



J.P. Morgan Asset Management

Guide to the Markets | 1Q 2020

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MARKET INSIGHTS

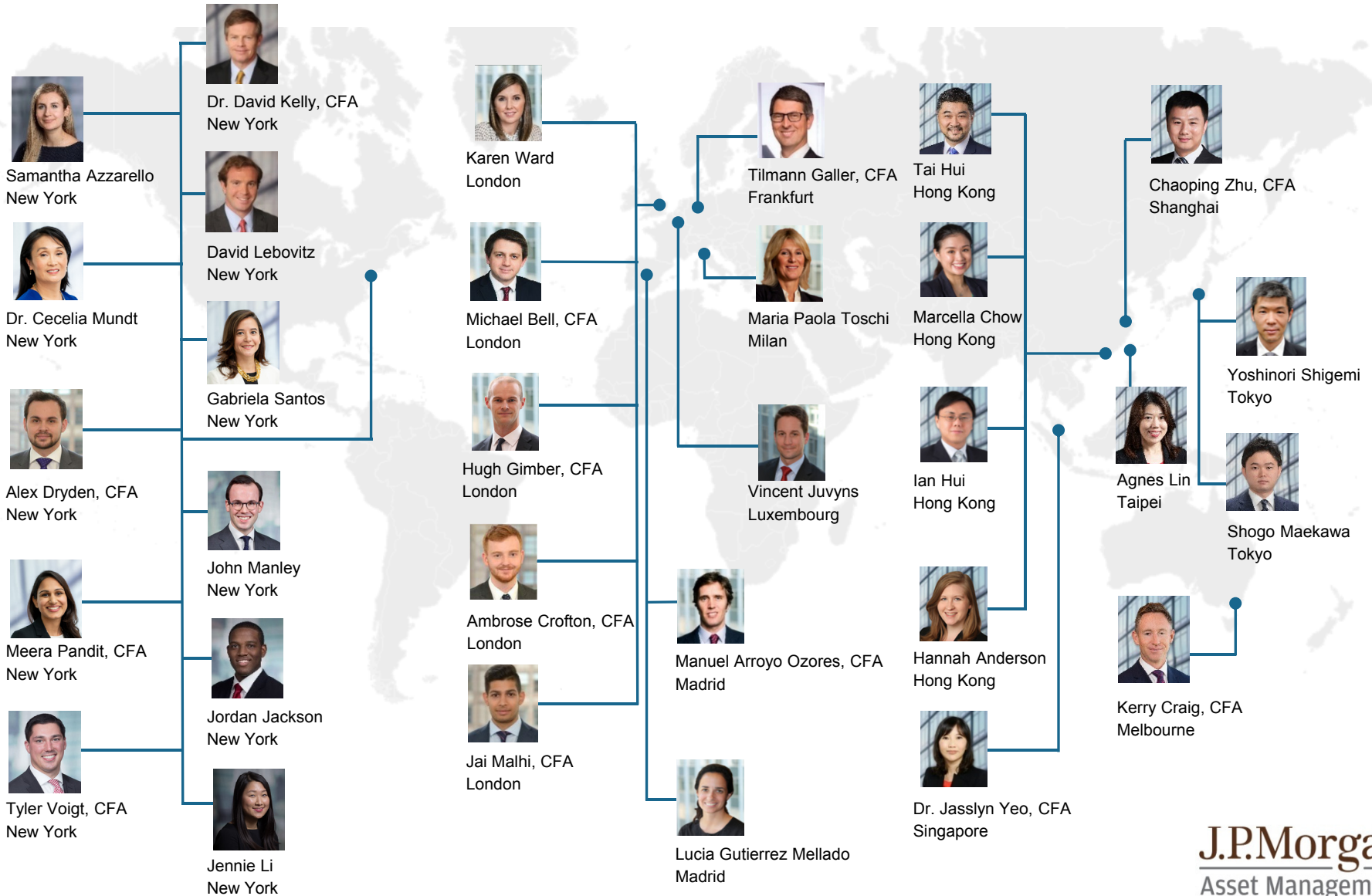
Guide to the Markets[®]

U.S. | 1Q 2020 | As of December 31, 2019

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


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

■ Equities

4. S&P 500 Index at inflection points
5. S&P 500 valuation measures 
6. P/E ratios and equity returns
7. Corporate profits
8. Sources of earnings per share growth 
9. Uses of profits
10. Returns and valuations by style
11. Returns and valuations by sector
12. Factor performance
13. Annual returns and intra-year declines
14. Bear markets and subsequent bull runs
15. Stock market since 1900

■ Economy

16. The length and strength of expansions
17. Economic growth and the composition of GDP 
18. Consumer finances
19. Income inequality in the U.S.
20. Cyclical sectors
21. Long-term drivers of economic growth
22. Federal finances
23. Unemployment and wages 
24. Business sentiment and economic cycles
25. Employment and income by educational attainment
26. Inflation 
27. Dollar drivers
28. Oil markets

■ Fixed income

29. The Fed and interest rates 
30. Interest rates and inflation 
31. Fixed income yields and returns
32. Yield curve
33. Fixed income yields and correlation to the equity market
34. Municipal finance
35. High yield bonds
36. Corporate debt
37. Negative-yielding debt
38. Bond market liquidity
39. Global monetary policy
40. Global fixed income
41. Fixed income sector returns


■ International

42. Global equity markets
43. Sources of global equity returns
44. Currency and international equity returns
45. U.S. and international equities at inflection points 
46. International equity earnings and valuations
47. Global economic growth
48. Manufacturing momentum 
49. Global inflation
50. Global trade
51. European recovery
52. Japan: Economy and markets
53. China: Economic growth
54. Emerging markets

■ Alternatives

55. Correlations and volatility
56. Hedge funds
57. Private equity
58. Yield alternatives: Domestic and global
59. Global commodities

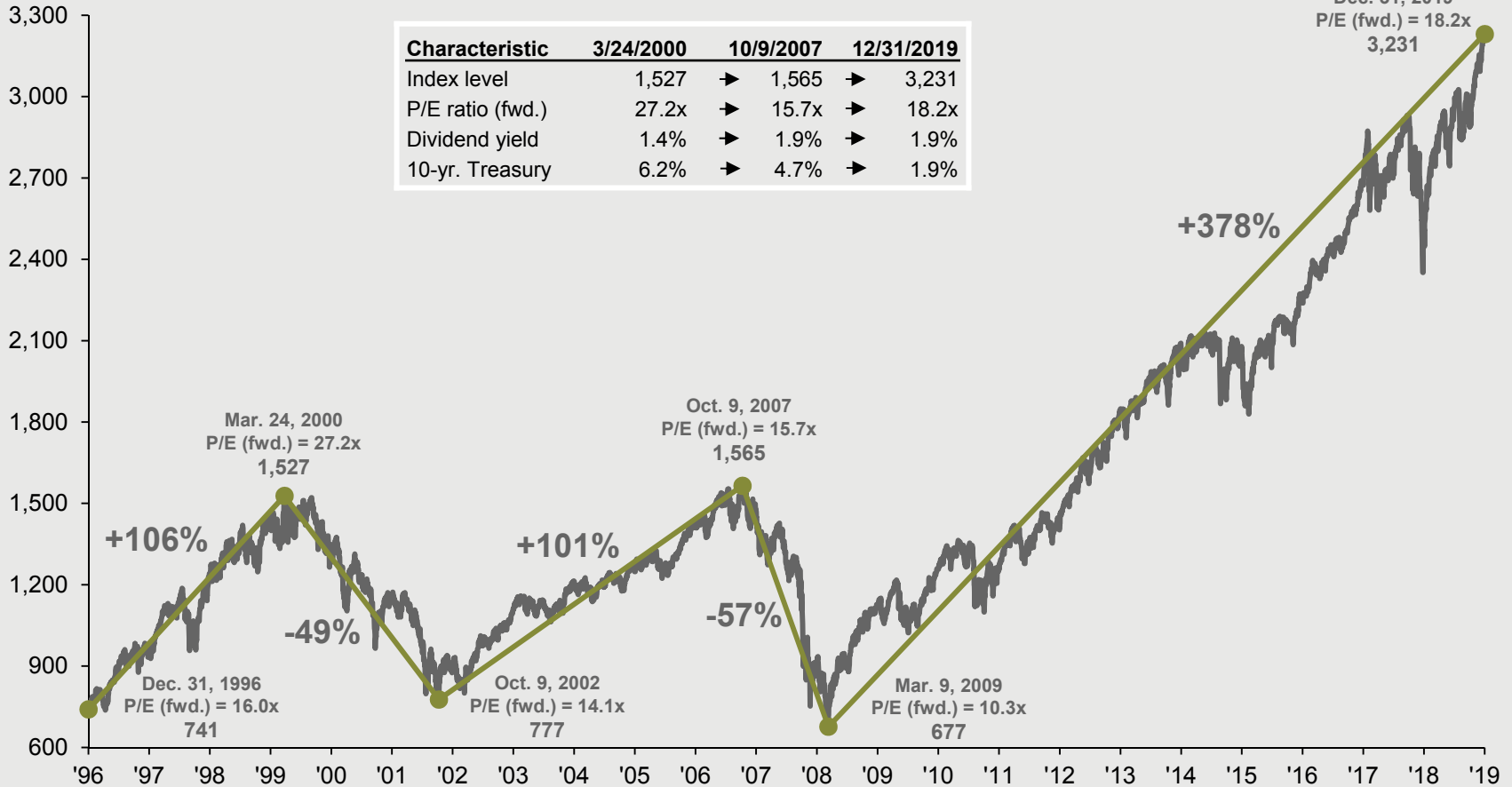
■ Investing principles

60. Asset class returns 
61. Fund flows
62. Life expectancy and retirement
63. Time, diversification and the volatility of returns
64. Diversification and the average investor
65. Equity market performance around bear markets
66. Consumer confidence by political affiliation
67. Cash account returns
68. Institutional investor behavior



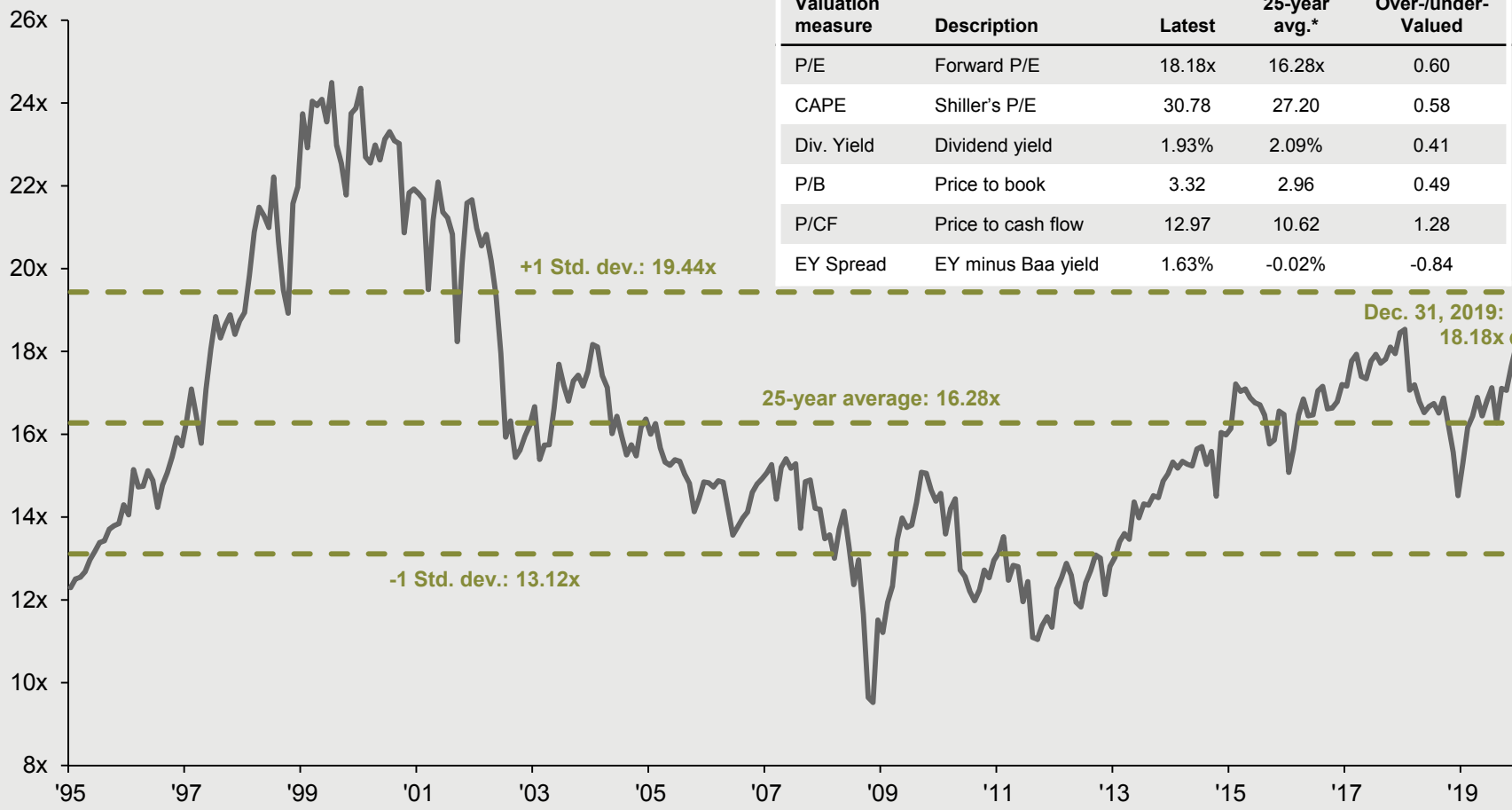
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S&P 500 Price Index



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. *Guide to the Markets* – U.S. Data are as of December 31, 2019.

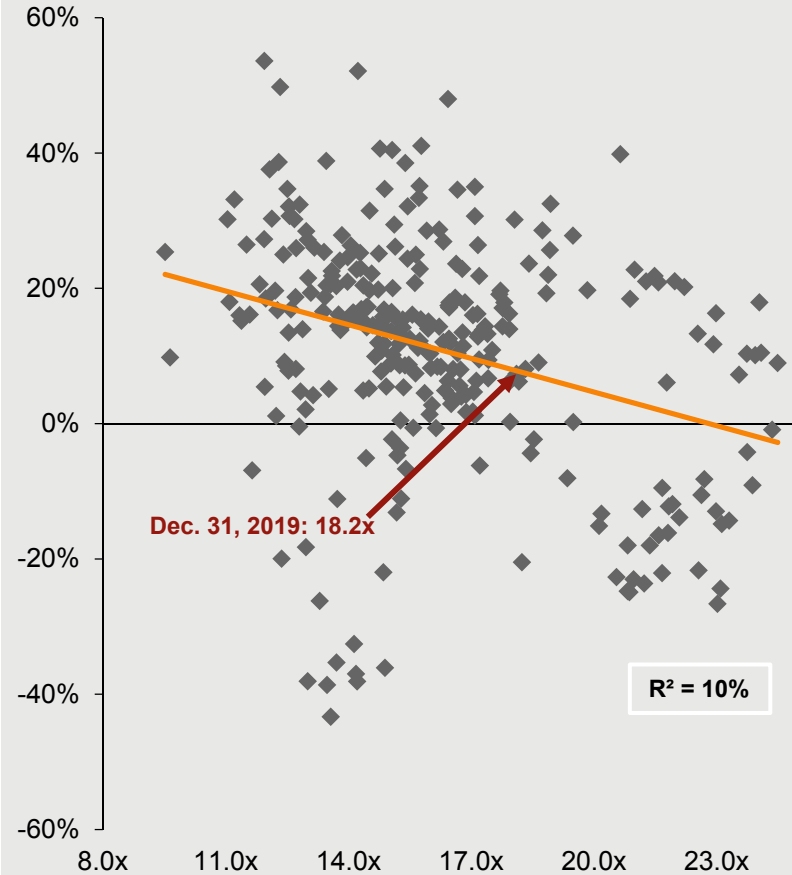
S&P 500 Index: Forward P/E ratio



Source: FactSet, FRB, Robert Shiller, Standard & Poor's, Thomson Reuters, J.P. Morgan Asset Management. Price to earnings is price divided by consensus analyst estimates of earnings per share for the next 12 months as provided by IBES since January 1995, and FactSet for December 31, 2019. Average P/E and standard deviations are calculated using 25 years of IBES history. Shiller's P/E uses trailing 10-years of inflation-adjusted earnings as reported by companies. Dividend yield is calculated as the next 12-month consensus dividend divided by most recent price. Price to book ratio is the price divided by book value per share. Price to cash flow is price divided by NTM cash flow. EY minus Baa yield is the forward earnings yield (consensus analyst estimates of EPS over the next 12 months divided by price) minus the Moody's Baa seasoned corporate bond yield. Std. dev. over-/under-valued is calculated using the average and standard deviation over 25 years for each measure. *P/CF is a 20-year average due to cash flow data availability. *Guide to the Markets* – U.S. Data are as of December 31, 2019.

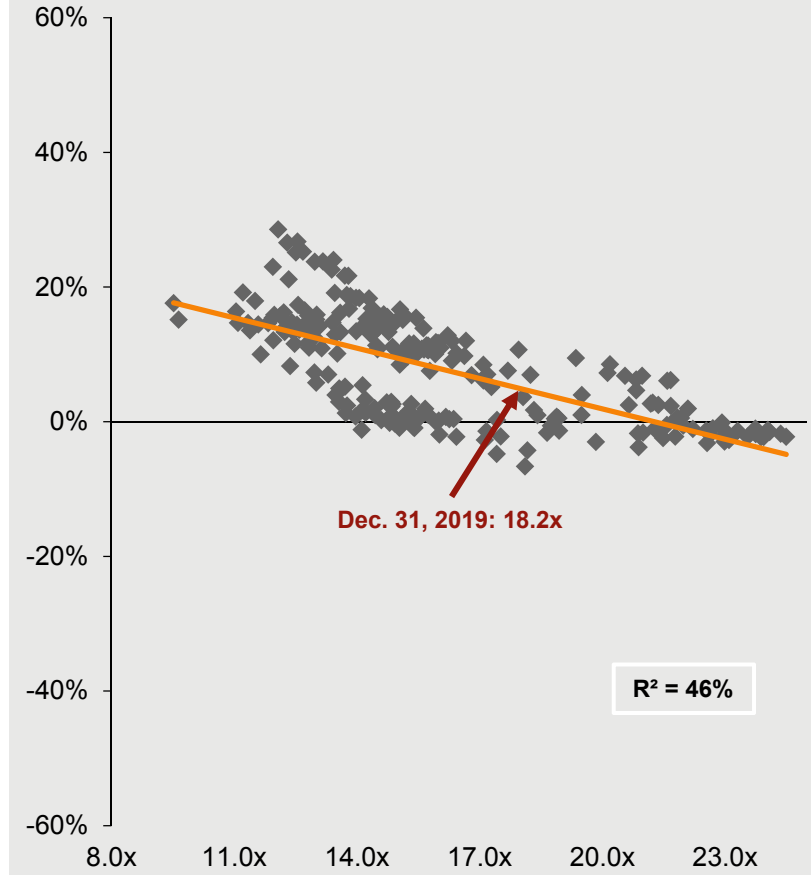
Forward P/E and subsequent 1-yr. returns

S&P 500 Total Return Index



Forward P/E and subsequent 5-yr. annualized returns

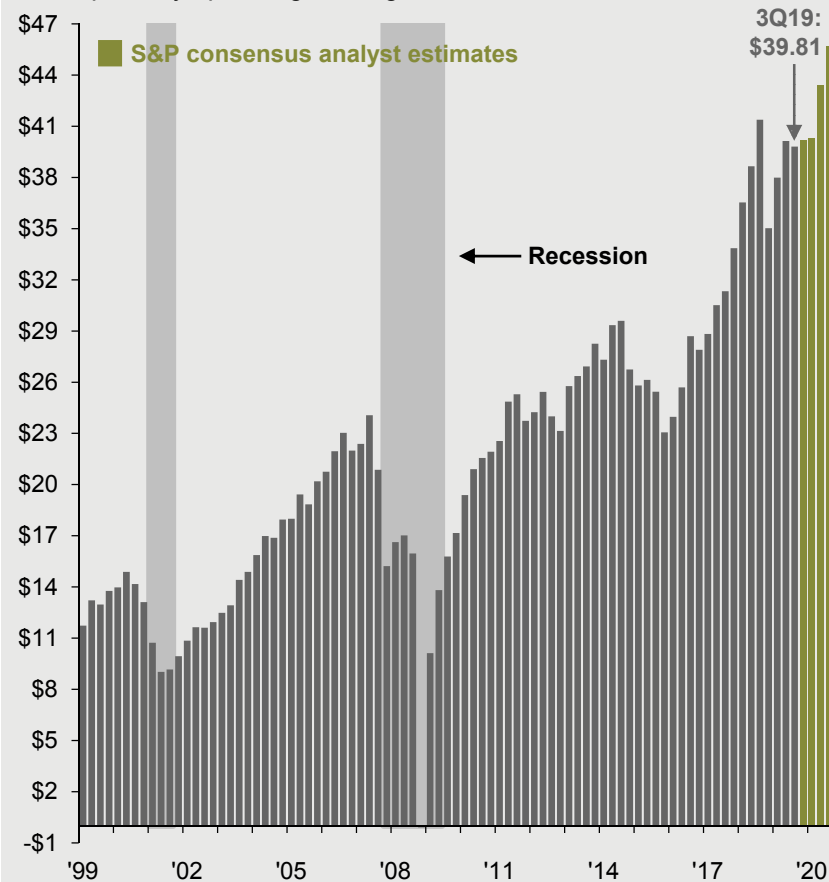
S&P 500 Total Return Index



Source: FactSet, Standard & Poor's, Thomson Reuters, J.P. Morgan Asset Management. Returns are 12-month and 60-month annualized total returns, measured monthly, beginning December 31, 1994. R^2 represents the percent of total variation in total returns that can be explained by forward P/E ratios. *Guide to the Markets - U.S.* Data are as of December 31, 2019.

S&P 500 operating earnings per share

Index quarterly operating earnings



S&P 500 profit margins

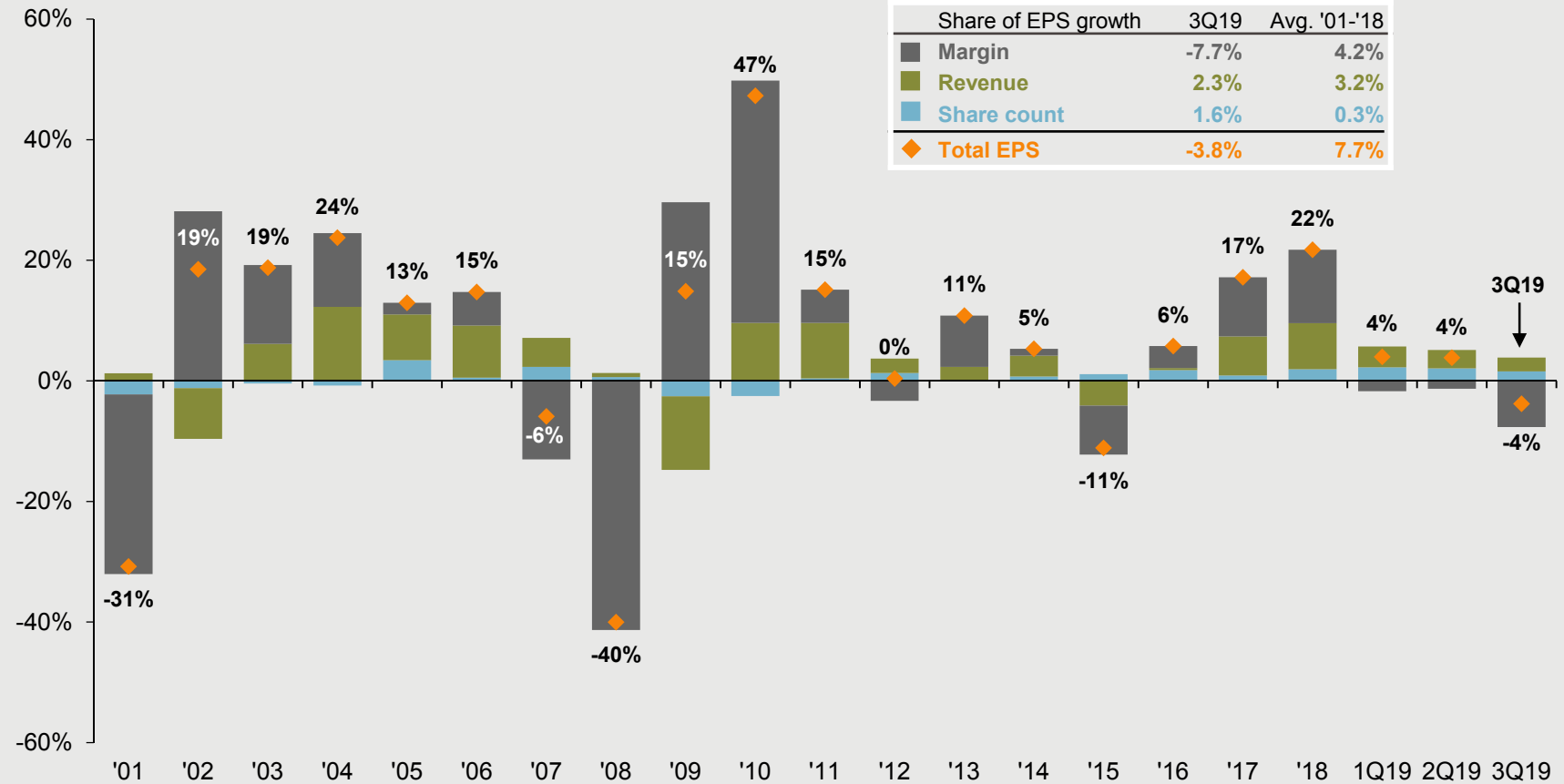
Quarterly operating earnings/sales



Source: Compustat, FactSet, Standard & Poor's, J.P. Morgan Asset Management. 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. Guide to the Markets – U.S. Data are as of December 31, 2019.

S&P 500 year-over-year operating EPS growth

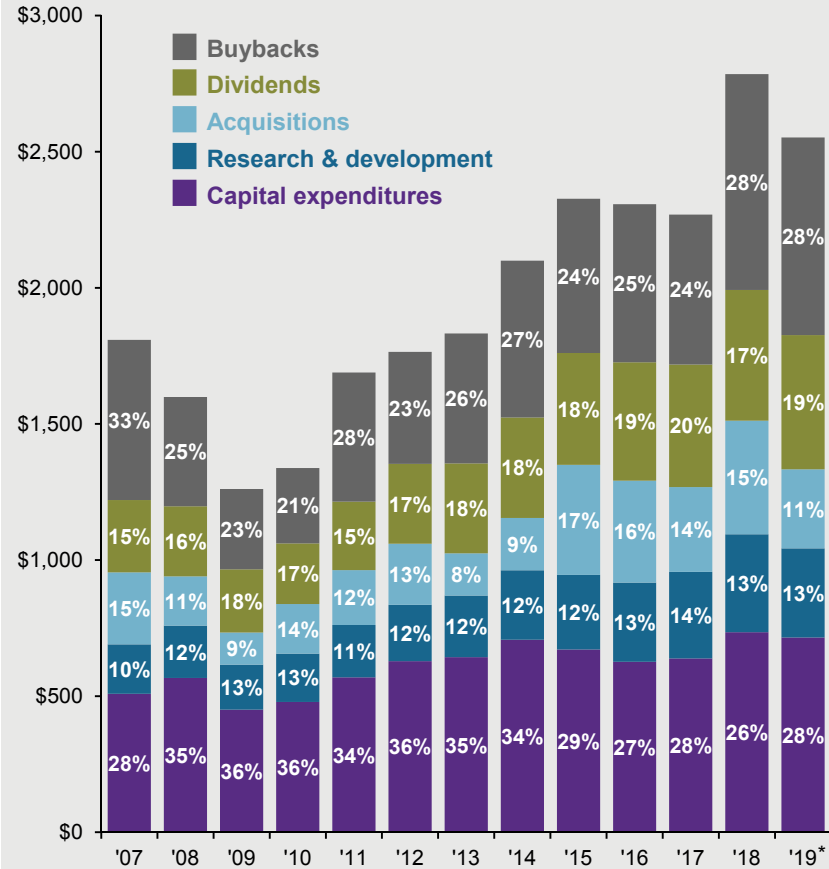
Annual growth broken into revenue, changes in profit margin & changes in share count



Source: Compustat, FactSet, Standard & Poor's, J.P. Morgan Asset Management. EPS levels are based on annual operating earnings per share except for 2019, which is quarterly. Percentages may not sum due to rounding. Past performance is not indicative of future returns. Guide to the Markets – U.S. Data are as of December 31, 2019.

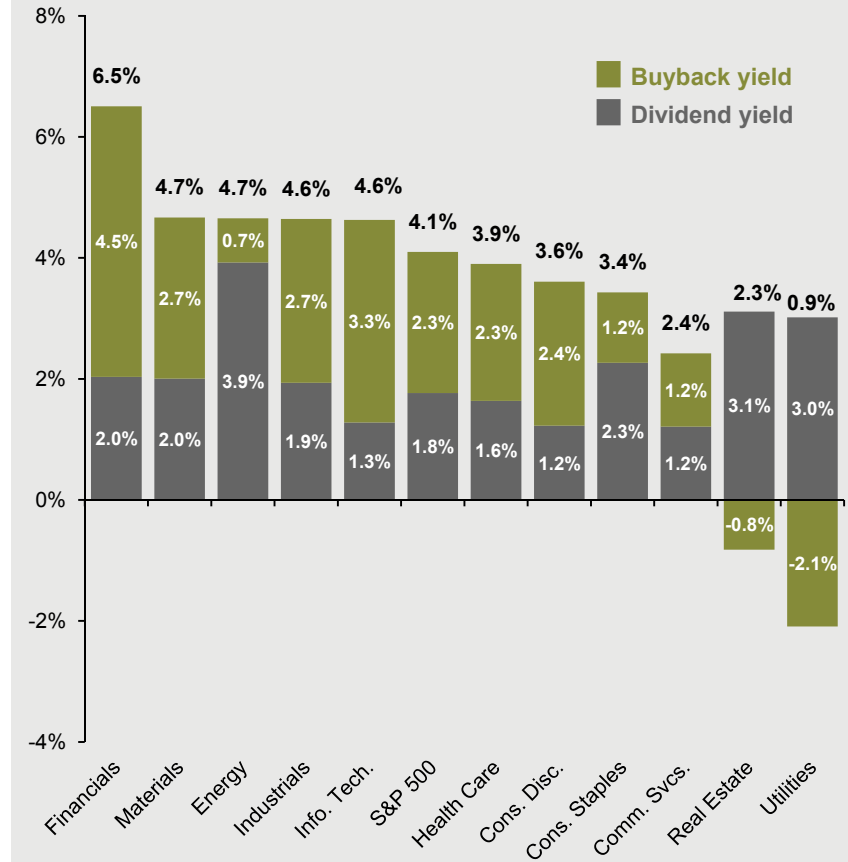
S&P 500 uses of cash

USD billions



Total shareholder yield by sector

Last 12-months dividends and buybacks minus iss. divided by mkt. cap



Source: Compustat, FactSet, Standard & Poor's, J.P. Morgan Asset Management.

Buyback yield is net of share issuance and is based on last 12-months net issuance divided by market capitalization. Dividend yield is calculated as the last 12-month dividend divided by market capitalization. *2019 S&P 500 uses of cash are a full-year forecast based on the growth rates observed year-to-date though the 3Q19 reporting season.

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4Q 2019			2019				
	Value	Blend	Growth		Value	Blend	Growth
Large	7.4%	9.1%	10.6%	Large	26.5%	31.5%	36.4%
Mid	6.4%	7.1%	8.2%	Mid	27.1%	30.5%	35.5%
Small	8.5%	9.9%	11.4%	Small	22.4%	25.5%	28.5%

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

	Value	Blend	Growth
Large	15.2 / 13.6	18.2 / 15.5	23.1 / 19.1
Mid	15.3 / 14.1	18.2 / 16.1	25.2 / 20.8
Small	15.6 / 16.2	23.4 / 20.4	44.4 / 29.7

Since market peak (October 2007)			Since market low (March 2009)				
	Value	Blend	Growth		Value	Blend	Growth
Large	111.6%	167.8%	236.6%	Large	427.7%	498.5%	586.5%
Mid	143.1%	165.6%	193.6%	Mid	520.8%	541.0%	578.7%
Small	107.6%	134.0%	160.5%	Small	413.4%	464.2%	514.6%

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

	Value	Blend	Growth
Large	111.9%	117.1%	120.8%
Mid	108.5%	112.6%	120.9%
Small	96.7%	114.8%	149.5%

Source: FactSet, Russell Investment Group, Standard & Poor's, J.P. Morgan Asset Management. All calculations are cumulative total return, including dividends reinvested for the stated period. Since Market Peak represents period 10/9/07 – 12/31/19, illustrating market returns since the S&P 500 Index high on 10/9/07. Since Market Low represents period 3/9/09 – 12/31/19, illustrating market returns since the S&P 500 Index low on 3/9/09. Returns are cumulative returns, not annualized. For all time periods, total return is based on Russell style indices with the exception of the large blend category, which is based on the S&P 500 Index. Past performance is not indicative of future returns. The price to earnings 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. *Guide to the Markets – U.S.* Data are as of December 31, 2019.

Returns and valuations by sector

GTM - U.S. | 11

Equities

	Materials	Energy	Financials	Industrials	Technology	Cons. Discr.	Comm. Services*	Health Care	Real Estate	Cons. Staples	Utilities	S&P 500 Index	Weight
S&P weight	2.7%	4.3%	13.0%	9.1%	23.2%	9.8%	10.4%	14.2%	2.9%	7.2%	3.3%	100.0%	
Russell Growth weight	1.3%	0.3%	3.1%	9.3%	38.9%	13.8%	11.6%	14.7%	2.4%	4.6%	0.0%	100.0%	
Russell Value weight	4.3%	8.2%	23.9%	9.7%	6.3%	5.9%	8.2%	13.0%	5.2%	8.9%	6.6%	100.0%	
4Q 2019	6.4	5.5	10.5	5.5	14.4	4.5	9.0	14.4	-0.5	3.5	0.8	9.1	
2019	24.6	11.8	32.1	29.4	50.3	27.9	32.7	20.8	29.0	27.6	26.3	31.5	
Since market peak (October 2007)	87.8	6.5	36.4	139.7	348.1	299.6	79.2	257.2	111.2	216.4	151.2	167.8	
Since market low (March 2009)	347.3	95.0	644.8	558.8	838.9	825.1	242.3	475.9	683.0	343.7	339.7	498.5	
Beta to S&P 500	1.24	1.22	1.19	1.18	1.12	1.10	0.96*	0.78	0.76	0.59	0.28	1.00	β
Correl. to Treas. yields	0.26	0.41	0.51	0.33	0.33	0.26	0.30	0.25	-0.32	0.13	-0.15	0.35	ρ
Foreign % of sales	56.8	51.3	30.1	43.8	58.2	34.0	44.7	38.5	-	32.7	-	42.9	%
NTM Earnings Growth	13.4%	19.9%	4.9%	14.8%	9.5%	12.3%	12.0%*	8.5%	5.8%	6.4%	4.7%	9.5%	
20-yr avg.	19.6%	12.7%	22.2%	11.0%	14.2%	15.3%	10.4%*	9.5%	7.7%**	8.5%	4.8%	11.5%	EPS
Forward P/E ratio	18.4x	17.7x	13.4x	16.9x	21.8x	22.2x	18.8x	16.2x	19.9x	20.2x	19.9x	18.2x	
20-yr avg.	14.0x	17.1x	12.5x	15.9x	19.7x	17.8x	18.2x*	16.2x	15.6x	16.8x	14.4x	15.5x	P/E
Buyback yield	2.7%	0.7%	4.5%	2.7%	3.3%	2.4%	1.2%	2.3%	-0.8%	1.2%	-2.1%	2.3%	
20-yr avg.	0.7%	1.5%	-0.1%	2.0%	2.7%	2.3%	1.2%	1.9%	-0.8%	1.8%	-0.9%	1.5%	Bbk
Dividend yield	2.2%	4.1%	2.2%	2.0%	1.4%	1.4%	1.3%	1.8%	3.2%	2.8%	3.2%	1.9%	
20-yr avg.	2.6%	2.4%	2.3%	2.2%	1.0%	1.4%	1.6%*	1.8%	4.3%	2.7%	3.9%	2.1%	Div

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 – 12/31/19. Since market low represents period 3/9/09 – 12/31/19. 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 2018: Global Sales report as of August 2019. 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. Buyback yield is net of share issuance and is calculated as last 12-months net buybacks divided by market cap. 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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Factor performance

GTM - U.S. | 12

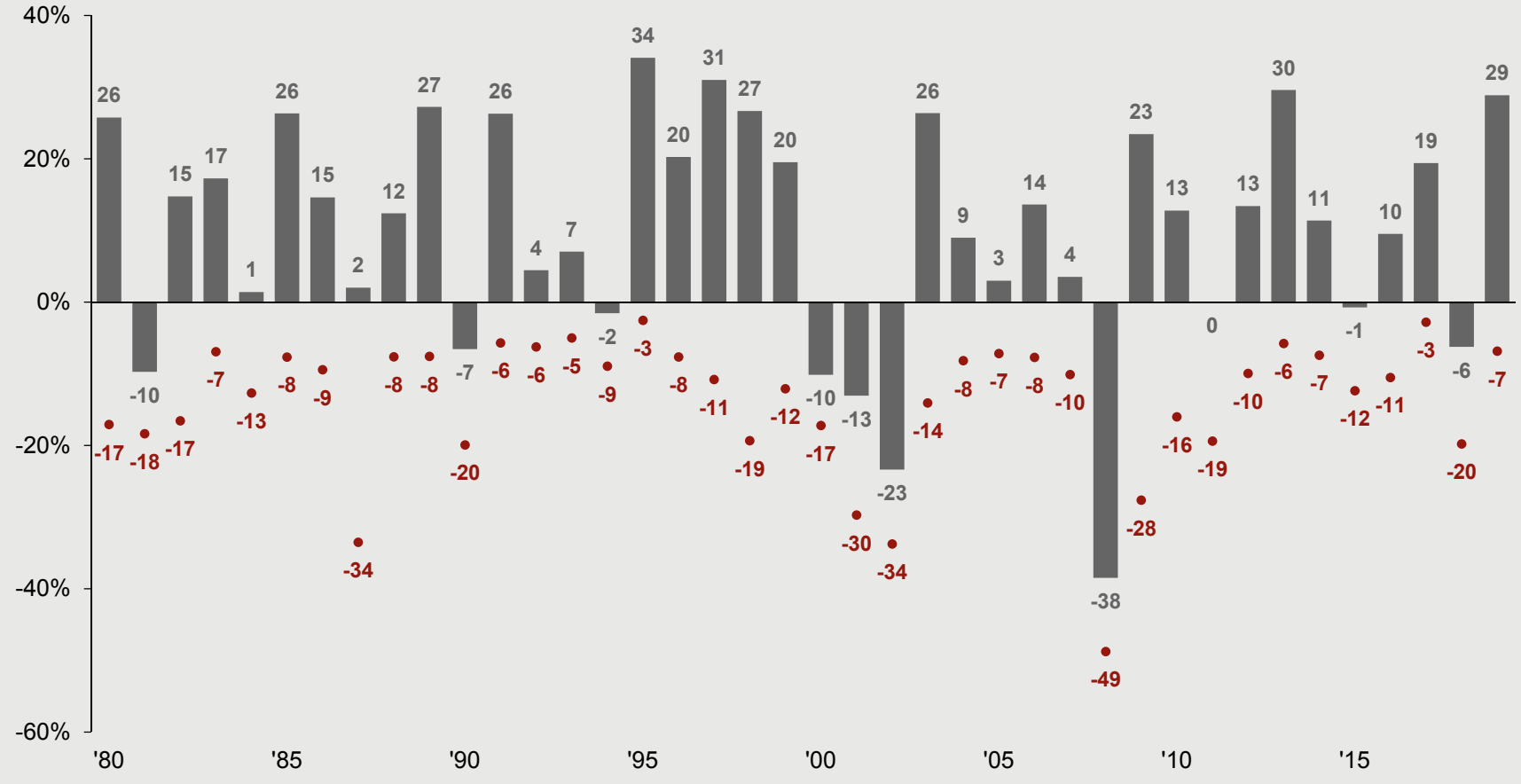
Equities

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2005 - 2019	
																Ann.	Vol.
Momen.	High Div.	Momen.	Min. Vol.	Value	Small Cap	High Div.	Cyclical	Value	Value	Momen.	Small Cap	Momen.	Min. Vol.	Cyclical	Momen.	Small Cap	
19.3%	21.1%	17.8%	-25.7%	38.8%	26.9%	14.3%	20.1%	43.2%	17.7%	9.3%	21.3%	37.8%	1.5%	36.3%	11.0%	18.7%	
Multi-Factor	Value	Defens.	Defens.	Cyclical	Multi-Factor	Min. Vol.	Value	Small Cap	Min. Vol.	Min. Vol.	High Div.	Cyclical	Momen.	Quality	Min. Vol.	Value	
15.7%	19.7%	17.7%	-26.7%	36.9%	18.3%	12.9%	16.8%	38.8%	16.5%	5.6%	16.3%	27.3%	-1.6%	34.4%	10.2%	17.7%	
Value	Small Cap	Quality	High Div.	Multi-Factor	Momen.	Defens.	Small Cap	Multi-Factor	High Div.	Quality	Value	Quality	High Div.	Momen.	Multi-Factor	Cyclical	
13.2%	18.4%	10.1%	-27.6%	29.8%	18.2%	10.1%	16.3%	37.4%	14.9%	4.6%	15.9%	22.5%	-2.3%	28.1%	9.9%	17.7%	
Defens.	Multi-Factor	Multi-Factor	Quality	Small Cap	Cyclical	Quality	Multi-Factor	Cyclical	Multi-Factor	Cyclical	Cyclical	Value	Defens.	Min. Vol.	Quality	Momen.	
11.1%	16.6%	5.5%	-31.2%	27.2%	17.9%	7.5%	15.7%	35.0%	14.8%	2.6%	14.0%	22.2%	-2.9%	28.0%	9.9%	16.3%	
Min. Vol.	Defens.	Min. Vol.	Small Cap	Quality	High Div.	Multi-Factor	Momen.	Momen.	Momen.	High Div.	Multi-Factor	Multi-Factor	Cyclical	Value	High Div.	Multi-Factor	
6.6%	15.9%	4.3%	-33.8%	24.9%	15.9%	7.3%	15.1%	34.8%	14.7%	0.7%	13.7%	21.5%	-5.3%	27.7%	9.5%	15.4%	
Quality	Cyclical	Value	Value	High Div.	Min. Vol.	Momen.	Quality	Quality	Cyclical	Multi-Factor	Min. Vol.	High Div.	Quality	Multi-Factor	Value	Quality	
5.4%	15.0%	1.1%	-36.9%	18.4%	14.7%	6.1%	12.8%	34.3%	13.6%	0.4%	10.7%	19.5%	-5.6%	26.6%	9.5%	13.6%	
Small Cap	Min. Vol.	High Div.	Multi-Factor	Min. Vol.	Quality	Value	Min. Vol.	High Div.	Defens.	Defens.	Quality	Min. Vol.	Multi-Factor	Small Cap	Defens.	High Div.	
4.6%	15.0%	0.0%	-39.3%	18.4%	14.2%	-2.7%	11.2%	28.9%	13.0%	-0.9%	9.4%	19.2%	-9.7%	25.5%	9.0%	13.3%	
High Div.	Quality	Cyclical	Momen.	Momen.	Value	Cyclical	Defens.	Defens.	Quality	Small Cap	Defens.	Small Cap	Small Cap	High Div.	Cyclical	Defens.	
3.7%	12.8%	-0.8%	-40.9%	17.6%	12.7%	-3.4%	10.7%	28.9%	10.7%	-4.4%	7.7%	14.6%	-11.0%	22.5%	8.8%	12.3%	
Cyclical	Momen.	Small Cap	Cyclical	Defens.	Defens.	Small Cap	High Div.	Min. Vol.	Small Cap	Value	Momen.	Defens.	Value	Defens.	Small Cap	Min. Vol.	
2.5%	10.7%	-1.6%	-44.8%	16.5%	12.0%	-4.2%	10.6%	25.3%	4.9%	-6.4%	5.1%	12.3%	-11.1%	21.4%	7.9%	11.7%	

Source: FactSet, MSCI, Russell, Standard & Poor's, J.P. Morgan Asset Management. The MSCI High Dividend Yield Index aims to offer a higher than average dividend yield relative to the parent index that passes dividend sustainability and persistence screens. The MSCI Minimum Volatility Index optimizes the MSCI USA Index using an estimated security co-variance matrix to produce low absolute volatility for a given set of constraints. The MSCI Defensive Sectors Index includes: Consumer Staples, Energy, Health Care and Utilities. The MSCI Cyclical Sectors Index contains: Consumer Discretionary, Communication Services, Financials, Industrials, Information Technology and Materials. Securities in the MSCI Momentum Index are selected based on a momentum value of 12-month and 6-month price performance. Constituents of the MSCI Sector Neutral Quality Index are selected based on stronger quality characteristics to their peers within the same GICS sector by using three main variables: high return-on-equity, low leverage and low earnings variability. Constituents of the MSCI Enhanced Value index are based on three variables: price-to-book value, price-to-forward earnings and enterprise value-to-cash flow from operations. The Russell 2000 is used for small cap. The MSCI USA Diversified Multiple Factor Index aims to maximize exposure to four factors – Value, Momentum, Quality and Size. Annualized volatility is calculated as the standard deviation of quarterly returns multiplied by the square root of 4. *Guide to the Markets – U.S.* Data are as of December 31, 2019.

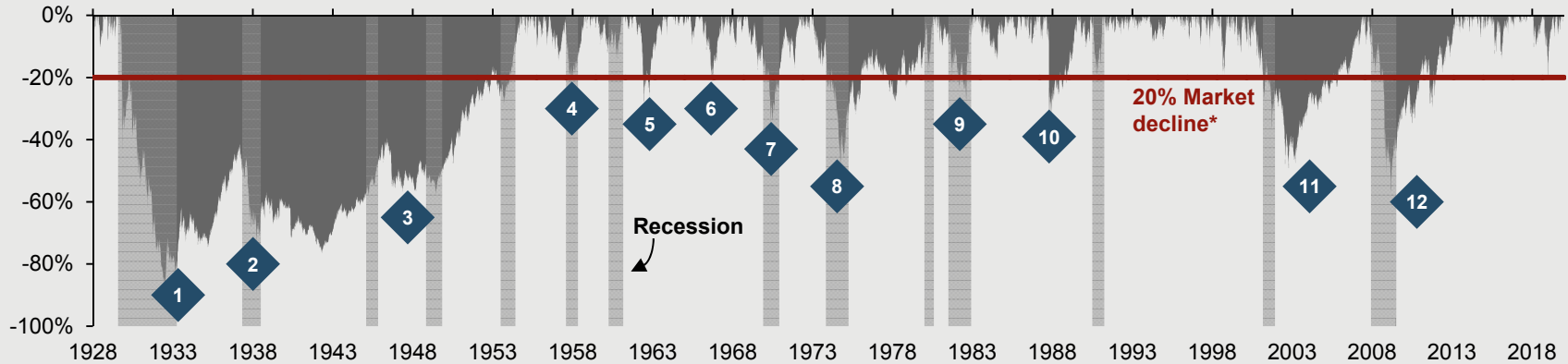
S&P 500 intra-year declines vs. calendar year returns

Despite average intra-year drops of 13.8%, annual returns positive in 30 of 40 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 2019, over which time period the average annual return was 8.9%.
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S&P 500 composite declines from all-time highs



Characteristics of bull and bear markets

Market Corrections	Bear markets			Macro environment			Bull markets			
	Market peak	Bear return*	Duration (months)*	Recession	Commodity spike	Aggressive Fed	Extreme valuations	Bull begin date	Bull return	Duration (months)
1 Crash of 1929 - Excessive leverage, irrational exuberance	Sep 1929	-86%	32	◆			◆	Jul 1926	152%	37
2 1937 Fed Tightening - Premature policy tightening	Mar 1937	-60%	61	◆		◆		Mar 1935	129%	23
3 Post WWII Crash - Post-war demobilization, recession fears	May 1946	-30%	36	◆			◆	Apr 1942	158%	49
4 Eisenhower Recession - Worldwide recession	Aug 1956	-22%	14			◆	◆	Jun 1949	267%	85
5 Flash Crash of 1962 - Flash crash, Cuban Missile Crisis	Dec 1961	-28%	6				◆	Oct 1960	39%	13
6 1966 Financial Crisis - Credit crunch	Feb 1966	-22%	7			◆	◆	Oct 1962	76%	39
7 Tech Crash of 1970 - Economic overheating, civil unrest	Nov 1968	-36%	17	◆	◆	◆	◆	Oct 1966	48%	25
8 Stagflation - OPEC oil embargo	Jan 1973	-48%	20	◆	◆			May 1970	74%	31
9 Volcker Tightening - Whip Inflation Now	Nov 1980	-27%	20	◆	◆	◆		Mar 1978	62%	32
10 1987 Crash - Program trading, overheating markets	Aug 1987	-34%	3				◆	Aug 1982	229%	60
11 Tech Bubble - Extreme valuations, .com boom/bust	Mar 2000	-49%	30	◆			◆	Oct 1990	417%	113
12 Global Financial Crisis - Leverage/housing, Lehman collapse	Oct 2007	-57%	17	◆	◆	◆		Oct 2002	101%	60
Current Cycle								Mar 2009	378%	129
Averages	-	-42%	22					-	164%	54

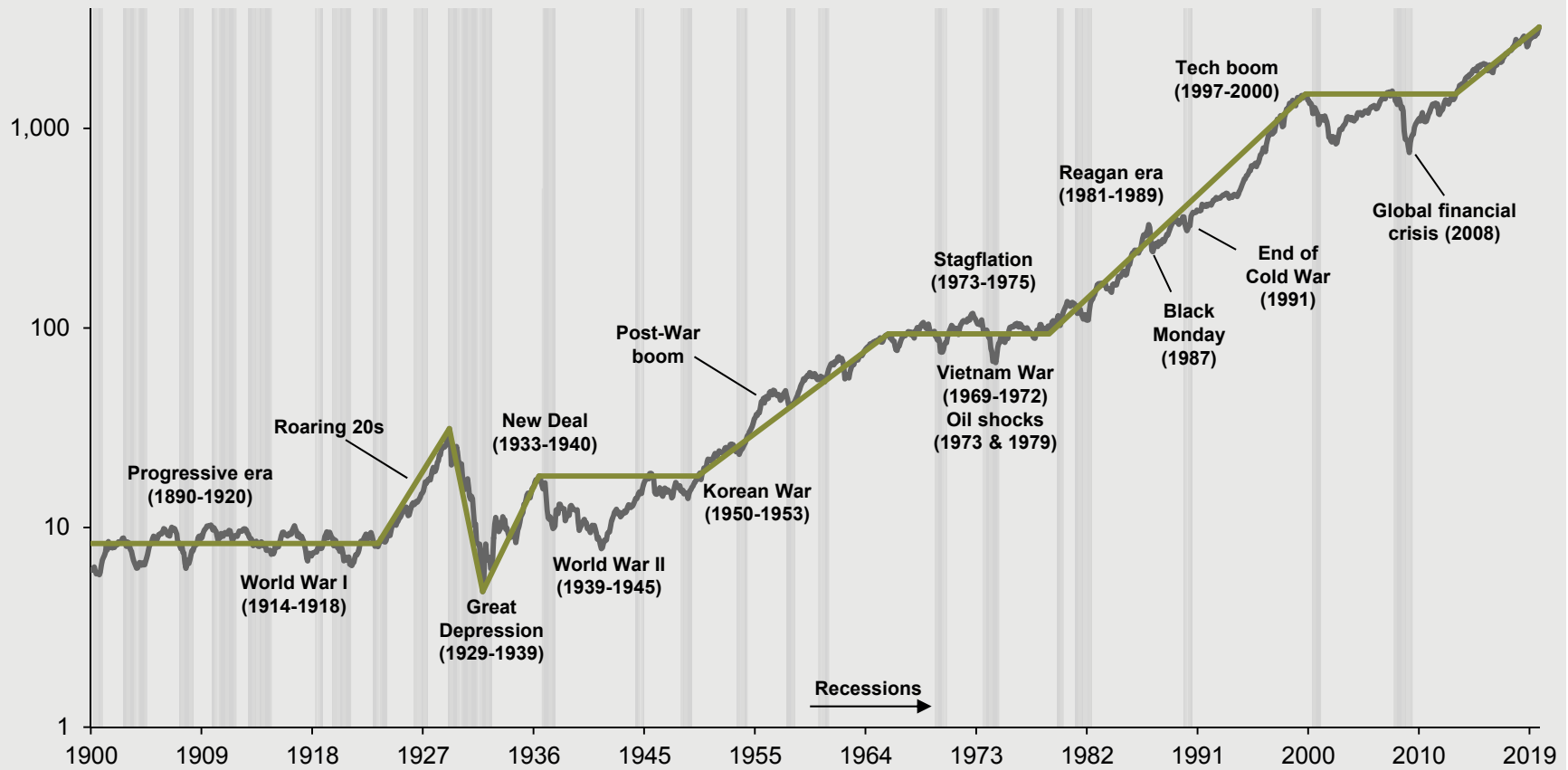
Source: FactSet, NBER, Robert Shiller, Standard & Poor's, J.P. Morgan Asset Management.

*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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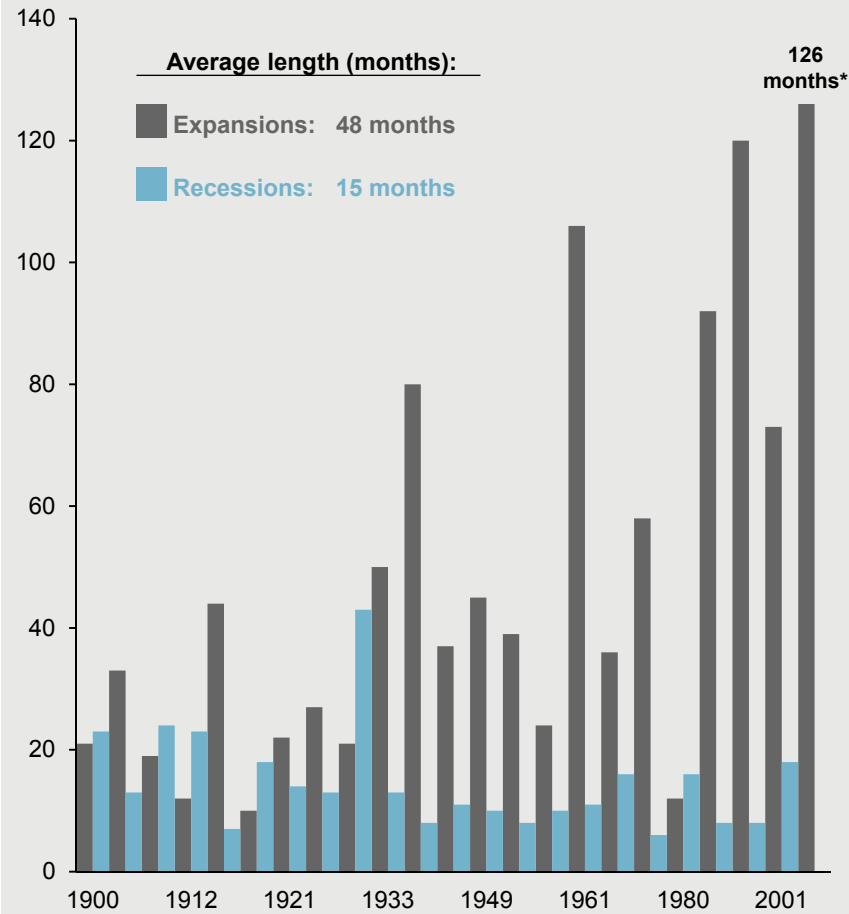
S&P Composite Index

Log scale, annual



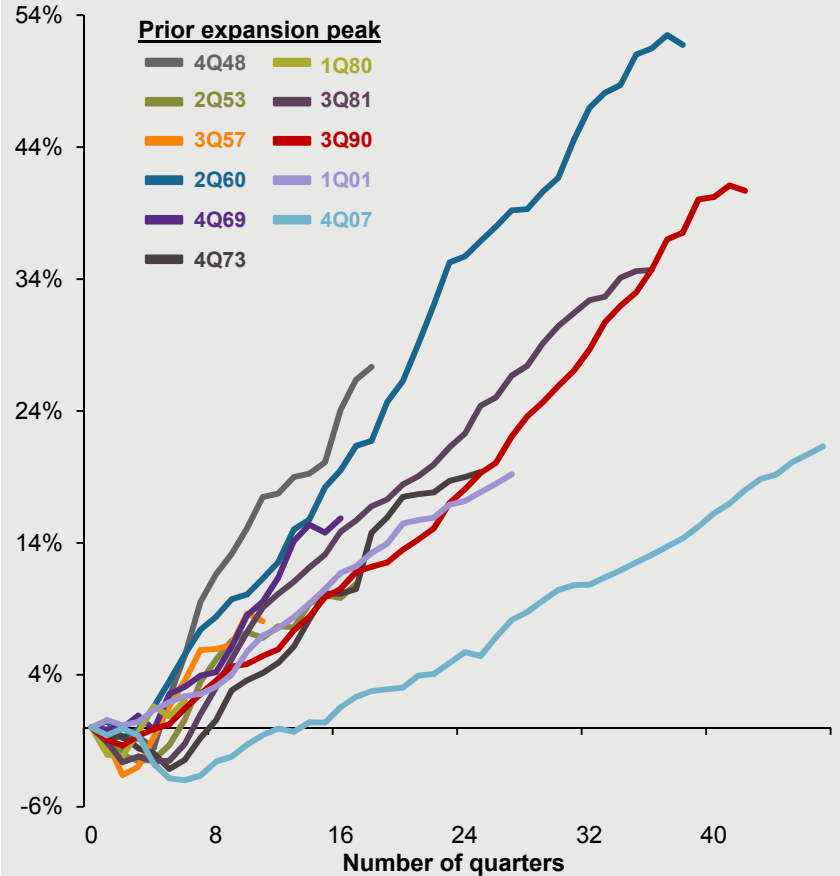
Source: FactSet, NBER, Robert Shiller, J.P. Morgan Asset Management.
 Data shown in log scale to best illustrate long-term index patterns. Past performance is not indicative of future returns. Chart is for illustrative purposes only.
 Guide to the Markets – U.S. Data are as of December 31, 2019.

Length of economic expansions and recessions



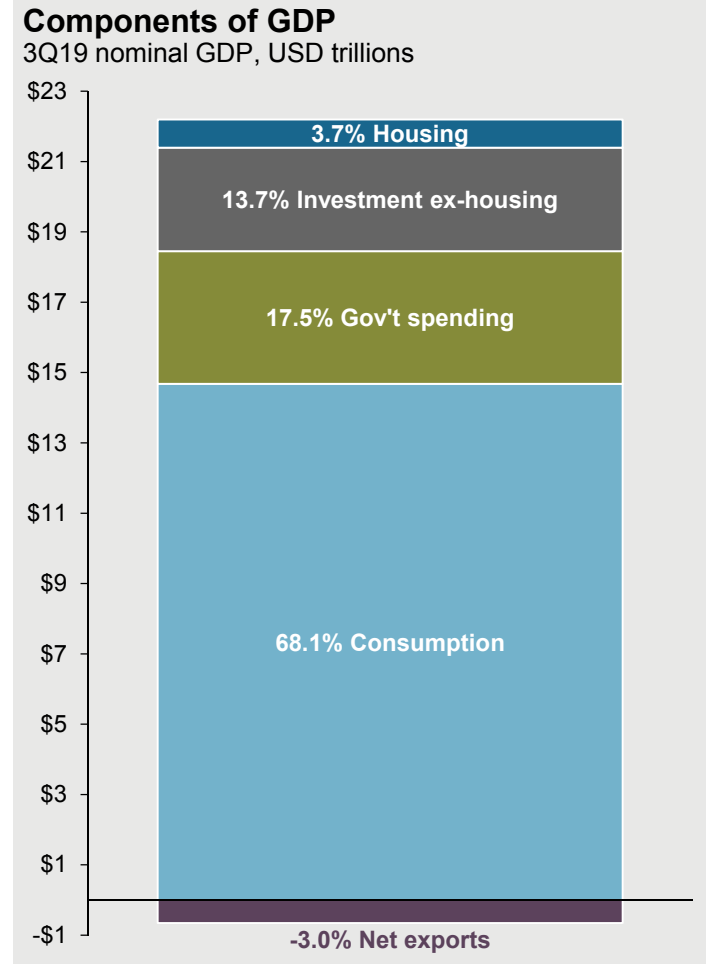
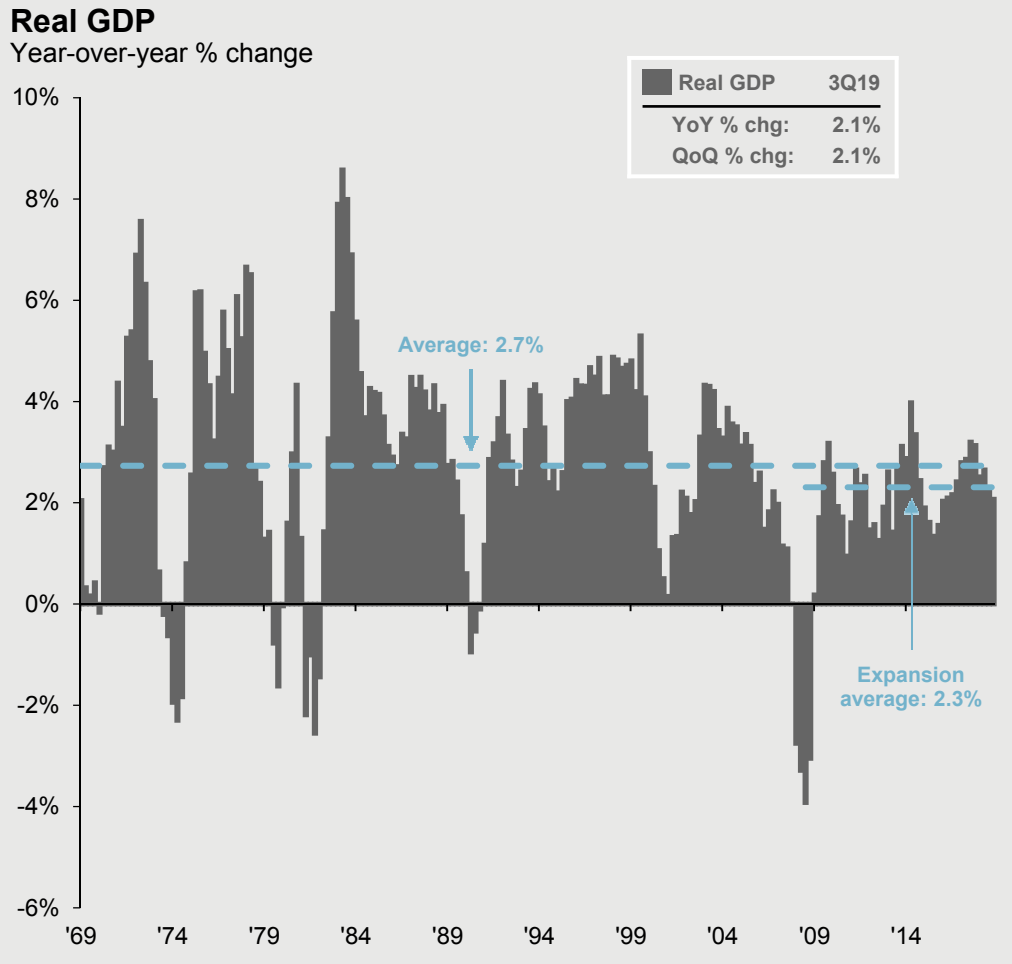
Strength of economic expansions

Cumulative real GDP growth since prior peak, percent



Source: BEA, NBER, J.P. Morgan Asset Management. *Chart assumes current expansion started in July 2009 and continued through December 2019, lasting 126 months so far. Data for length of economic expansions and recessions obtained from the National Bureau of Economic Research (NBER). These data can be found at www.nber.org/cycles/ and reflect information through December 2019. Past performance is not a reliable indicator of current and future results.

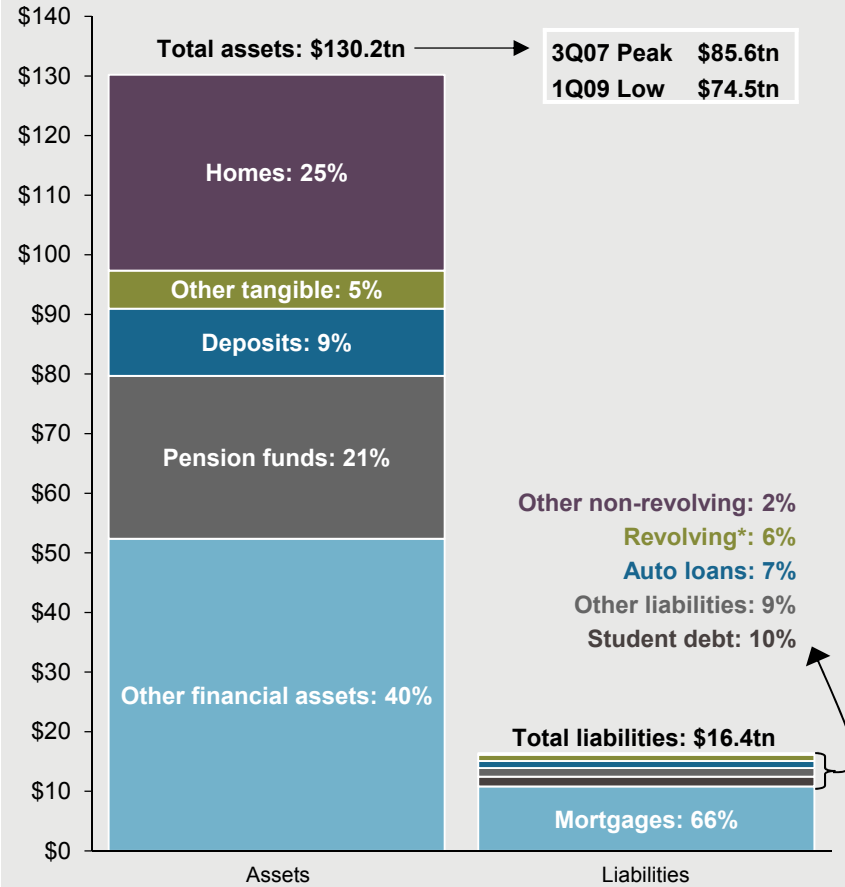
Guide to the Markets – U.S. Data are as of December 31, 2019.



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 December 31, 2019.

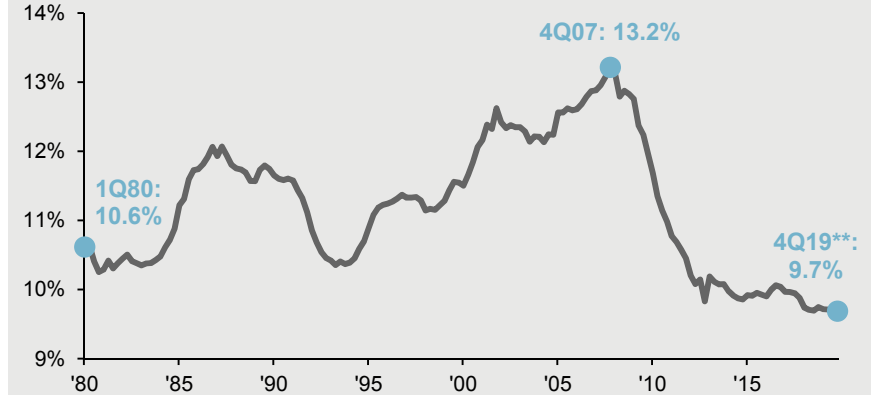
Consumer balance sheet

3Q19, trillions of dollars outstanding, not seasonally adjusted



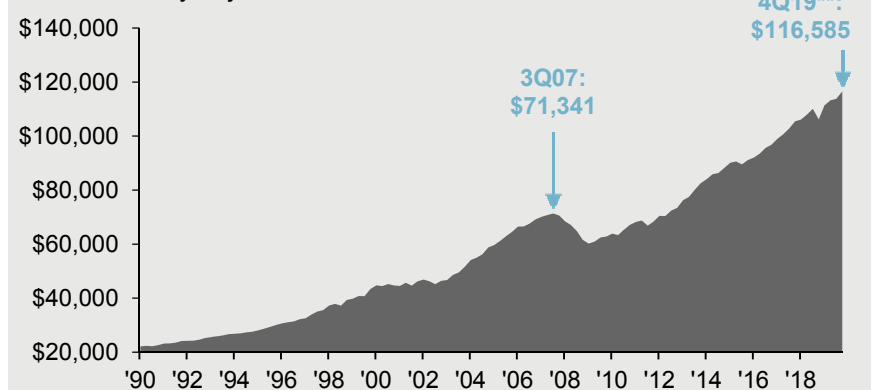
Household debt service ratio

Debt payments as % of disposable personal income, SA

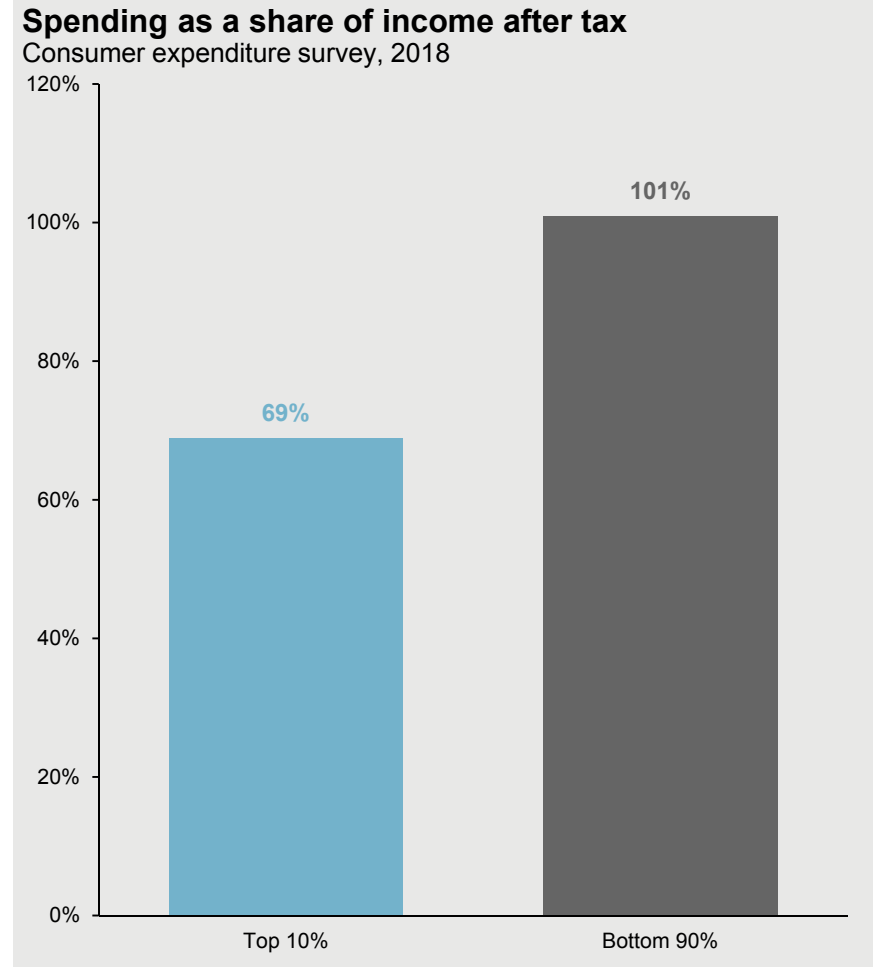
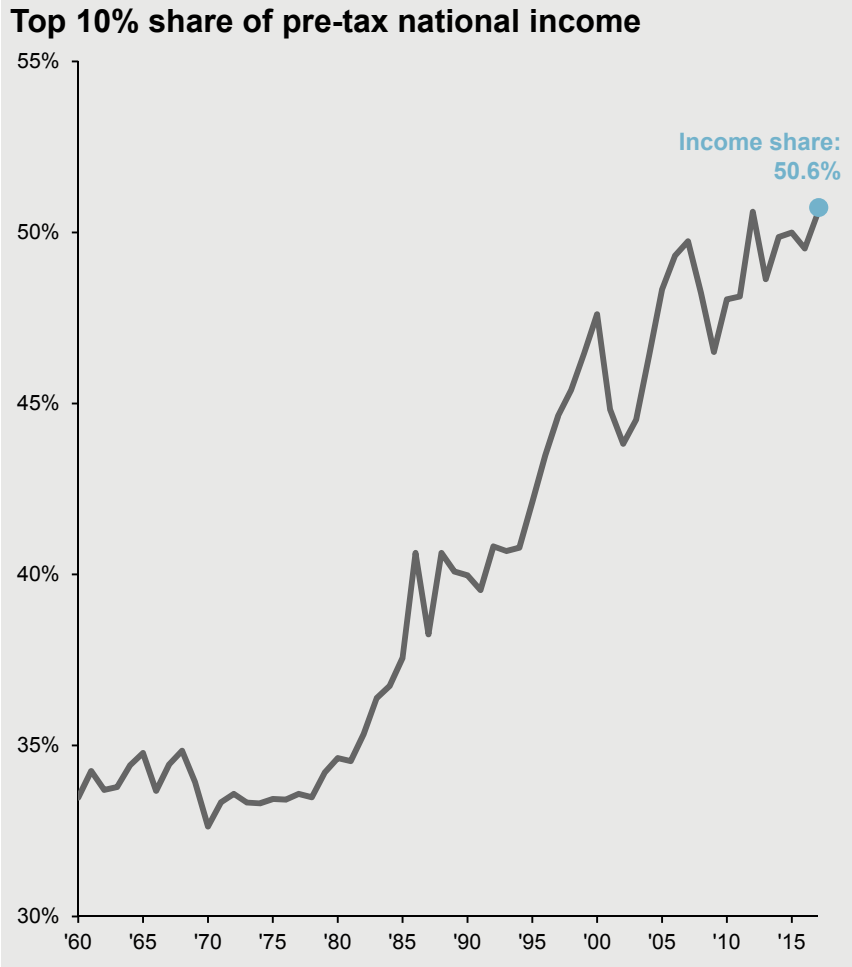


Household net worth

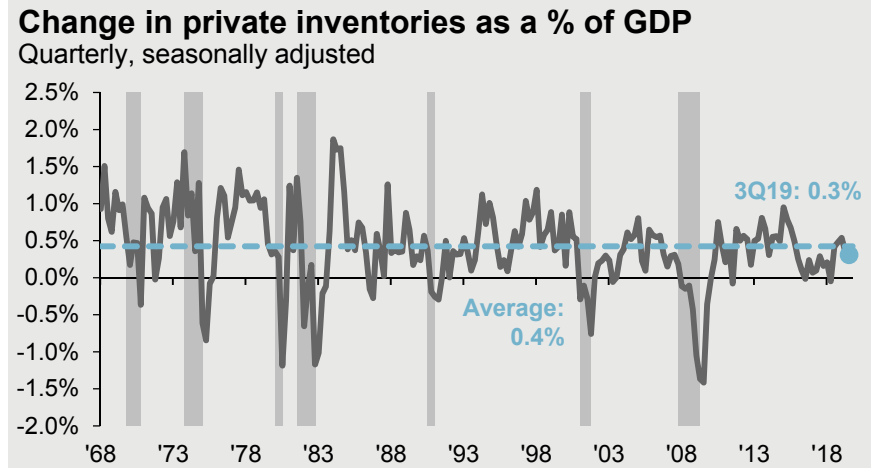
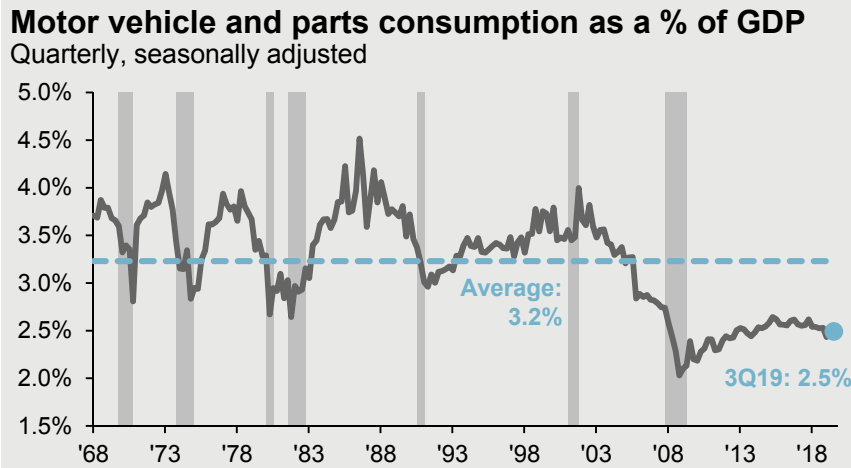
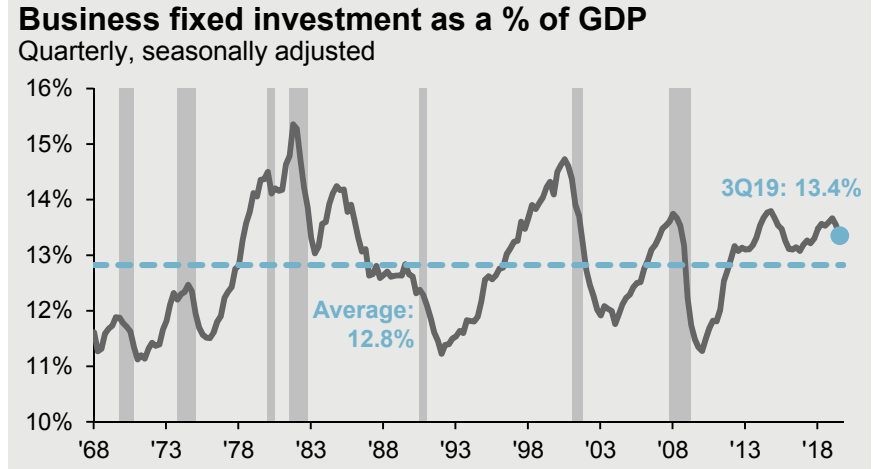
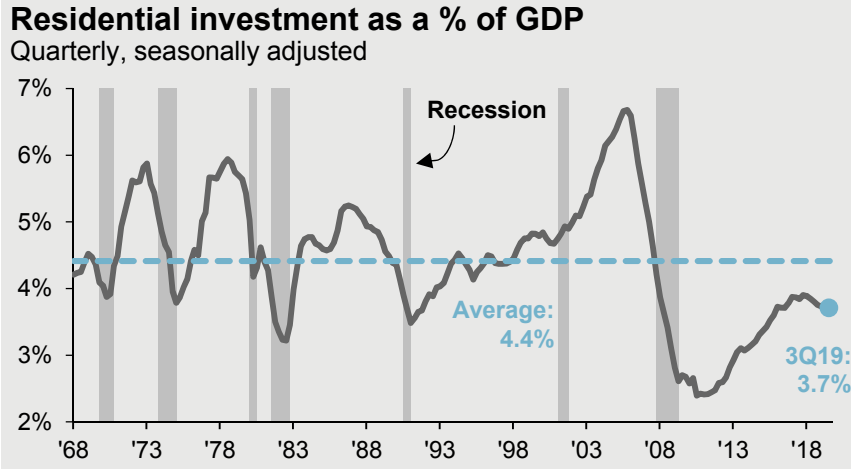
Not seasonally adjusted, USD billions



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. **4Q19 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 December 31, 2019.



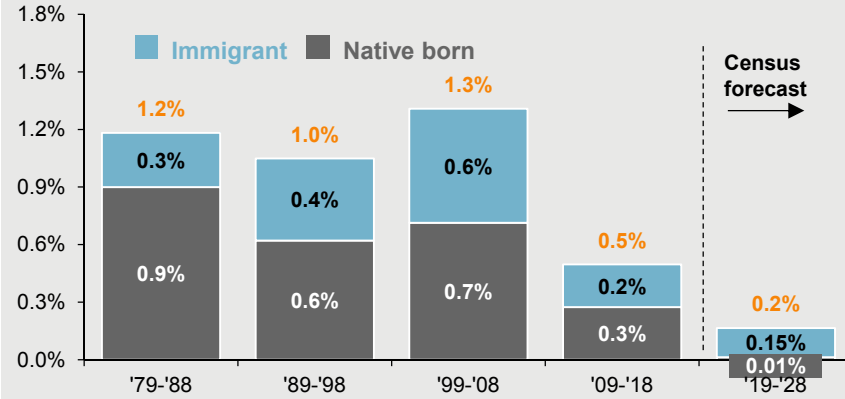
Source: Bureau of Labor Statistics, Piketty, Saez, J.P. Morgan Asset Management. (Left) "Income Inequality in the United States, 1913-1998" by Thomas Piketty and Emmanuel Saez, updated to 2018. Income is defined as market income and excludes government transfers but includes capital gains. In 2018, top decile includes all families with annual income above \$135,000. (Right) Consumer Expenditure Survey 2018. *Guide to the Markets - U.S.* Data are as of December 31, 2019.



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

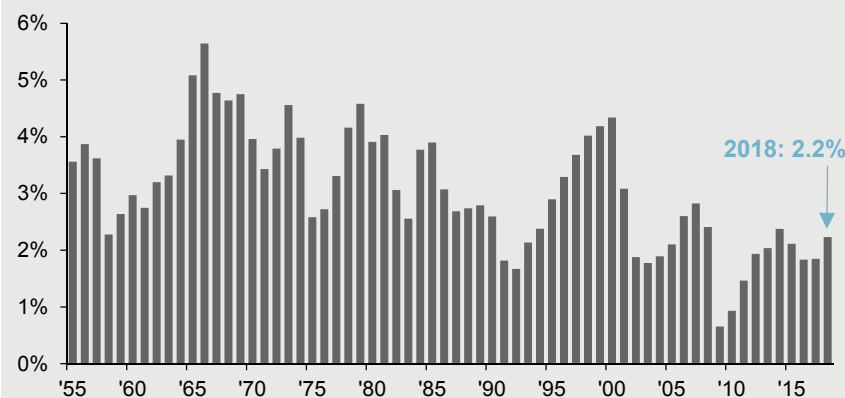
Growth in working-age population

Percent increase in civilian non-institutional population ages 16-64



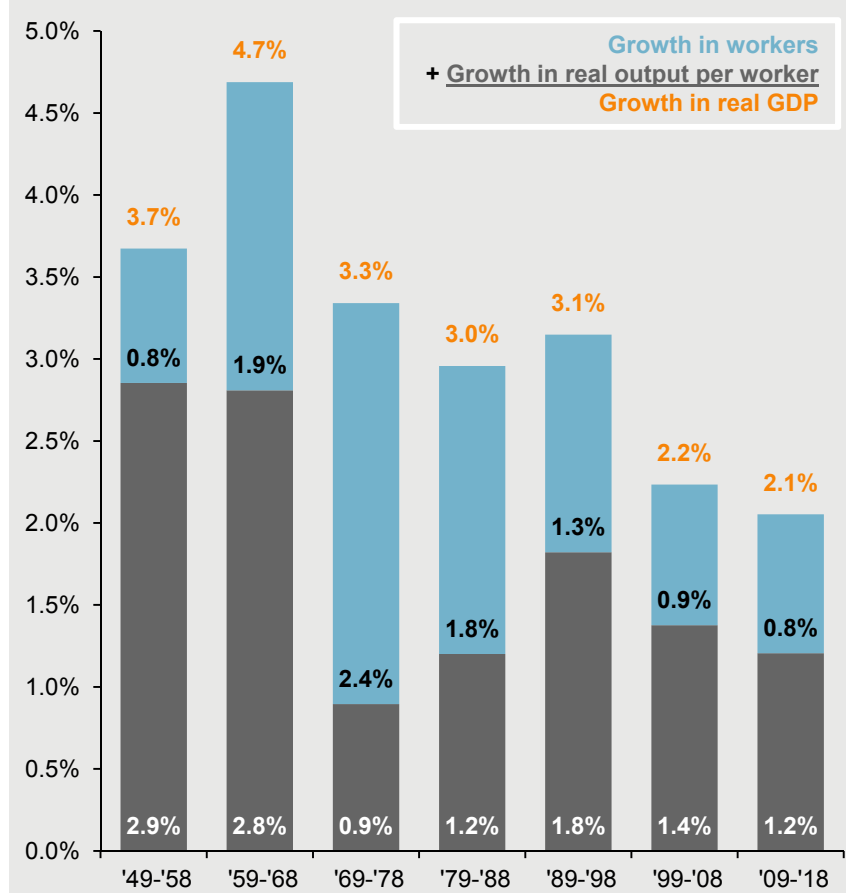
Growth in private non-residential capital stock

Non-residential fixed assets, year-over-year % change



Drivers of GDP growth

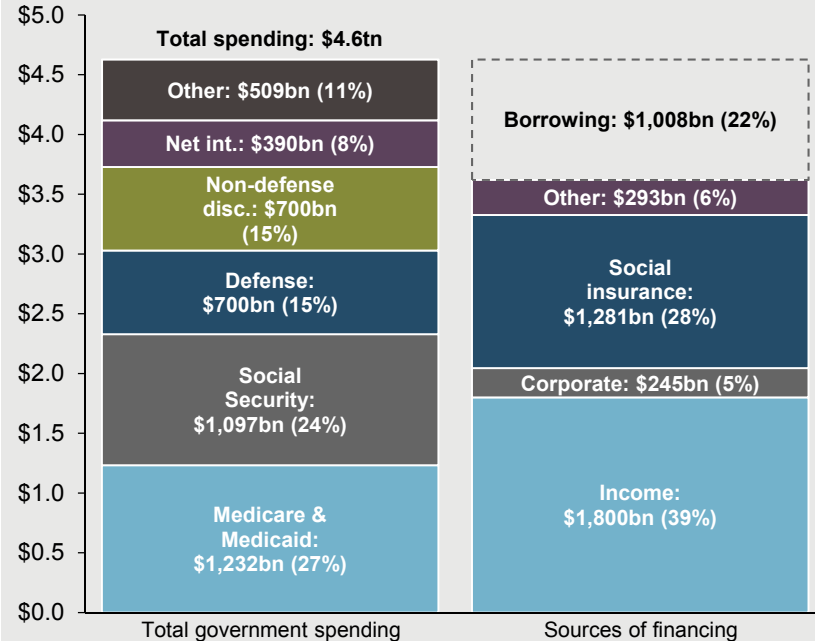
Average year-over-year % change



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 4Q18. 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. Numbers may not sum due to rounding. *Guide to the Markets – U.S.* Data are as of December 31, 2019.

The 2020 federal budget

CBO Baseline forecast, USD trillions

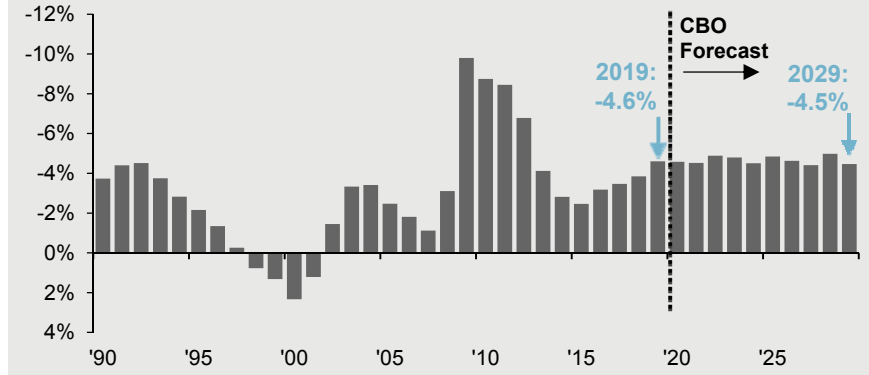


CBO's Baseline economic assumptions

	2020	'21-'22	'23-'24	'25-'29
Real GDP growth	2.2%	1.8%	1.7%	1.8%
10-year Treasury	2.2%	2.6%	3.0%	3.2%
Headline inflation (CPI)	2.3%	2.5%	2.4%	2.3%
Unemployment	3.7%	4.0%	4.5%	4.7%

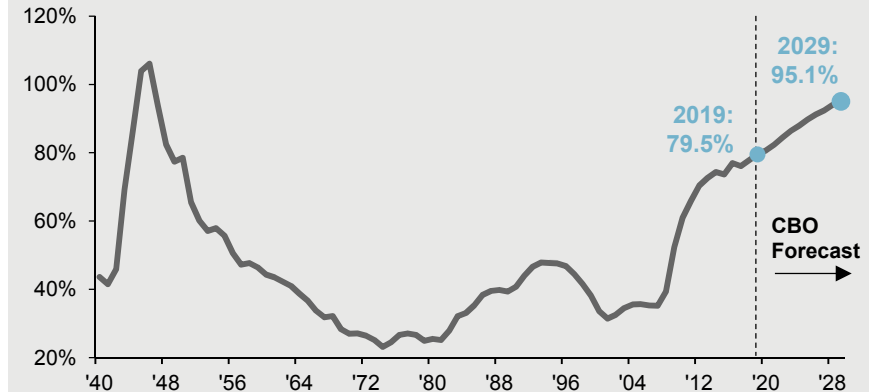
Federal budget surplus/deficit

% of GDP, 1990 – 2029, 2019 CBO Baseline



Federal net debt (accumulated deficits)

% of GDP, 1940 – 2029, 2019 CBO Baseline, end of fiscal year

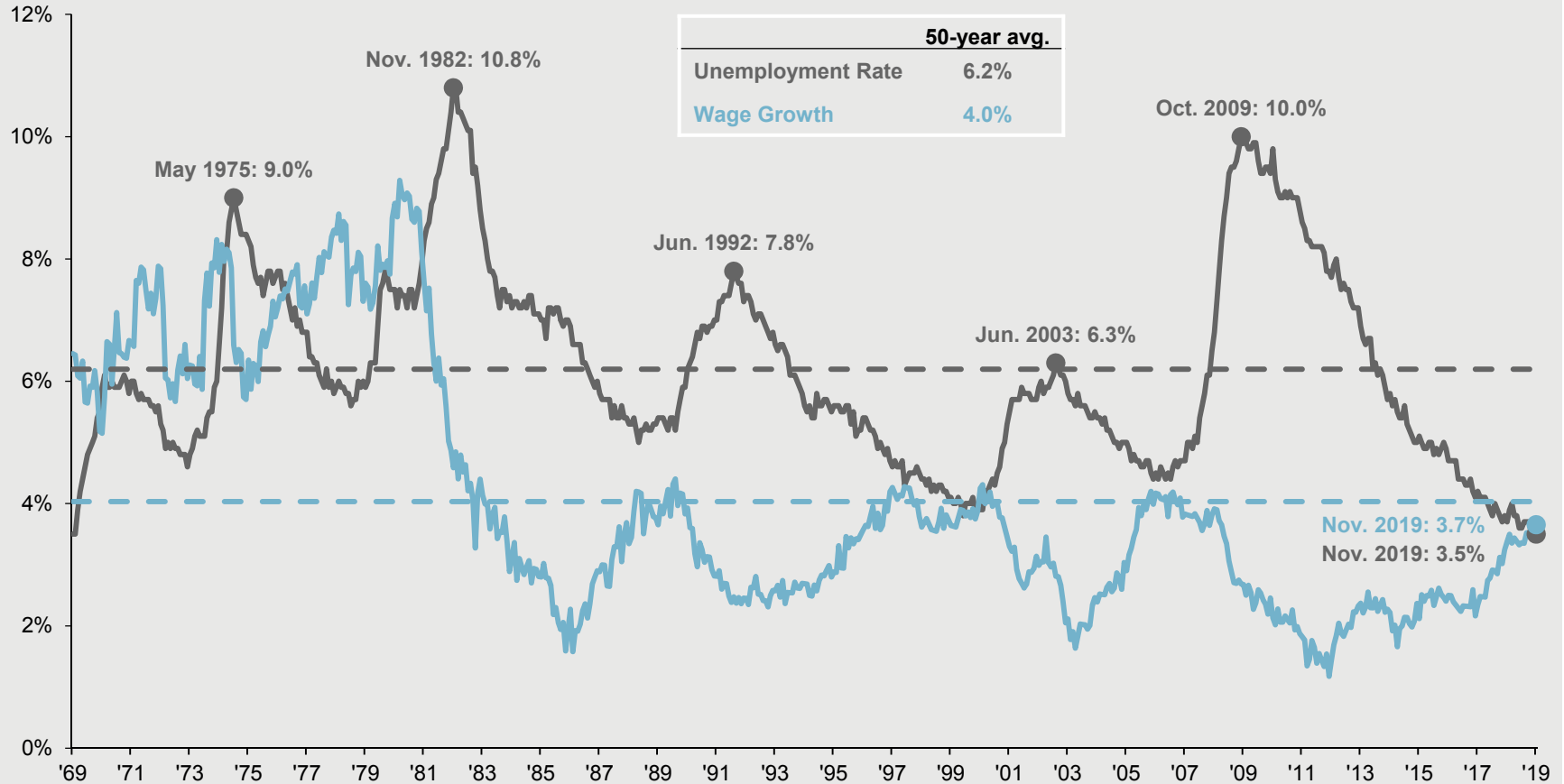


Source: CBO, J.P. Morgan Asset Management; (Top and bottom right) BEA, Treasury Department. 2020 Federal Budget is based on the Congressional Budget Office (CBO) August 2019 Baseline Budget Forecast. CBO Baseline is based on the Congressional Budget Office (CBO) August 2019 Update to Economic Outlook. Other spending includes, but is not limited to, health insurance subsidies, income security and federal civilian and military retirement. Note: Years shown are fiscal years (Oct. 1 through Sep. 30). Economic projections as of August 2019.

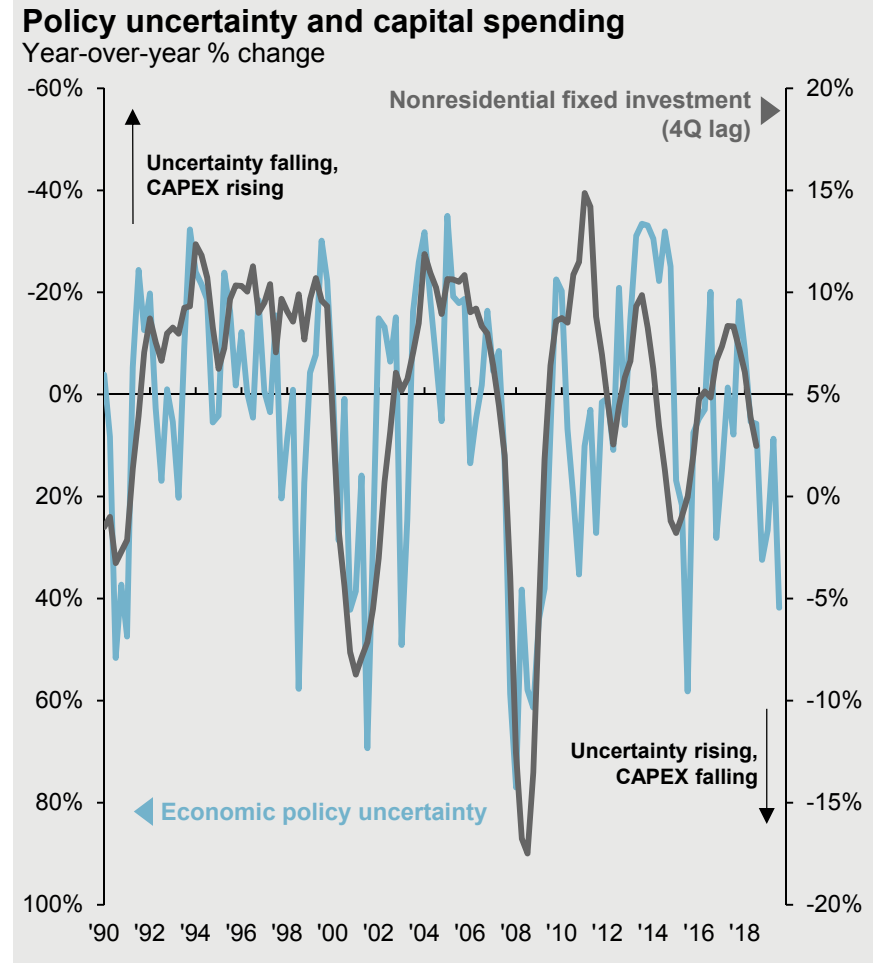
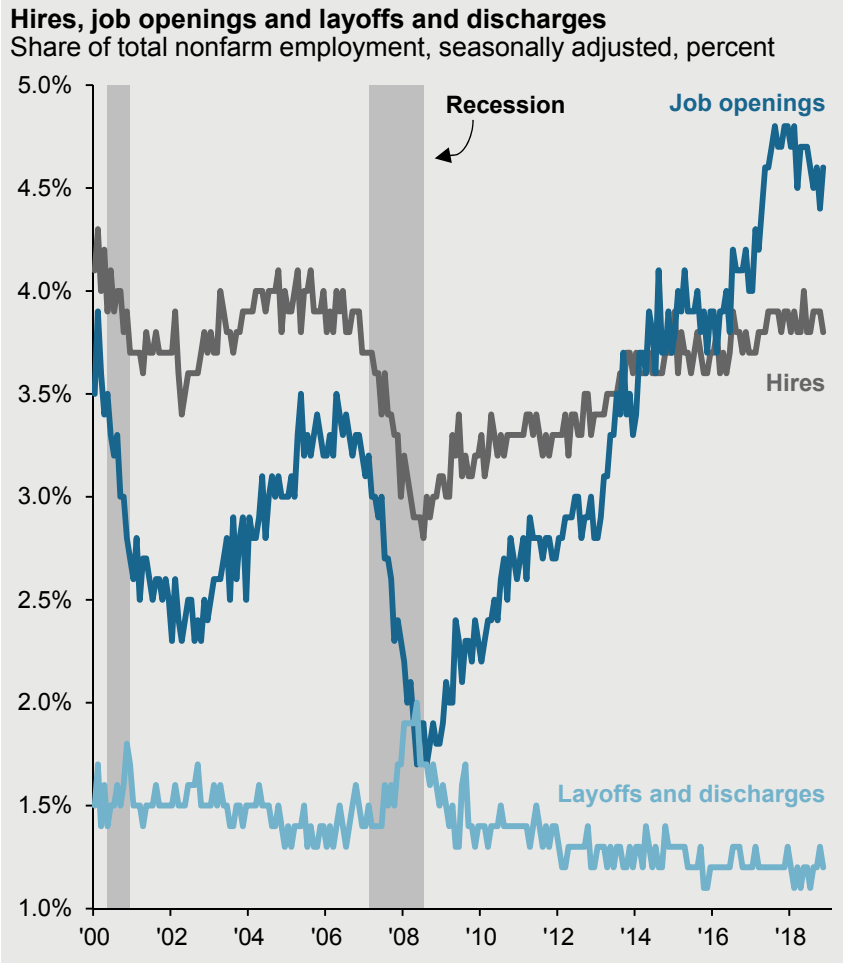
Guide to the Markets – U.S. Data are as of December 31, 2019.

Civilian unemployment rate and year-over-year wage growth for private production and non-supervisory workers

Seasonally adjusted, percent

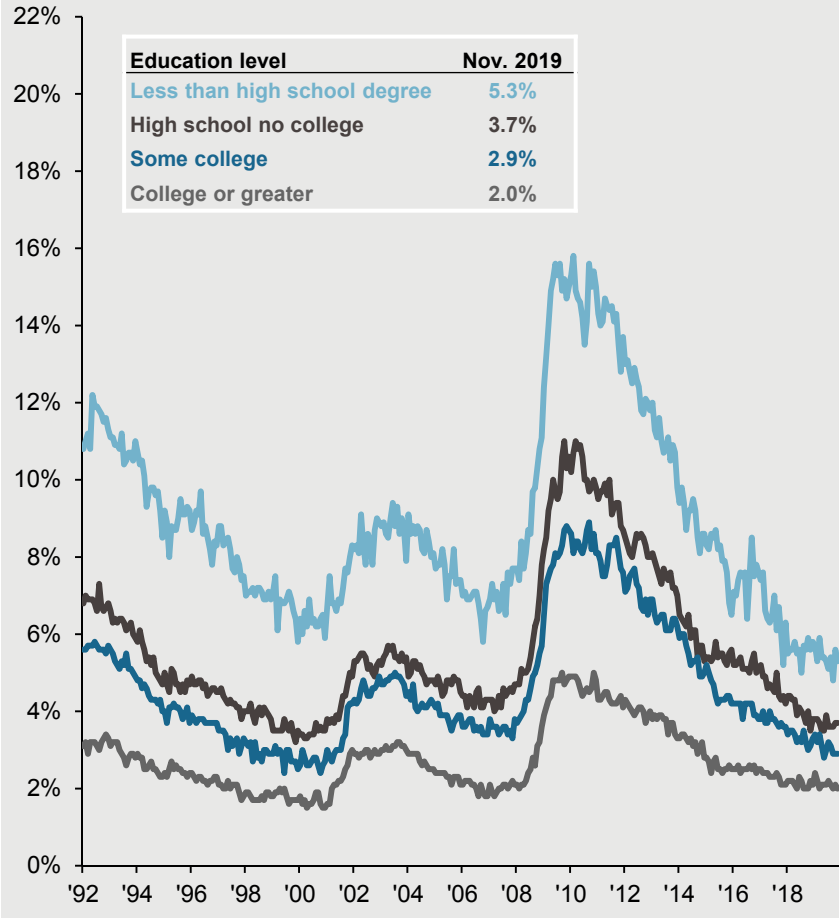


Source: BLS, FactSet, J.P. Morgan Asset Management.
 Guide to the Markets – U.S. Data are as of December 31, 2019.



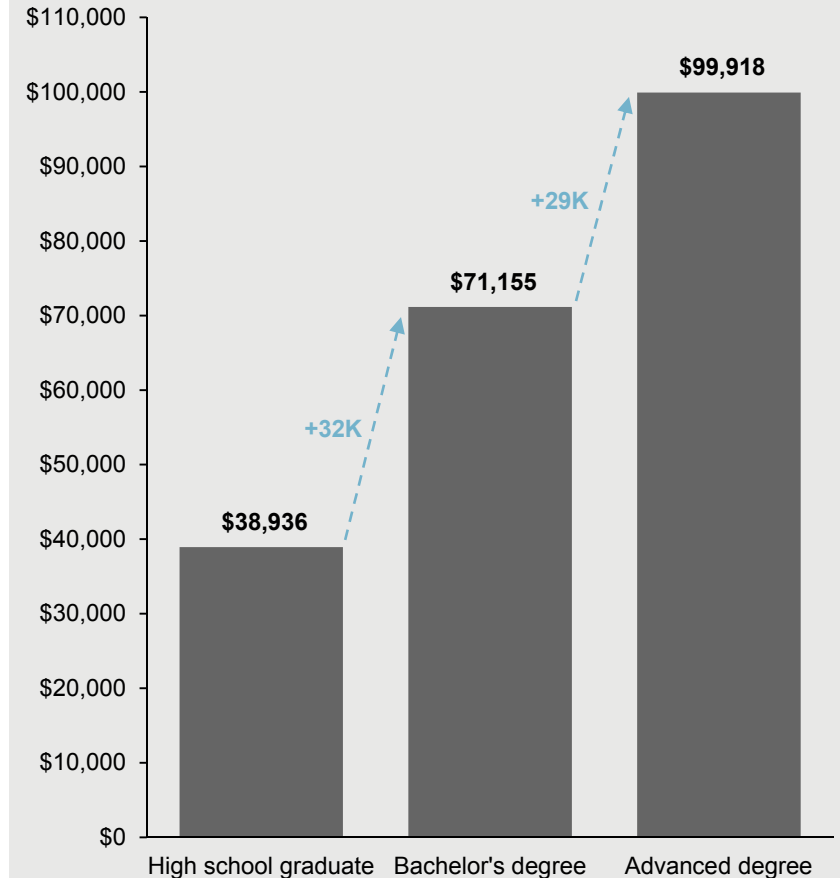
Source: J.P. Morgan Asset Management, (Left) Bureau of Labor Statistics; (Right) Bureau of Economic Analysis, "Measuring Economic Policy Uncertainty" by Scott Baker, Nicholas Bloom and Steven J. Davis. The policy uncertainty index is constructed by three components: newspaper coverage of policy-related economic uncertainty, the number of federal tax code provisions set to expire in future years and disagreement among economic forecasters as a proxy for uncertainty.
 Guide to the Markets – U.S. Data are as of December 31, 2019.

Unemployment rate by education level



Average annual earnings by highest degree earned

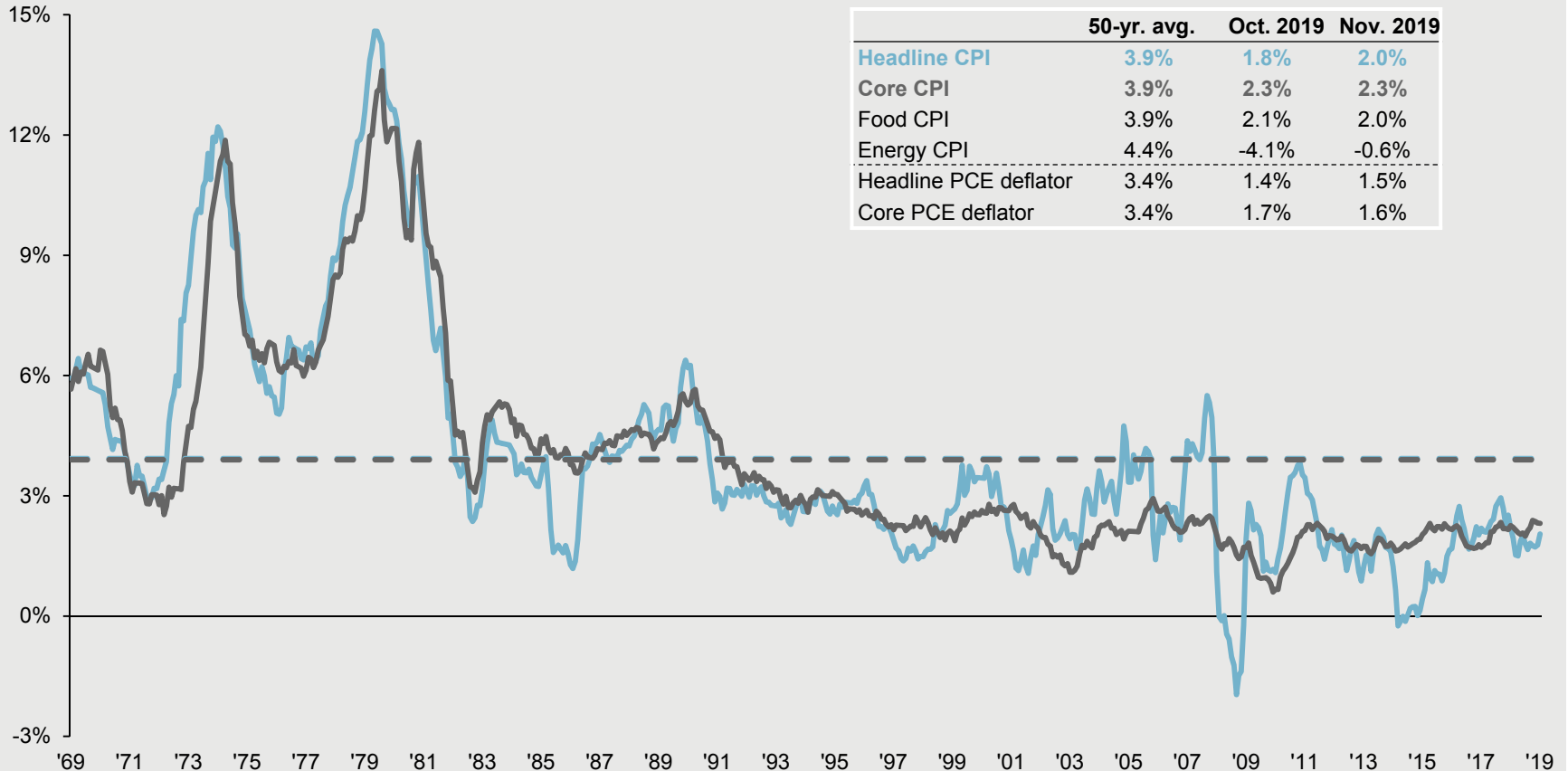
Workers aged 18 and older, 2018



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 December 31, 2019.

CPI and core CPI

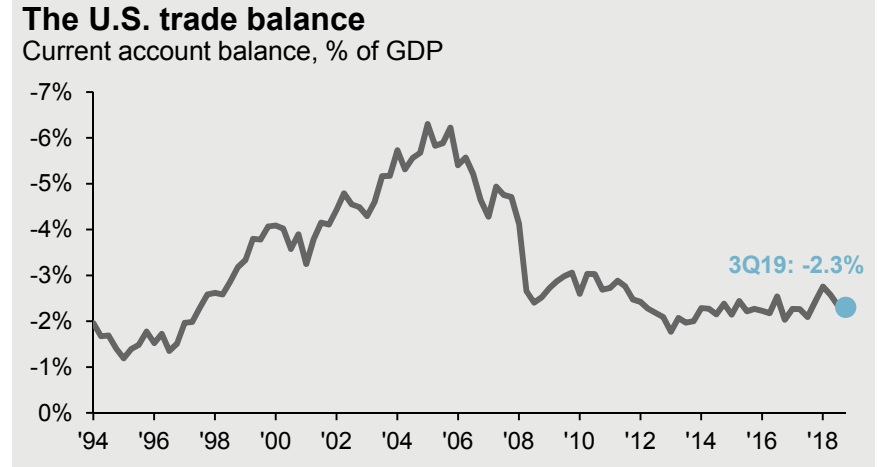
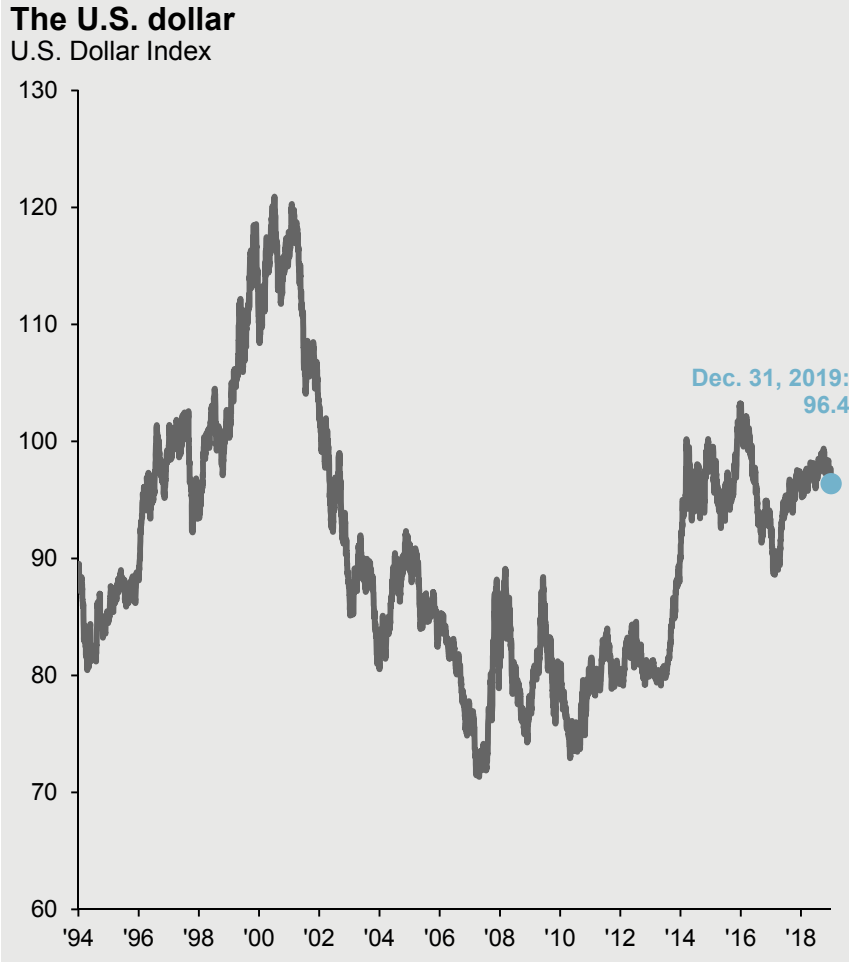
% change vs. prior year, seasonally adjusted



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.

Guide to the Markets – U.S. Data are as of December 31, 2019.



Source: J.P. Morgan Asset Management; (Left) FactSet, ICE; (Top right) Bureau of Economic Analysis, FactSet; (Bottom right) Tullett Prebon. Currencies in the DXY Index are: 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. *Guide to the Markets – U.S.* Data are as of December 31, 2019.

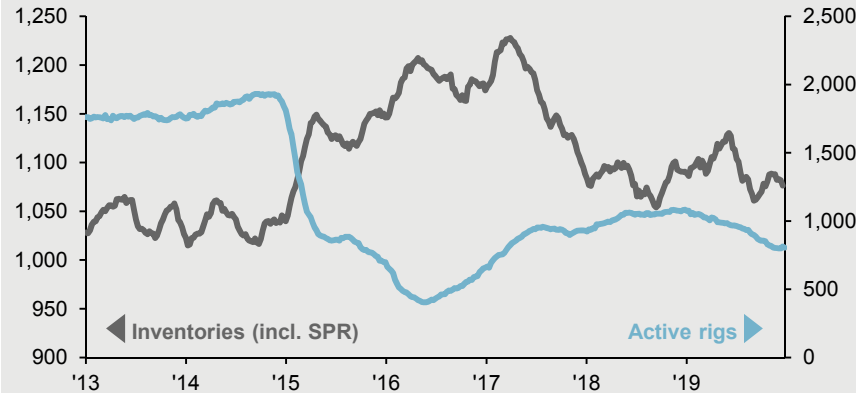
Change in production and consumption of liquid fuels

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	21.2	42.9%
OPEC	37.5	37.4	37.3	35.2	34.4	-8.3%
Russia	11.3	11.2	11.4	11.5	11.5	1.7%
Global	97.6	98.1	100.9	100.8	102.3	4.8%
Consumption						
U.S.	19.7	20.0	20.5	20.6	20.8	5.4%
China	13.0	13.6	14.0	14.5	15.0	15.3%
Global	96.8	98.6	100.0	100.7	102.1	5.6%
Inventory Change	2016	2017	2018	2019	2020	
	0.8	-0.5	0.9	0.1	0.2	

U.S. crude oil inventories and rig count**

Million barrels, number of active rigs



Price of oil

WTI crude, nominal prices, USD/barrel

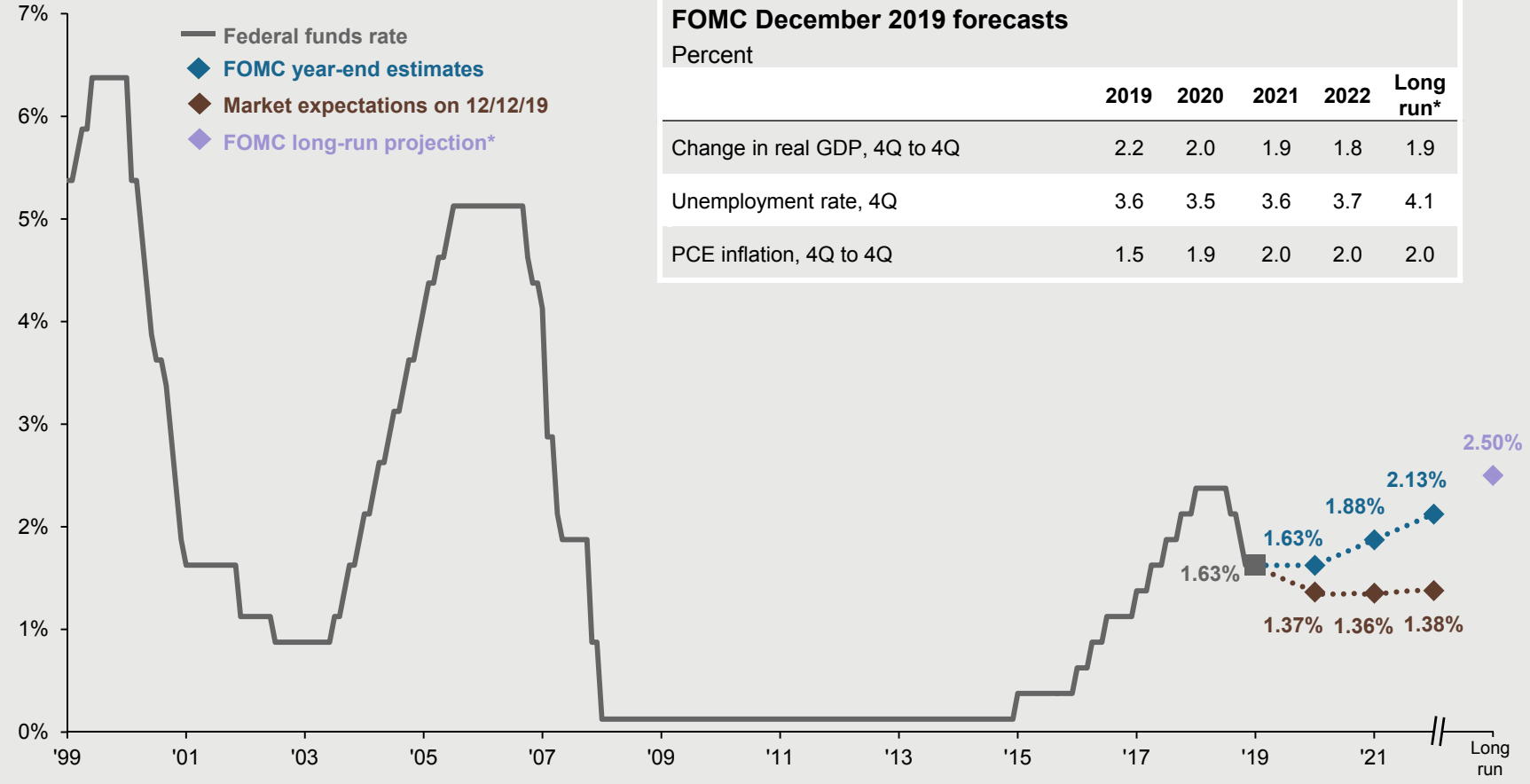


Source: J.P. Morgan Asset Management; (Top and bottom left) EIA; (Right) FactSet; (Bottom left) Baker Hughes.

*Forecasts are from the December 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 continuous contract NYM prices in USD. Guide to the Markets – U.S. Data are as of December 31, 2019.

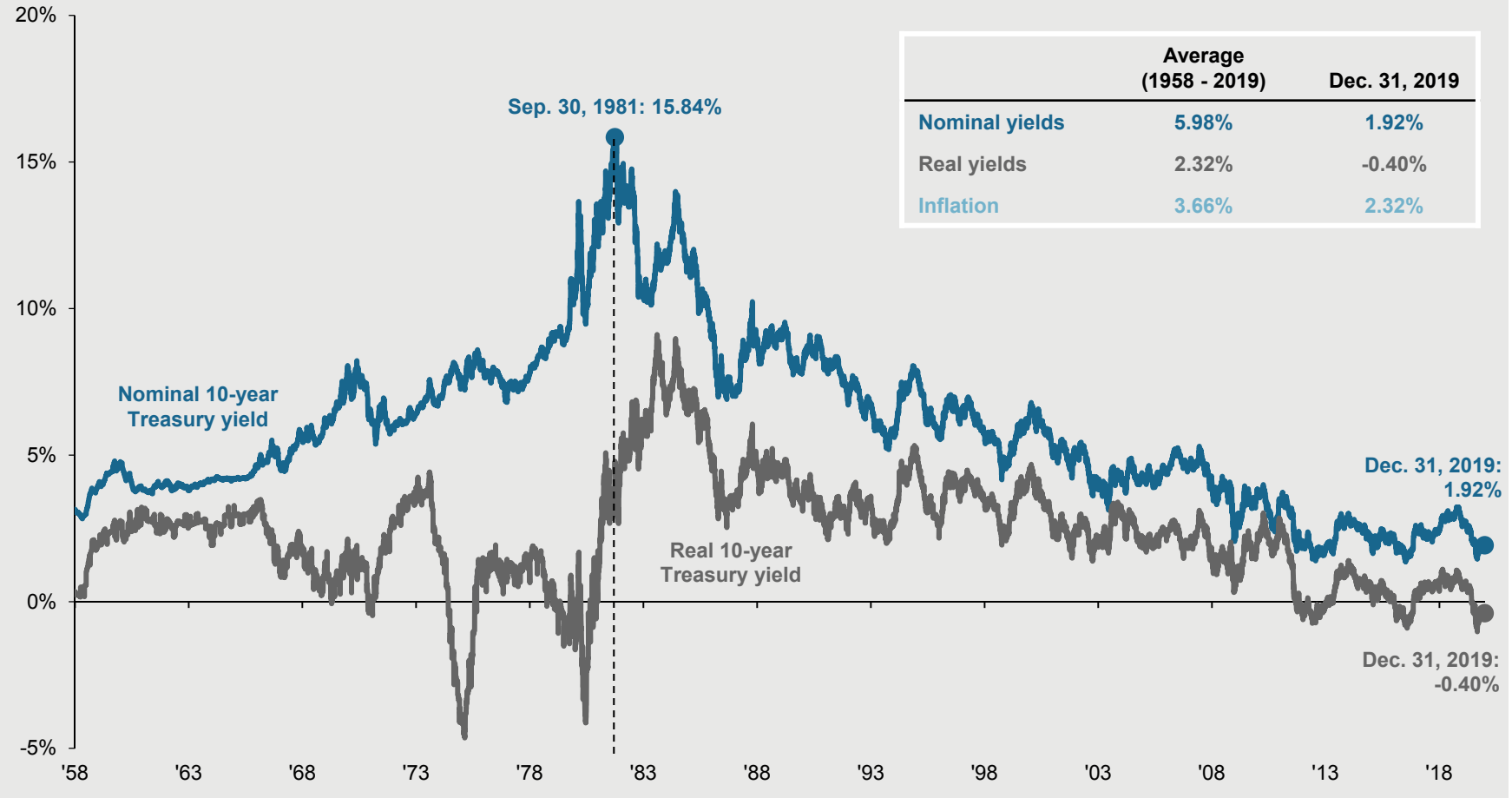
Federal funds rate expectations

FOMC and market expectations for the federal funds rate



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 following date of the December 2019 FOMC meeting and are through December 2022. *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. *Guide to the Markets – U.S.* Data are as of December 31, 2019.

Nominal and real 10-year Treasury yields

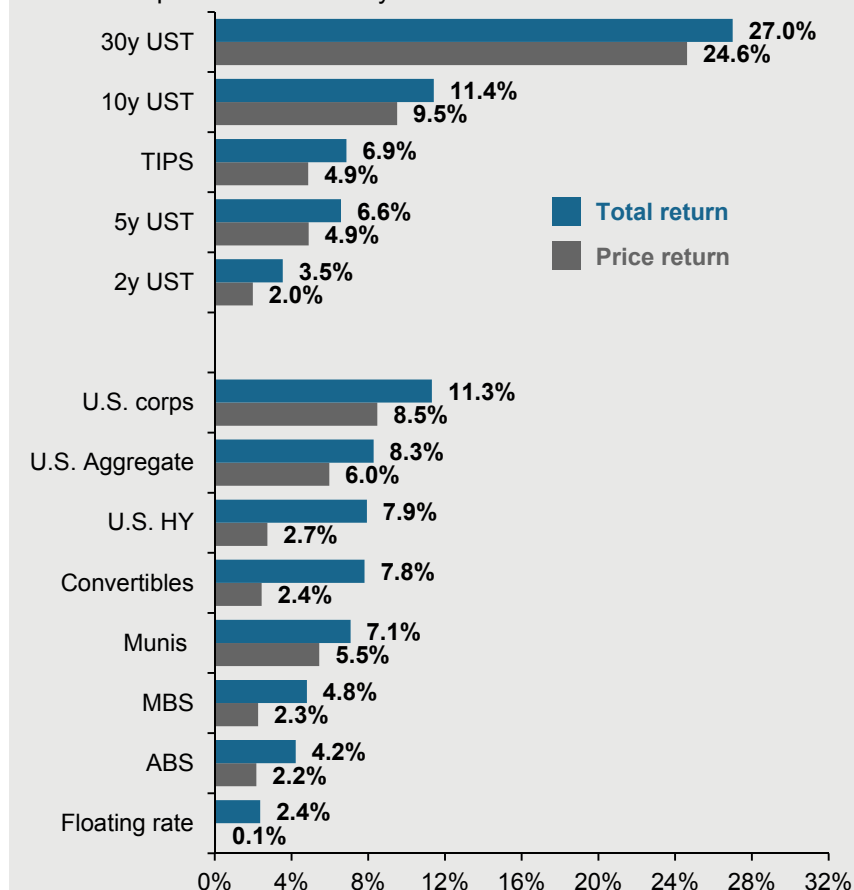


Source: BLS, FactSet, Federal Reserve, J.P. Morgan Asset Management.
 Real 10-year Treasury yields are calculated as the daily Treasury yield less year-over-year core CPI inflation for that month except for December 2019, where real yields are calculated by subtracting out November 2019 year-over-year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

U.S. Treasuries	Yield		Return			
	12/31/2019	9/30/2019	2019	Avg. Maturity	Correlation to 10-year	Correlation to S&P 500
2-Year	1.58%	1.63%	3.31%	2 years	0.67	-0.34
5-Year	1.69%	1.55%	5.82%	5	0.92	-0.32
TIPS	0.15%	0.15%	8.43%	10	0.62	0.13
10-Year	1.92%	1.68%	8.90%	10	1.00	-0.31
30-Year	2.39%	2.12%	16.43%	30	0.93	-0.32
Sector						
Corporates	2.84%	2.91%	14.54%	11.5	0.52	0.31
U.S. Aggregate	2.31%	2.26%	8.72%	8.1	0.88	-0.01
Convertibles	5.36%	5.28%	23.02%	-	-0.29	0.89
High Yield	5.19%	5.65%	14.32%	5.9	-0.22	0.71
Municipals	1.63%	1.70%	7.70%	10.0	0.54	-0.02
MBS	2.54%	2.45%	6.35%	5.1	0.82	-0.13
ABS	2.87%	2.83%	3.77%	2.3	0.06	0.20
Floating Rate	2.30%	2.56%	4.28%	1.9	-0.20	0.38

Impact of a 1% fall in interest rates

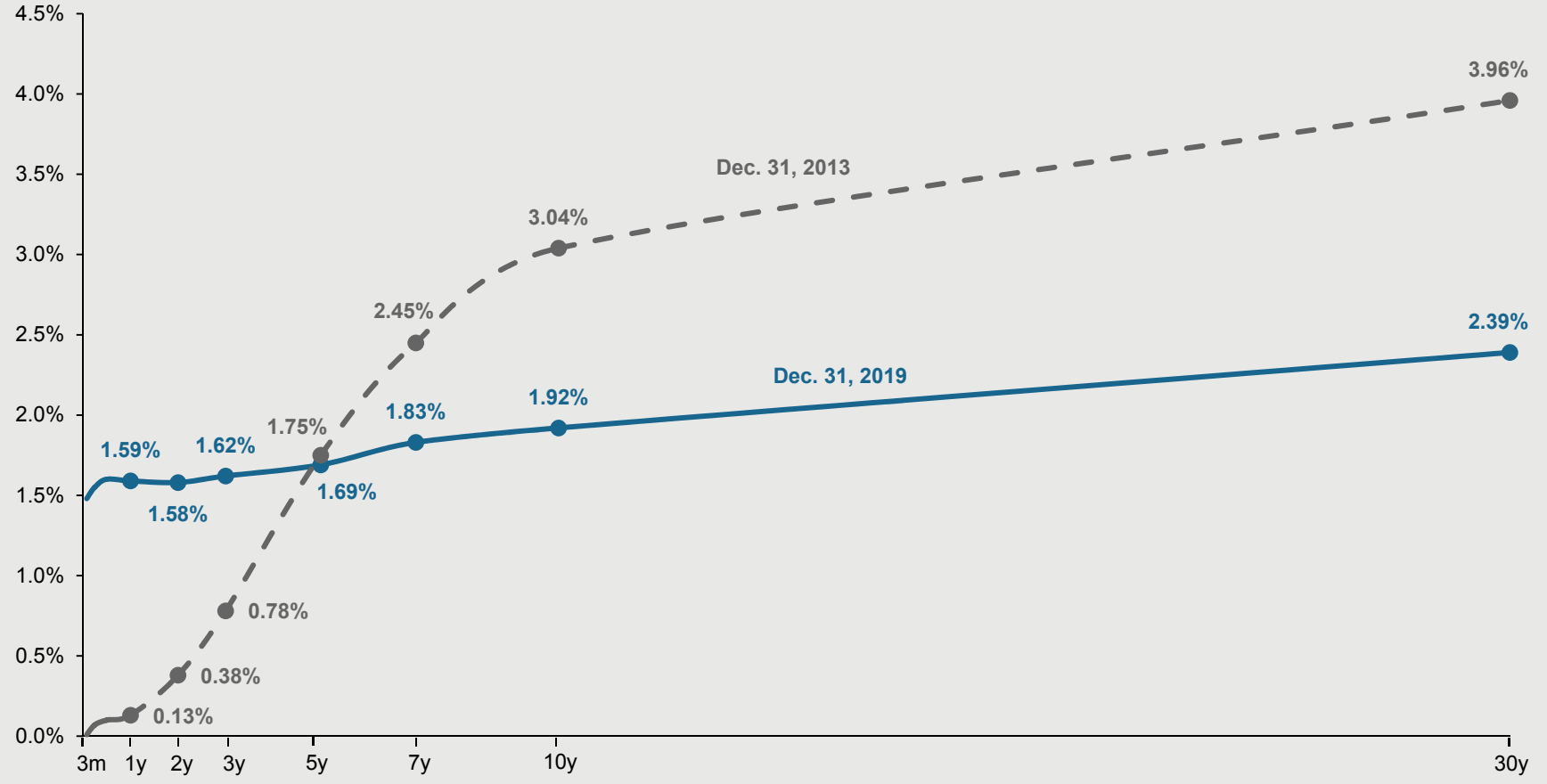
Assumes a parallel shift in the yield curve



Source: Barclays, Bloomberg, FactSet, Standard & Poor's, U.S. Treasury, J.P. Morgan Asset Management. Sectors shown above are provided by Bloomberg unless otherwise noted and are represented by – U.S. Aggregate; MBS: U.S. Aggregate Securitized - MBS; ABS: J.P. Morgan ABS Index; Corporates: U.S. Corporates; Municipals: Muni Bond 10-year; High Yield: Corporate High Yield; TIPS: Treasury Inflation-Protected Securities (TIPS); U.S. Floating rate index; Convertibles: U.S. Convertibles Composite. Yield and return information based on bellwethers for Treasury securities. Sector yields reflect yield to worst. Convertibles yield is based on U.S. portion of Bloomberg Barclays Global Convertibles. Correlations are based on 15-years of monthly returns for all sectors. Change in bond price is calculated using both duration and convexity according to the following formula: $New\ Price = (Price + (Price * -Duration * Change\ in\ Interest\ Rates)) + (0.5 * Price * Convexity * (Change\ in\ Interest\ Rates)^2)$. Chart is for illustrative purposes only. Past performance is not indicative of future results.
 Guide to the Markets – U.S. Data are as of December 31, 2019.

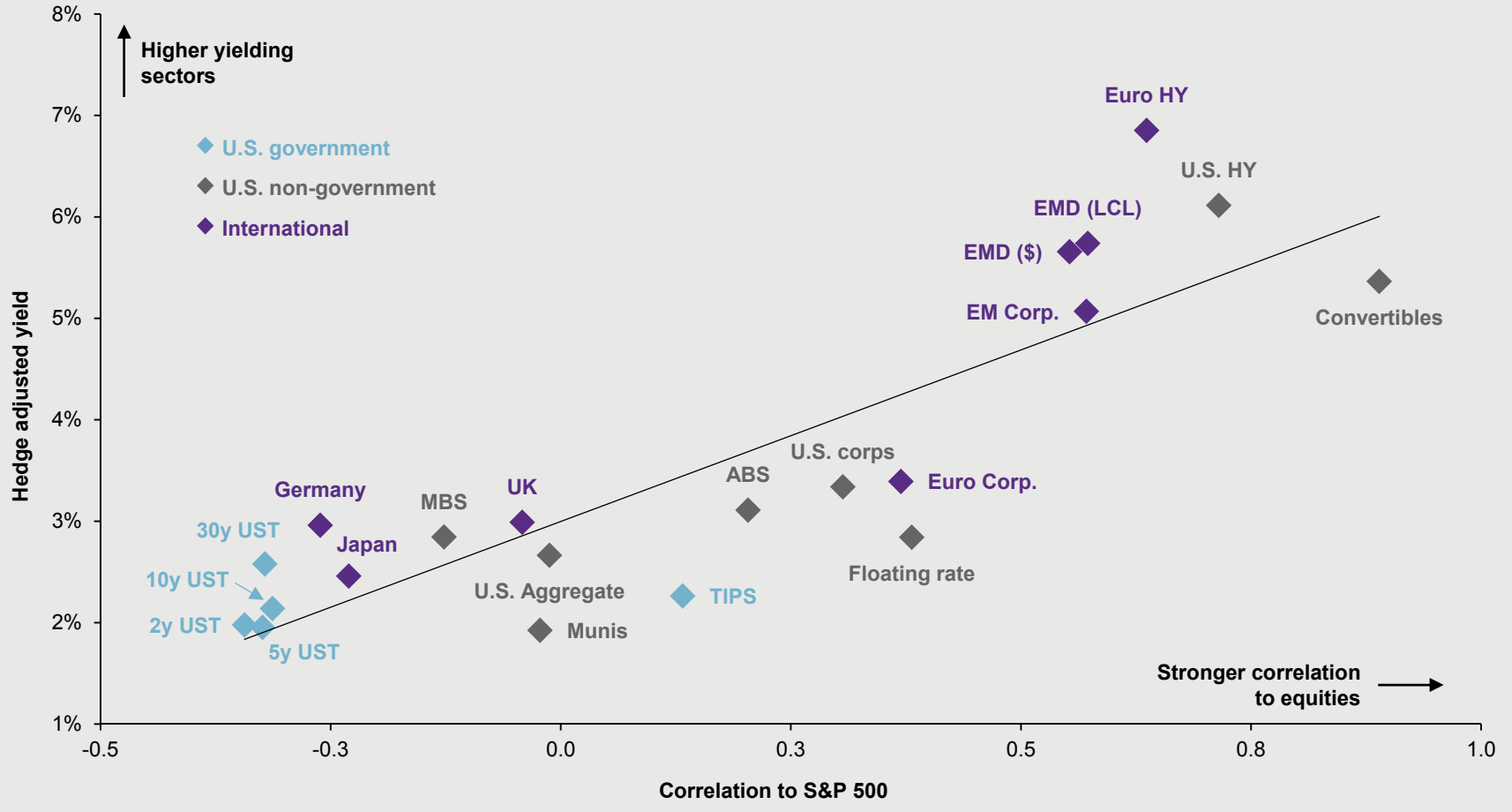
Yield curve

U.S. Treasury yield curve



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

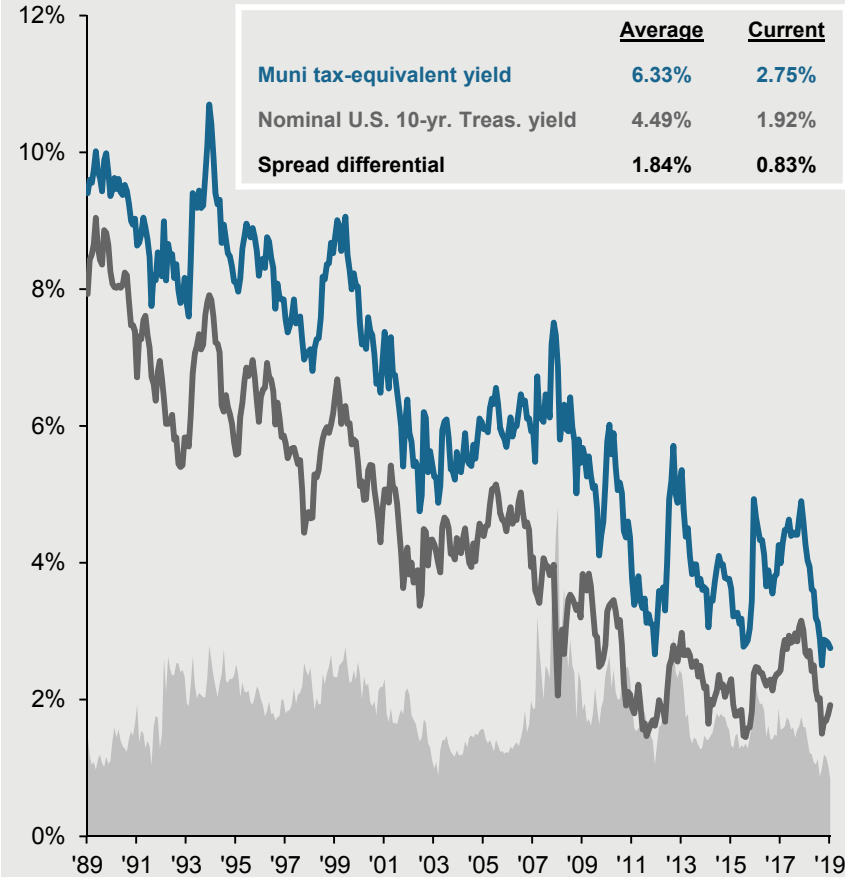
Correlation of fixed income sectors vs. S&P 500 and yields



Source: Bloomberg, FactSet, ICE, J.P. Morgan Asset Management. Sectors shown above are represented by Bloomberg indices except for EMD and ABS – U.S. Aggregate; MBS: U.S. Aggregate Securitized - MBS; U.S. corps: U.S. Corporates; Munis: Muni Bond 10-year; U.S. HY: Corporate High Yield; TIPS: Treasury Inflation-Protected Securities (TIPS); Floating Rate: U.S. Floating Rate; Convertibles: U.S. Convertibles Composite; ABS: J.P. Morgan ABS Index; EMD (\$): J.P. Morgan EMBIG Diversified Index; EMD (LCL): J.P. Morgan GBI EM Global Diversified Index; EM Corp.: J.P. Morgan CEMBI Broad Diversified Index; Euro Corp.: Euro Aggregate Corporate Index; Euro HY: Pan-European High Yield Index. Convertibles yield is based on the U.S. portion of the Bloomberg Barclays Global Convertibles. Country yields are represented by the global aggregate for each country. Yield and return information based on bellwethers for Treasury securities. Correlations are based on 15-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 hedged using three-month LIBOR rates between the U.S. and international LIBOR and are a 12-month average. *Guide to the Markets – U.S.* Data are as of December 31, 2019.

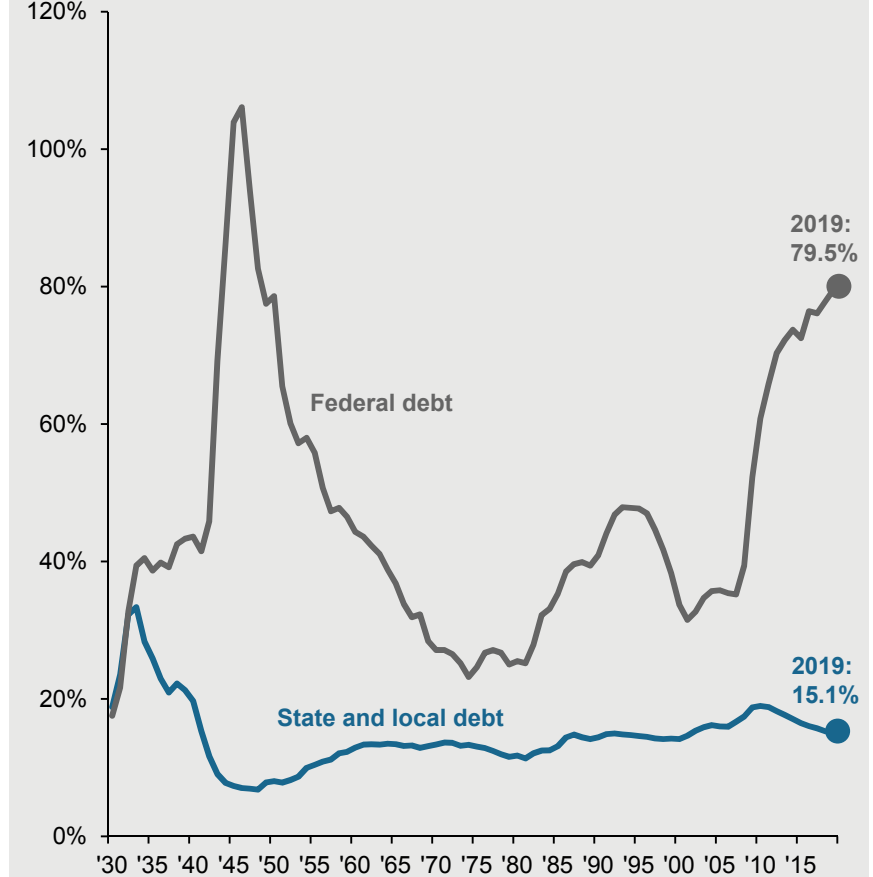
Muni tax-equivalent yield and nominal Treasury yields

1990-2019, adjusted for top income tax bracket



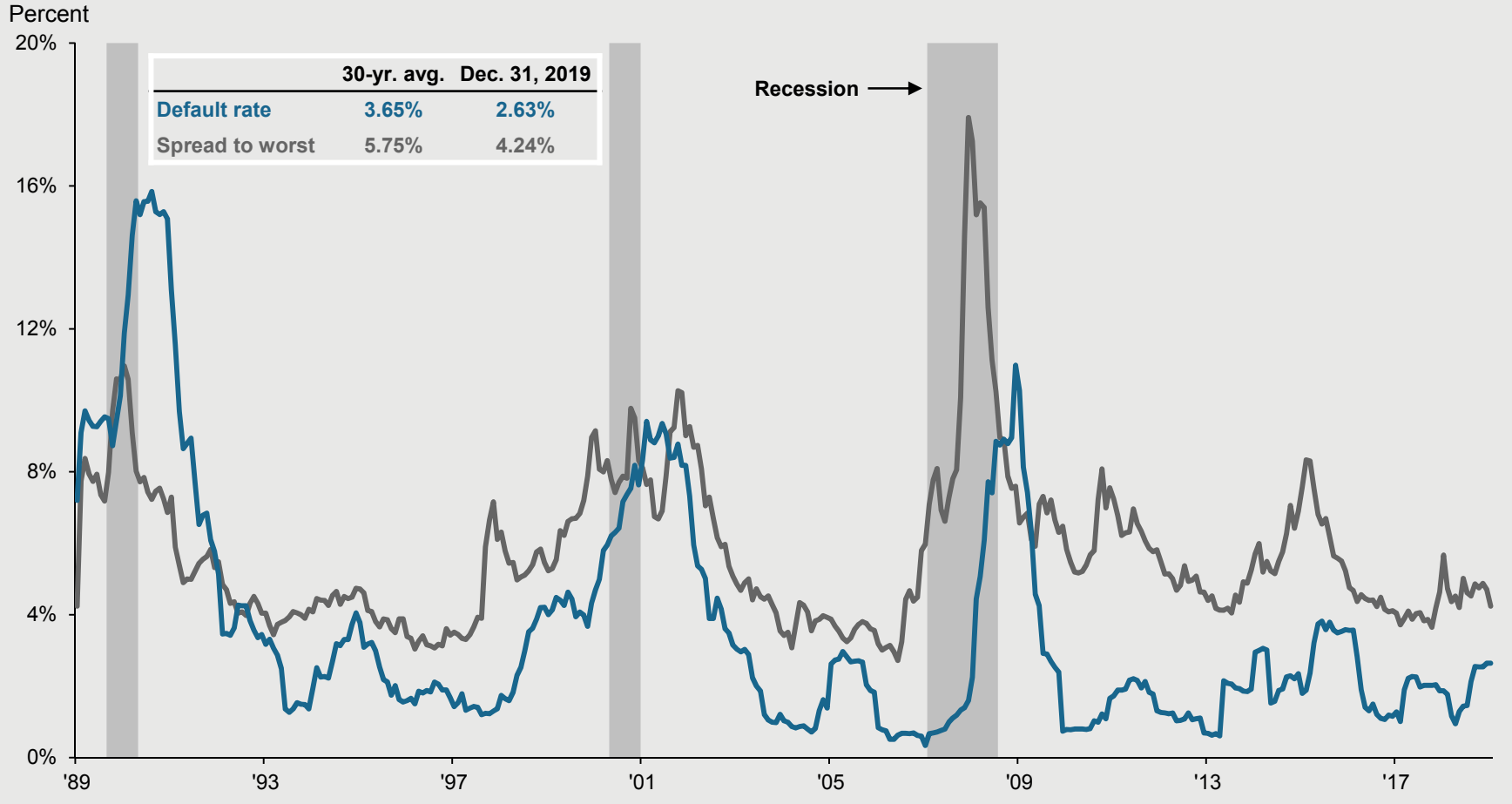
State and local and federal net debt

% of GDP, 1930-2019, end of fiscal year



Source: J.P. Morgan Asset Management, (Left) Barclays, Bloomberg, FactSet, Federal Reserve; (Right) Congressional Budget Office (CBO), Census Bureau. State and local debt are based on the Census Bureau's Annual Survey of State and Local Government Finances. *Guide to the Markets - U.S.* Data are as of December 31, 2019.

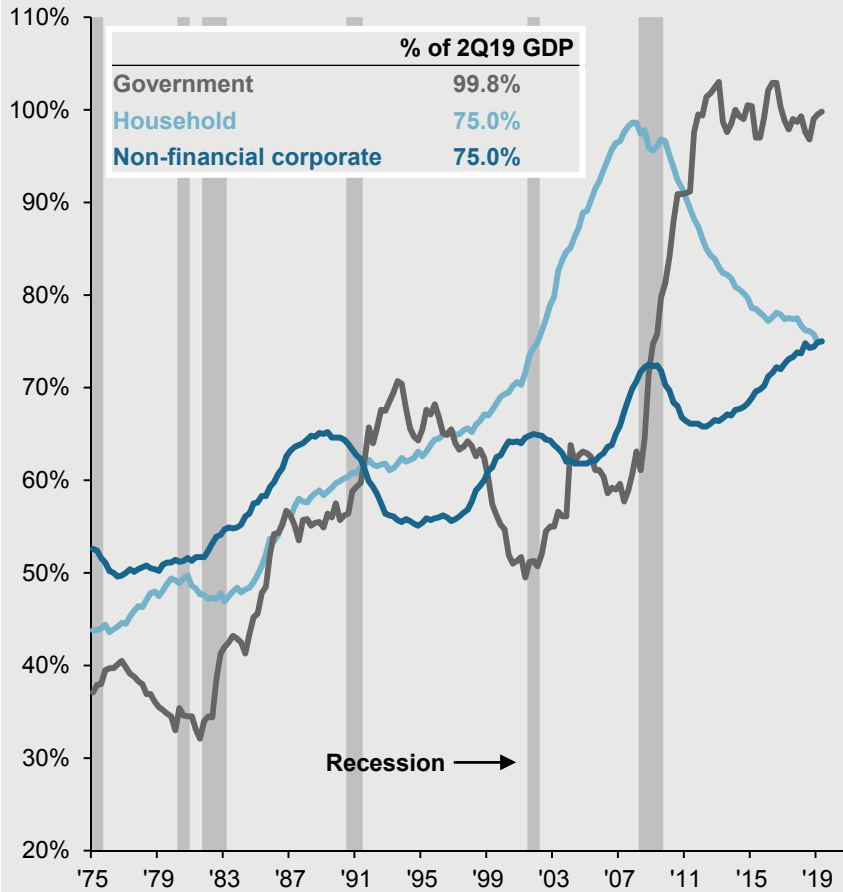
Default rate and spread to worst



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. Spread to worst indicated are the difference between the yield-to-worst of a bond and yield-to-worst of a U.S. Treasury security with a similar duration. High yield is represented by the J.P. Morgan Domestic High Yield Index. *Guide to the Markets – U.S.* Data are as of December 31, 2019.

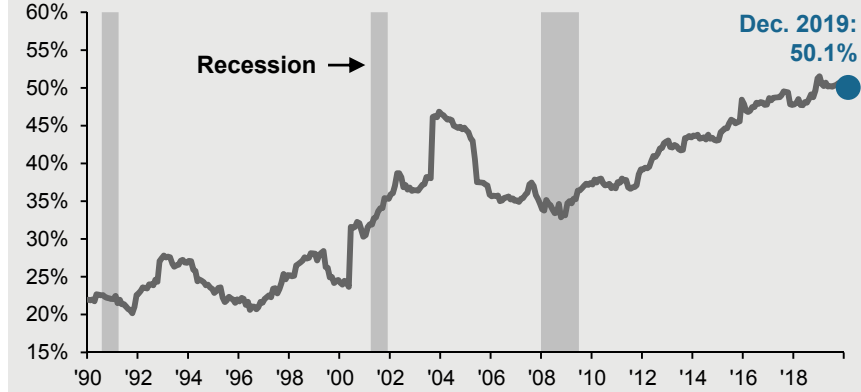
U.S. debt to GDP ratios

Percentage of nominal GDP



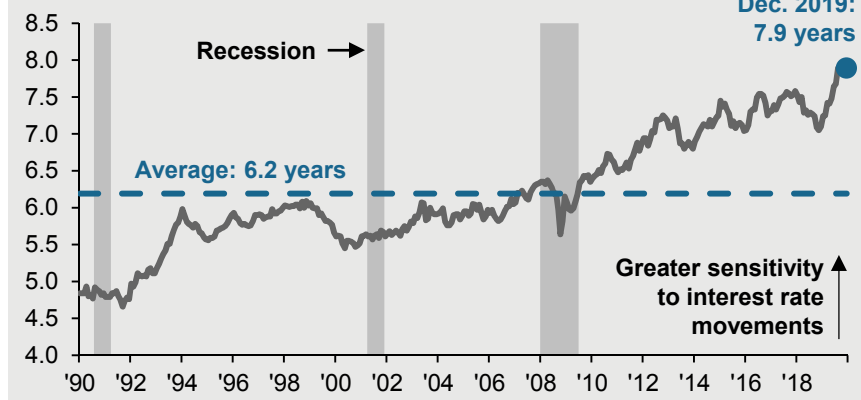
Baa corporate debt*

Percentage of Baa-rated investment-grade corporate debt outstanding



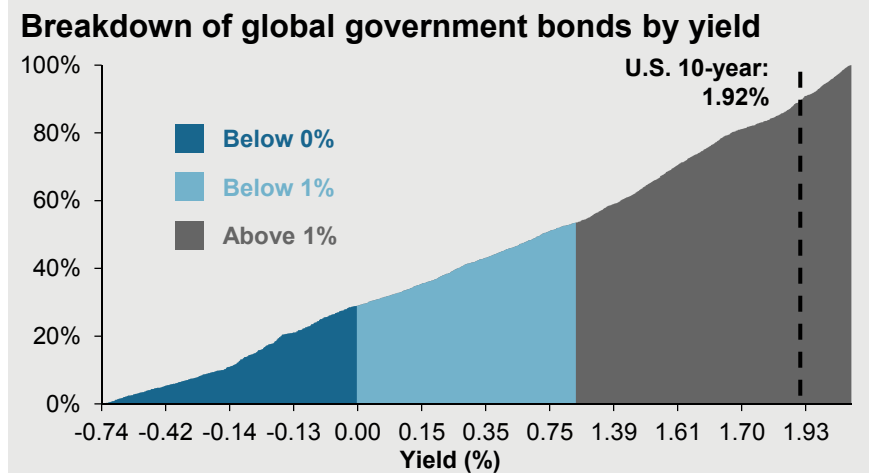
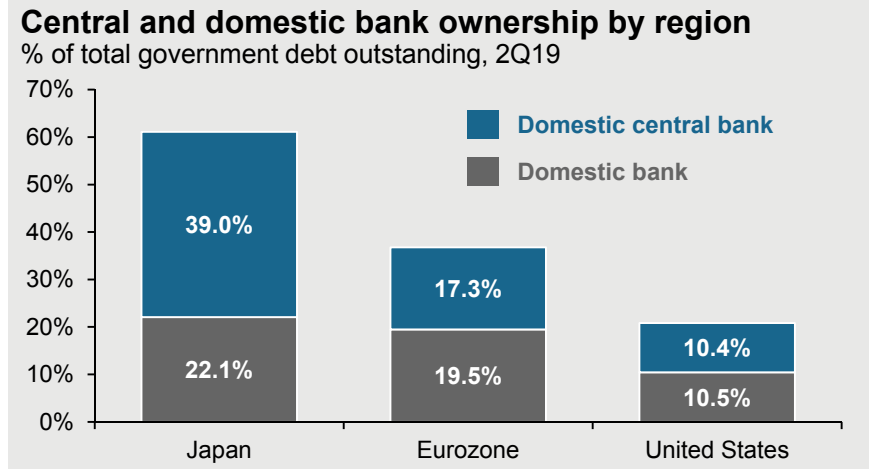
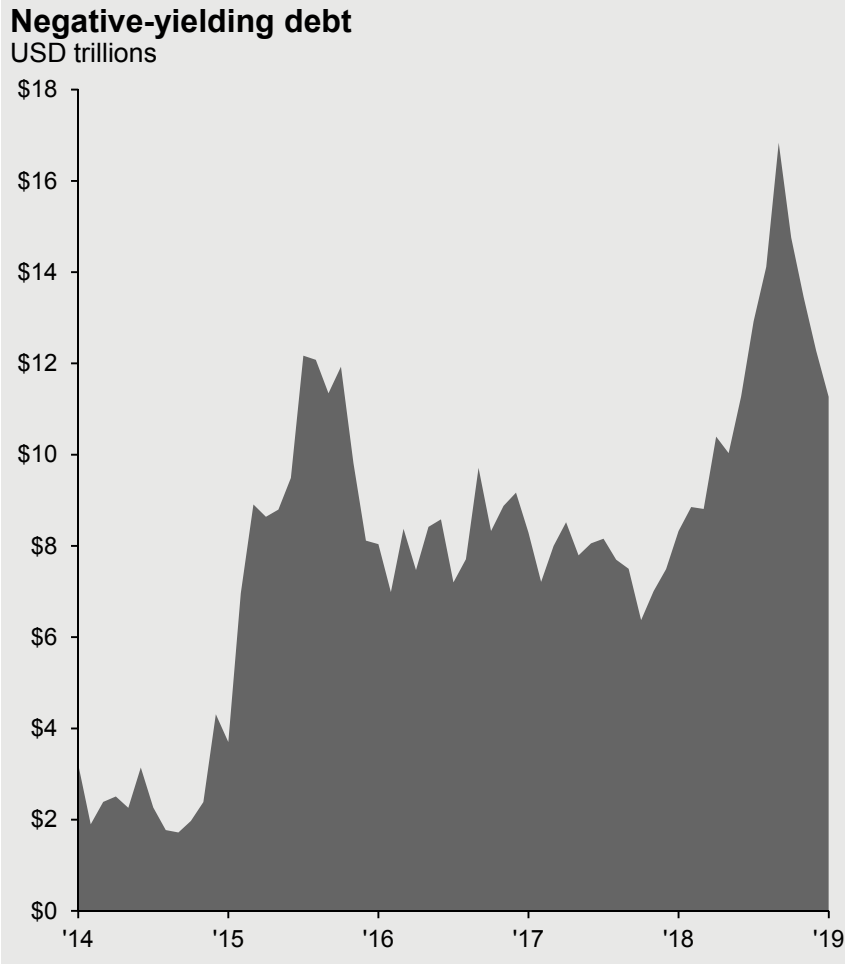
Duration of investment-grade corporate credit universe

Years



Source: FactSet, J.P. Morgan Asset Management; (Left) Bank for International Settlements (BIS); (Top and bottom right) Barclays, Bloomberg. Government, household and non-financial corporate debt refers to gross debt. General government debt is comprised of core debt instruments that include currency and deposits, loans and debt securities. All debt values are shown at market value. *Baa debt outstanding and duration of investment grade is based on the Bloomberg Barclays U.S. Aggregate Investment Grade Corporate Credit Index. Baa debt is the lowest credit rating issued by Moody's for investment-grade debt.
 Guide to the Markets – U.S. Data are as of December 31, 2019.

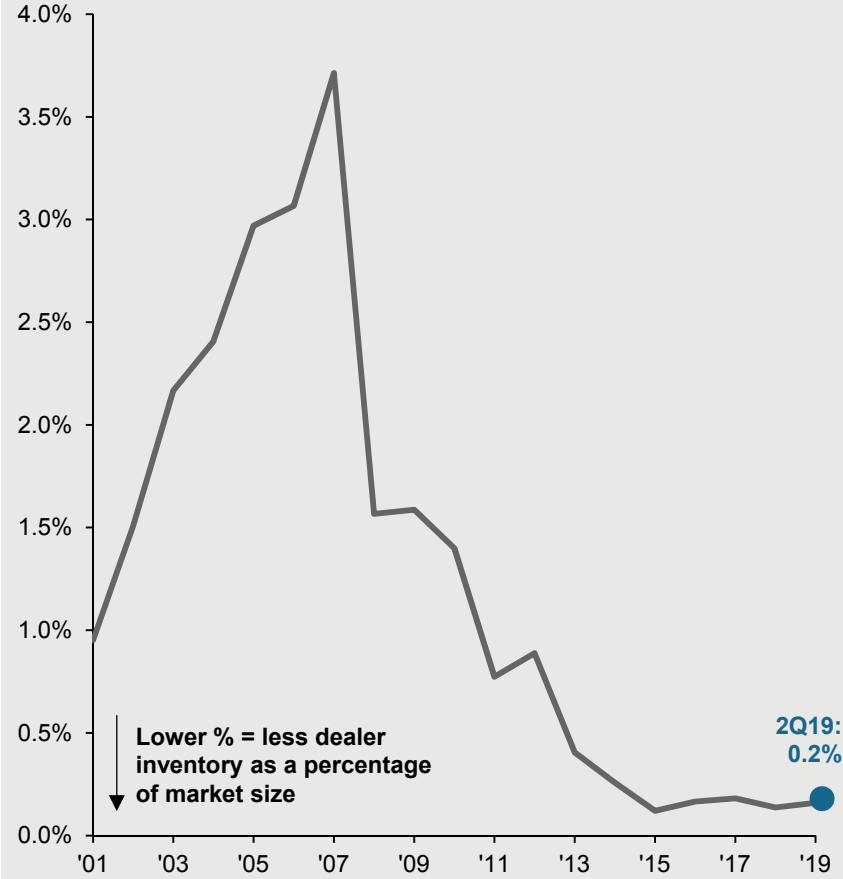
Fixed income



Source: J.P. Morgan Asset Management, (Left) Bloomberg, BofA/Merrill Lynch; (Top right) Bank for International Settlements International Banking Statistics; ECB; Eurostat; IMF International Financial Statistics (IFS); IMF Coordinated Portfolio Investment Survey (CPIS); IMF Currency Composition of Official Foreign Exchange Reserves (COFER); IMF-World Bank Quarterly External Debt Statistics; (Bottom right) Bloomberg, BofA/Merrill Lynch. Countries included in eurozone are: Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Netherlands, Portugal, Slovenia and Spain.
 Guide to the Markets – U.S. Data are as of December 31, 2019.

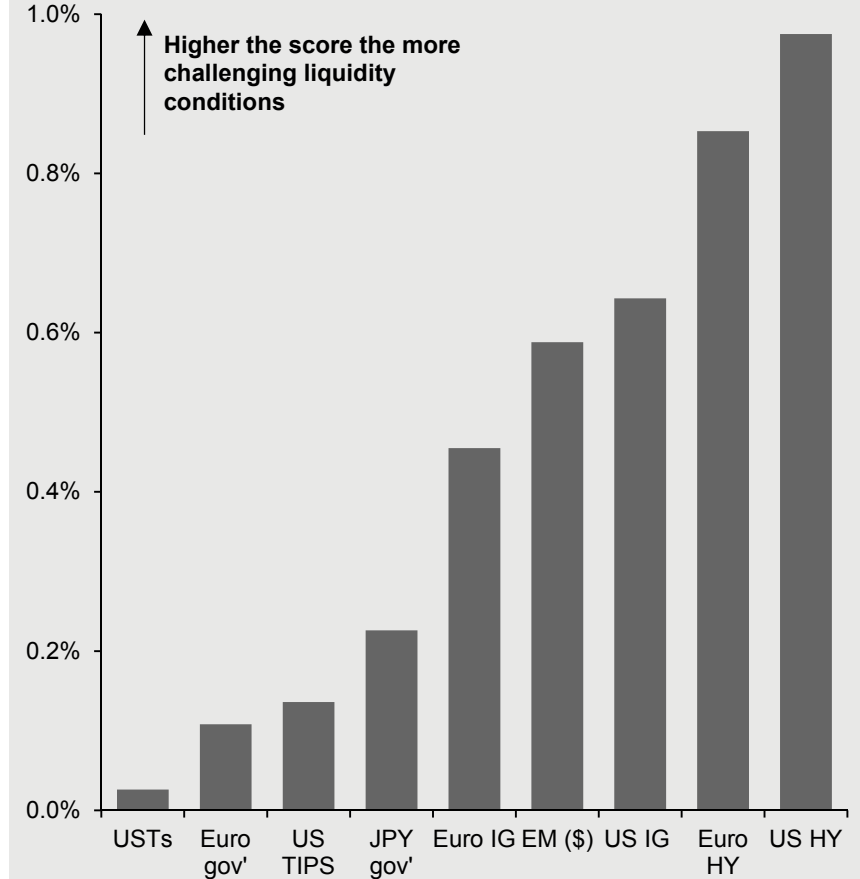
Primary dealer inventories

As a % of U.S. corporate debt outstanding

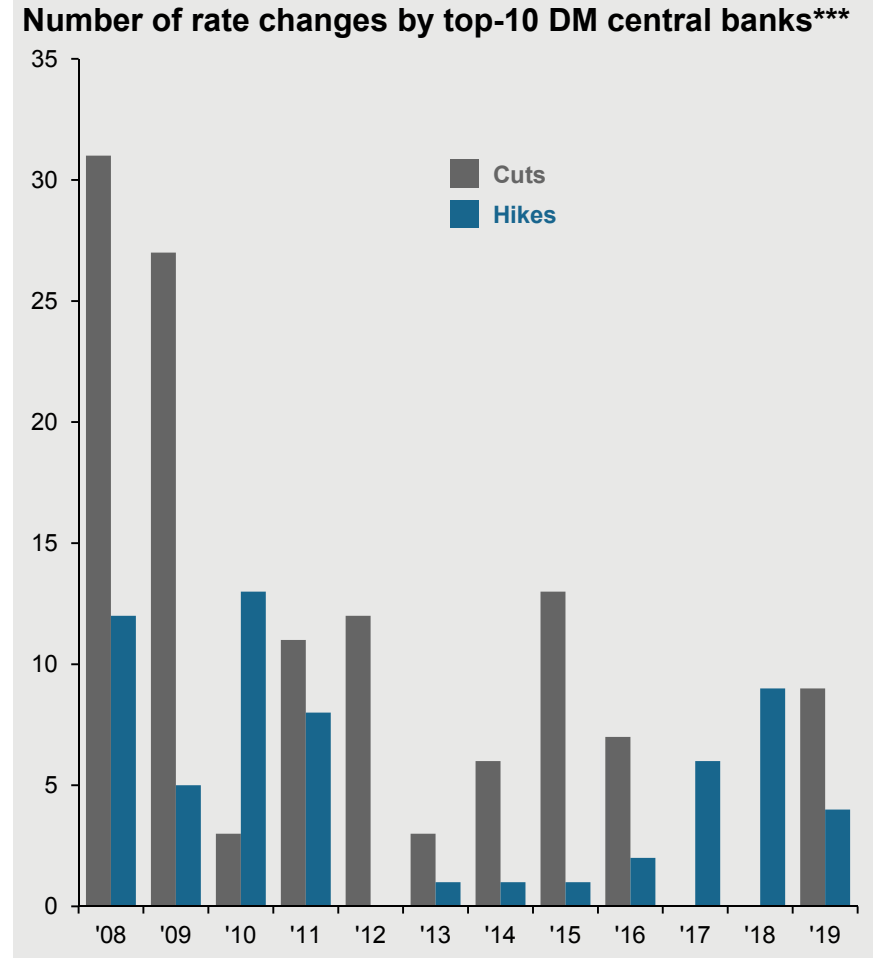
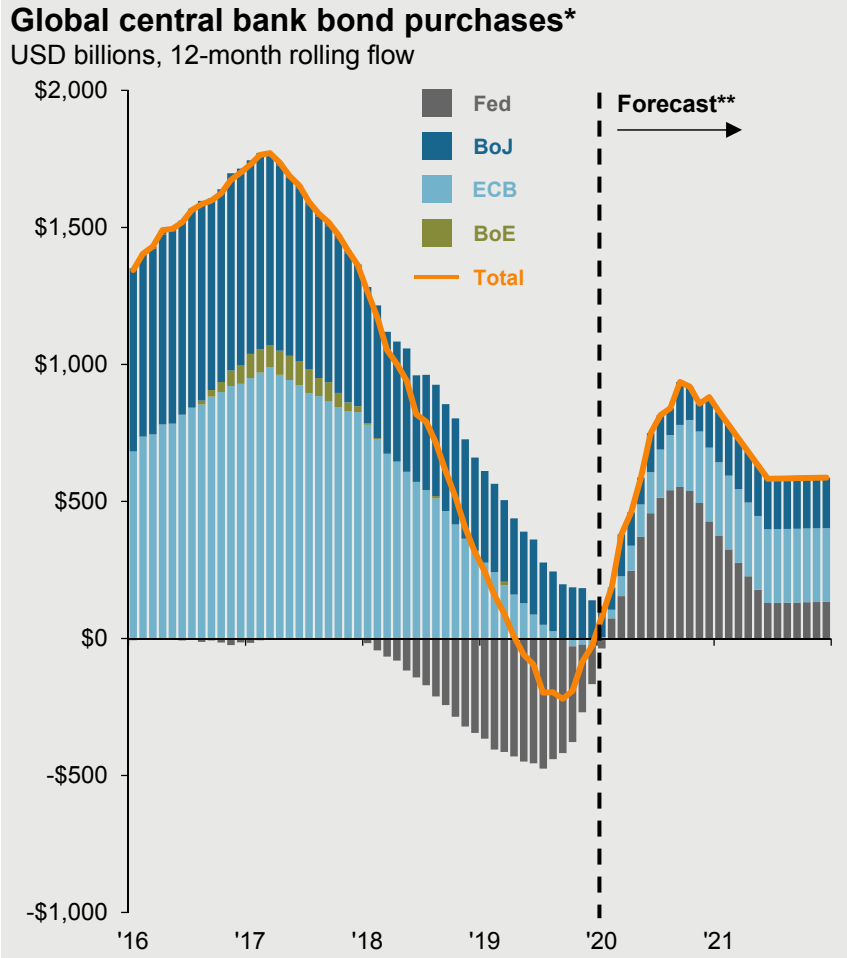


Liquidity Cost Score (LCS) for different bond markets

% score, November 2019



Source: J.P. Morgan Asset Management; (Left) Federal Reserve Bank of New York, SIFMA; (Right) Barclays. U.S. corporate debt outstanding includes money market debt. Liquidity Cost Score focuses on the cost of trading across different asset classes by assessing 20,400 fixed income securities. It is calculated by the bid-spread minus the ask-spread multiplied by the option-adjusted spread duration (OASD).
 Guide to the Markets – U.S. Data are as of December 31, 2019.

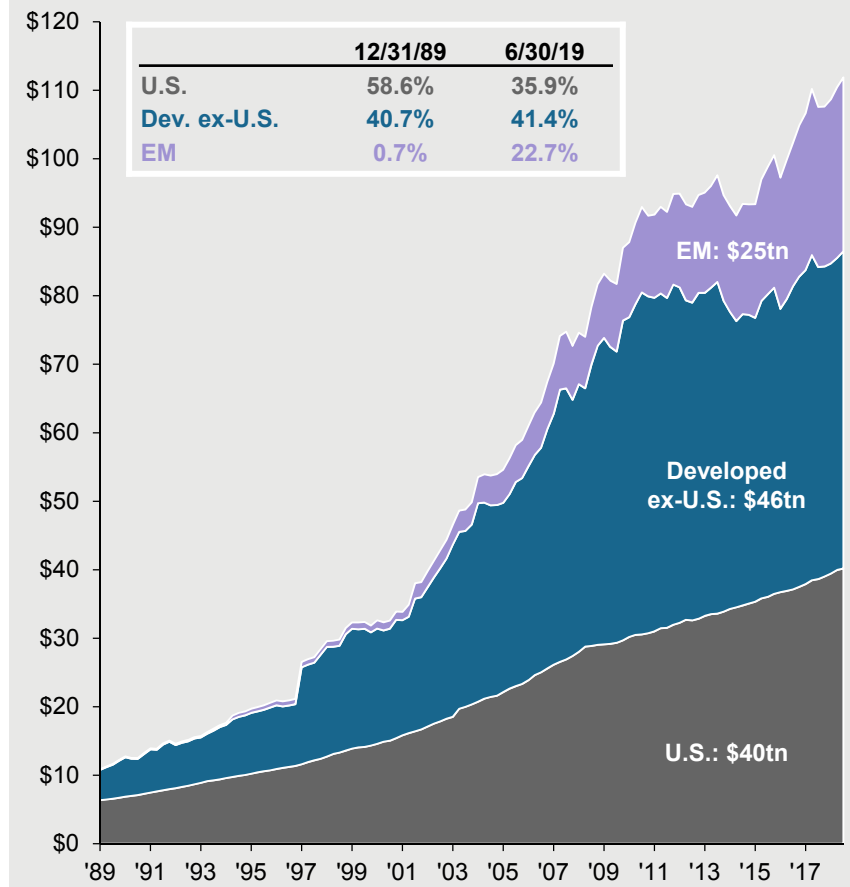


Source: J.P. Morgan Asset Management; (Left) Bank of England, Bank of Japan, European Central Bank, FactSet, Federal Reserve System, J.P. Morgan Global Economic Research; (Right) Bloomberg. *Includes the Bank of Japan (BoJ), Bank of England (BoE), European Central Bank (ECB) and Federal Reserve. **Bond purchase forecast assumes no further purchases from BoE; continued BoJ QE of \$20trn JPY ann. for 2020 and 2021; restarting of purchases from the ECB at a pace of \$20bn EUR per month beginning in November 2019; and Federal Reserve purchases of Treasury bill securities at a pace of \$60bn per month through June 2020 per the October 2019 policy statement. Beginning August 2019, maturing MBS holdings will be reinvested in Treasuries up to \$20bn per month, anything in excess of that is reinvested back into MBS. The Fed balance sheet continues to rise again due to rising liabilities. ***Including: Australia, Canada, Denmark, eurozone, Japan, Norway, Sweden, Switzerland, UK and U.S. Guide to the Markets –U.S. Data are as of December 31, 2019.

Aggregates	Yield		2019 Return		Duration	Correl. to 10-year
	12/31/2019	12/31/2018	Local	USD		
U.S.	2.31%	3.28%	8.72%	8.72%	5.9 years	0.92
Gbl. ex-U.S.	0.94%	1.26%	-	5.77%	7.9	0.27
Japan	0.08%	0.18%	1.78%	2.76%	9.6	0.52
Germany	0.20%	0.62%	4.49%	2.61%	6.6	0.03
UK	1.30%	1.92%	7.15%	11.45%	10.6	0.21
Italy	0.97%	2.00%	10.50%	8.51%	6.8	-0.11
Spain	0.35%	0.98%	8.06%	6.11%	7.4	-0.10
Sector						
Euro Corp.	0.51%	1.30%	6.24%	4.32%	5.2 years	0.27
Euro HY	3.46%	5.33%	12.29%	10.27%	4.2	-0.22
EMD (\$)	4.91%	6.86%	-	15.04%	7.5	0.26
EMD (LCL)	5.22%	6.46%	12.34%	13.47%	5.4	0.02
EM Corp.	4.51%	6.14%	-	13.09%	5.7	0.09

Global bond market

USD trillions



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 December 31, 2019.

Fixed income sector returns

Fixed income

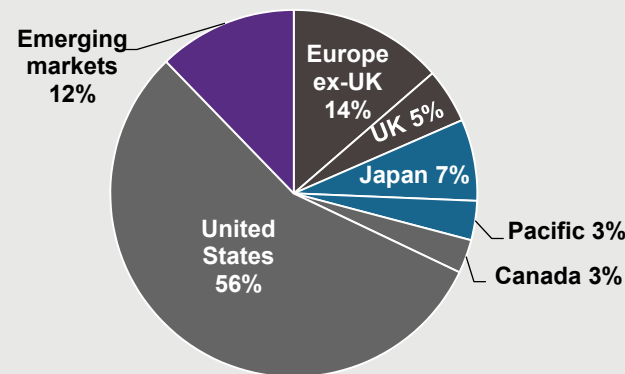
															2005-2019	
2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Ann.	Vol.
EMD USD 10.2%	EMD LCL. 15.2%	EMD LCL. 18.1%	Treas. 13.7%	High Yield 58.2%	EMD LCL. 15.7%	TIPS 13.6%	EMD USD 17.4%	High Yield 7.4%	Muni 8.7%	Muni 3.8%	High Yield 17.1%	EMD LCL. 15.2%	ABS 2.7%	EMD USD 15.0%	EMD USD 7.3%	EMD LCL. 10.6%
EMD LCL. 6.3%	High Yield 11.8%	TIPS 11.6%	MBS 8.3%	EMD USD 29.8%	High Yield 15.1%	Muni 12.3%	EMD LCL. 16.8%	ABS 1.3%	Corp. 7.5%	MBS 1.5%	EMD USD 10.2%	EMD USD 10.3%	Muni 1.4%	Corp. 14.5%	High Yield 7.2%	High Yield 10.3%
Asset Alloc. 3.0%	EMD USD 9.9%	Treas. 9.0%	Barclays Agg 5.2%	ABS 24.7%	EMD USD 12.2%	Treas. 9.8%	High Yield 15.8%	MBS -1.4%	EMD USD 7.4%	EMD USD 1.2%	EMD LCL. 9.9%	High Yield 7.5%	MBS 1.0%	High Yield 14.3%	EMD LCL. 5.3%	EMD USD 7.2%
TIPS 2.8%	Asset Alloc. 5.8%	Barclays Agg 7.0%	Muni 1.5%	EMD LCL. 22.0%	Corp. 9.0%	Corp. 8.1%	Corp. 9.8%	Corp. -1.5%	MBS 6.1%	Treas. 0.8%	Corp. 6.1%	Corp. 6.4%	Treas. 0.9%	EMD LCL. 13.5%	Corp. 5.2%	Corp. 5.5%
Treas. 2.8%	MBS 5.2%	MBS 6.9%	Asset Alloc. -1.3%	Corp. 18.7%	Asset Alloc. 7.9%	Asset Alloc. 7.9%	Asset Alloc. 7.5%	Asset Alloc. -1.7%	Barclays Agg 6.0%	Barclays Agg 0.5%	Asset Alloc. 4.7%	Muni 5.8%	Barclays Agg 0.0%	Asset Alloc. 9.8%	Asset Alloc. 5.0%	TIPS 4.8%
Muni 2.7%	Muni 4.7%	Asset Alloc. 6.4%	TIPS -2.4%	Asset Alloc. 16.1%	Barclays Agg 6.5%	Barclays Agg 7.8%	TIPS 7.0%	Barclays Agg -2.0%	Asset Alloc. 5.4%	ABS 0.2%	TIPS 4.7%	Asset Alloc. 5.3%	Asset Alloc. -0.6%	Barclays Agg 8.7%	Muni 4.6%	Treas. 4.6%
High Yield 2.7%	ABS 4.7%	EMD USD 6.2%	Corp. -4.9%	TIPS 11.4%	TIPS 6.3%	EMD USD 7.3%	Muni 5.7%	Muni -2.2%	Treas. 5.1%	Asset Alloc. -0.3%	Barclays Agg 2.6%	Barclays Agg 3.5%	TIPS -1.3%	TIPS 8.4%	Barclays Agg 4.1%	ABS 4.1%
MBS 2.6%	Barclays Agg 4.3%	Corp. 4.6%	EMD LCL. -5.2%	Muni 9.9%	Treas. 5.9%	MBS 6.2%	Barclays Agg 4.2%	Treas. -2.7%	TIPS 3.6%	Corp. -0.7%	ABS 2.0%	TIPS 3.0%	High Yield -2.1%	Muni 7.7%	MBS 4.0%	Muni 3.8%
Barclays Agg 2.4%	Corp. 4.3%	Muni 4.3%	EMD USD -12.0%	Barclays Agg 5.9%	ABS 5.9%	ABS 5.1%	ABS 3.7%	EMD USD -5.3%	High Yield 2.5%	TIPS -1.4%	MBS 1.7%	ABS 3.0%	Corp. -2.5%	Treas. 6.9%	TIPS 3.8%	Asset Alloc. 3.6%
ABS 2.1%	Treas. 3.1%	ABS 2.2%	ABS -12.7%	MBS 5.9%	MBS 5.4%	High Yield 5.0%	MBS 2.6%	TIPS -8.6%	ABS 1.7%	High Yield -4.5%	Treas. 1.0%	MBS 2.5%	EMD USD -4.3%	MBS 6.4%	Treas. 3.7%	Barclays Agg 3.3%
Corp. 1.7%	TIPS 0.4%	High Yield 1.9%	High Yield -26.2%	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%	ABS 3.8%	ABS 3.1%	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: U.S. Aggregate Index; MBS: US Aggregate Securitized - MBS Index; ABS: J.P. Morgan ABS Index; Corporate: U.S. Aggregate Credit - Corporates - Investment Grade; Municipals: Municipal Bond 10-Year Index; High Yield: U.S. Aggregate Credit - Corporate - High Yield Index; Treasuries: Global U.S. Treasury; TIPS: U.S. Treasury Inflation Protected Notes Index; Emerging Debt USD: J.P. Morgan EMBIG Diversified Index; Emerging Debt LCL: J.P. Morgan EM Global Index. The "Asset Allocation" portfolio assumes the following weights: 20% in MBS, 5% in ABS, 20% in Corporate, 15% in Municipals, 5% in Emerging Debt USD, 5% in Emerging Debt LCL, 10% in High Yield, 15% in Treasuries, 5% in TIPS. Asset allocation portfolio assumes annual rebalancing. Guide to the Markets - U.S. Data are as of December 31, 2019.

Returns	2019		2018		15-years	
	Local	USD	Local	USD	Ann.	Beta
Regions						
U.S. (S&P 500)	-	31.5	-	-4.4	9.0	0.87
AC World ex-U.S.	21.4	22.1	-10.2	-13.8	5.7	1.10
EAFE	22.3	22.7	-10.5	-13.4	5.3	1.06
Europe ex-UK	27.5	25.9	-10.6	-14.4	5.9	1.20
Emerging markets	18.5	18.9	-9.7	-14.2	7.8	1.26
Selected Countries						
United Kingdom	16.5	21.1	-8.8	-14.1	4.2	1.01
France	29.3	27.0	-7.5	-11.9	5.9	1.22
Germany	23.9	21.7	-17.7	-21.6	6.4	1.32
Japan	18.9	20.1	-14.9	-12.6	4.3	0.75
China	23.3	23.7	-18.6	-18.7	11.3	1.26
India	10.0	7.6	1.4	-7.3	9.2	1.31
Brazil	31.5	26.7	16.7	-0.1	9.5	1.49
Russia	38.8	52.7	18.1	0.5	7.4	1.53

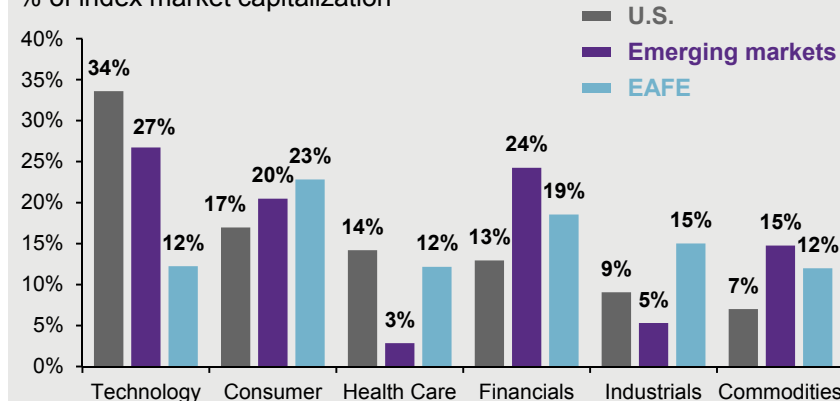
Weights in MSCI All Country World Index

% global market capitalization, float adjusted



Global equities by sector

% of index market capitalization

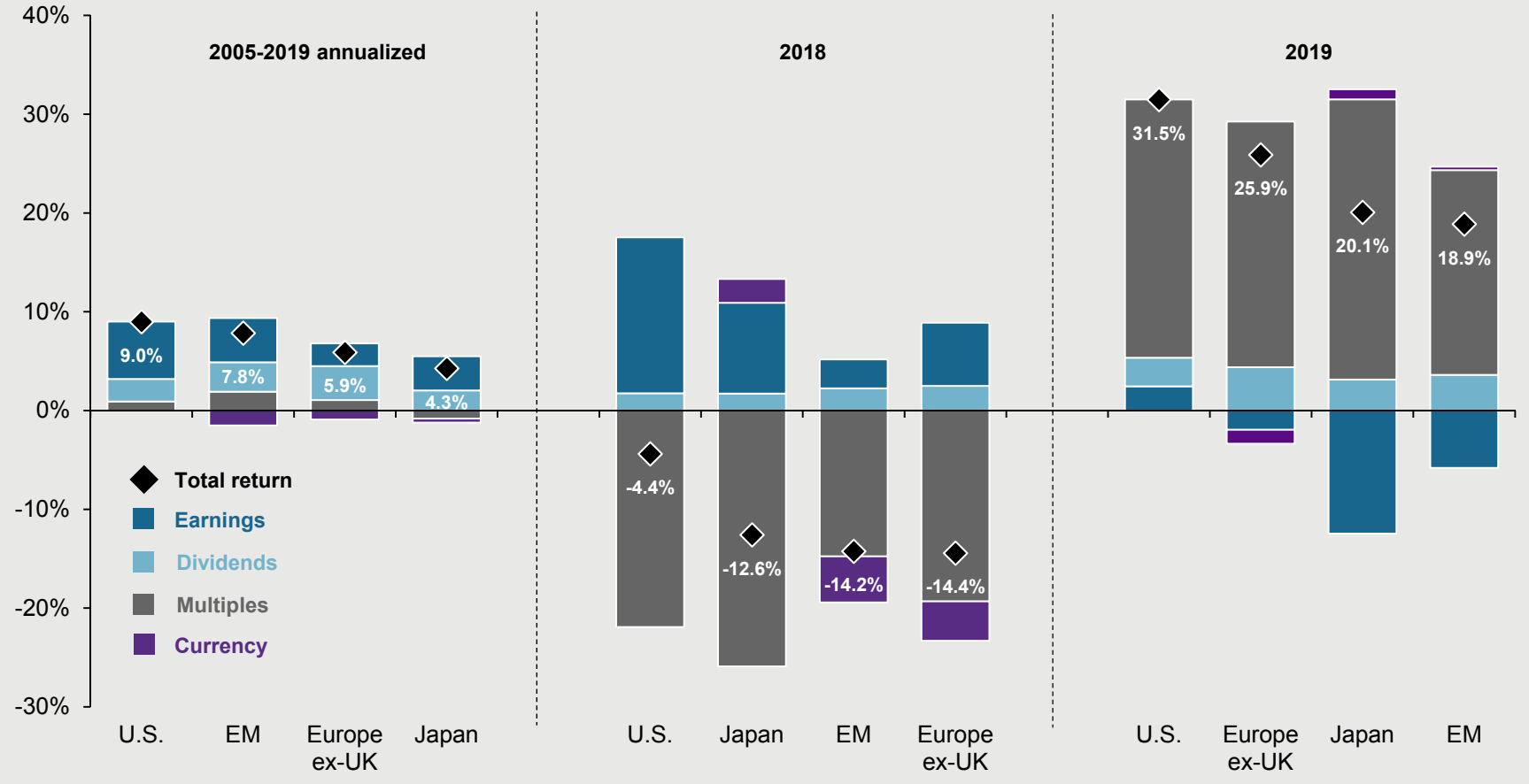


Source: FactSet, Federal Reserve, MSCI, Standard & Poor's, J.P. Morgan Asset Management. All return values are MSCI Gross Index (official) data. 15-year history based on U.S. dollar returns. 15-year return and beta figures are calculated for the time period 12/31/04-12/31/19. Beta is for monthly returns relative to the MSCI AC World Index. Annualized volatility is calculated as the standard deviation of quarterly returns multiplied by the square root of 4. Chart is for illustrative purposes only. Please see disclosure page for index definitions. Past performance is not a reliable indicator of current and future results. Sector breakdown includes the following aggregates: Technology (communication services and technology), consumer (consumer discretionary and staples) and commodities (energy and materials). The graph excludes the utilities and real estate sectors for illustrative purposes.

Guide to the Markets – U.S. Data are as of December 31, 2019.

Sources of global equity returns*

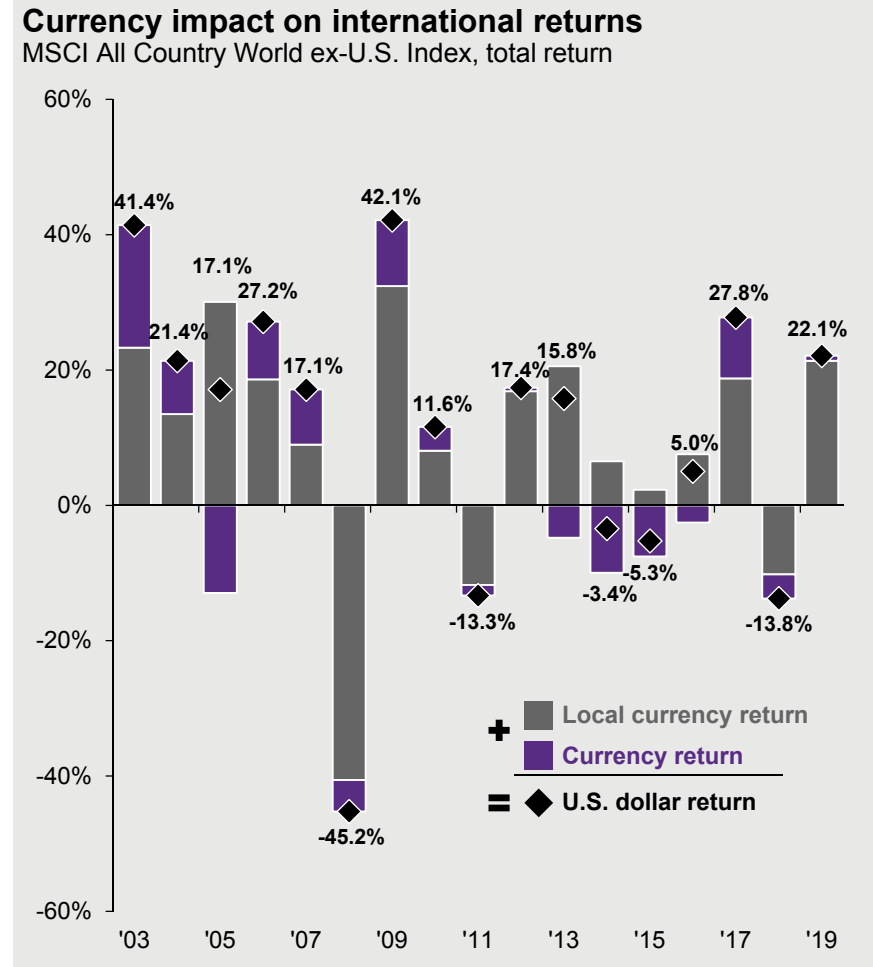
Total return, USD



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.

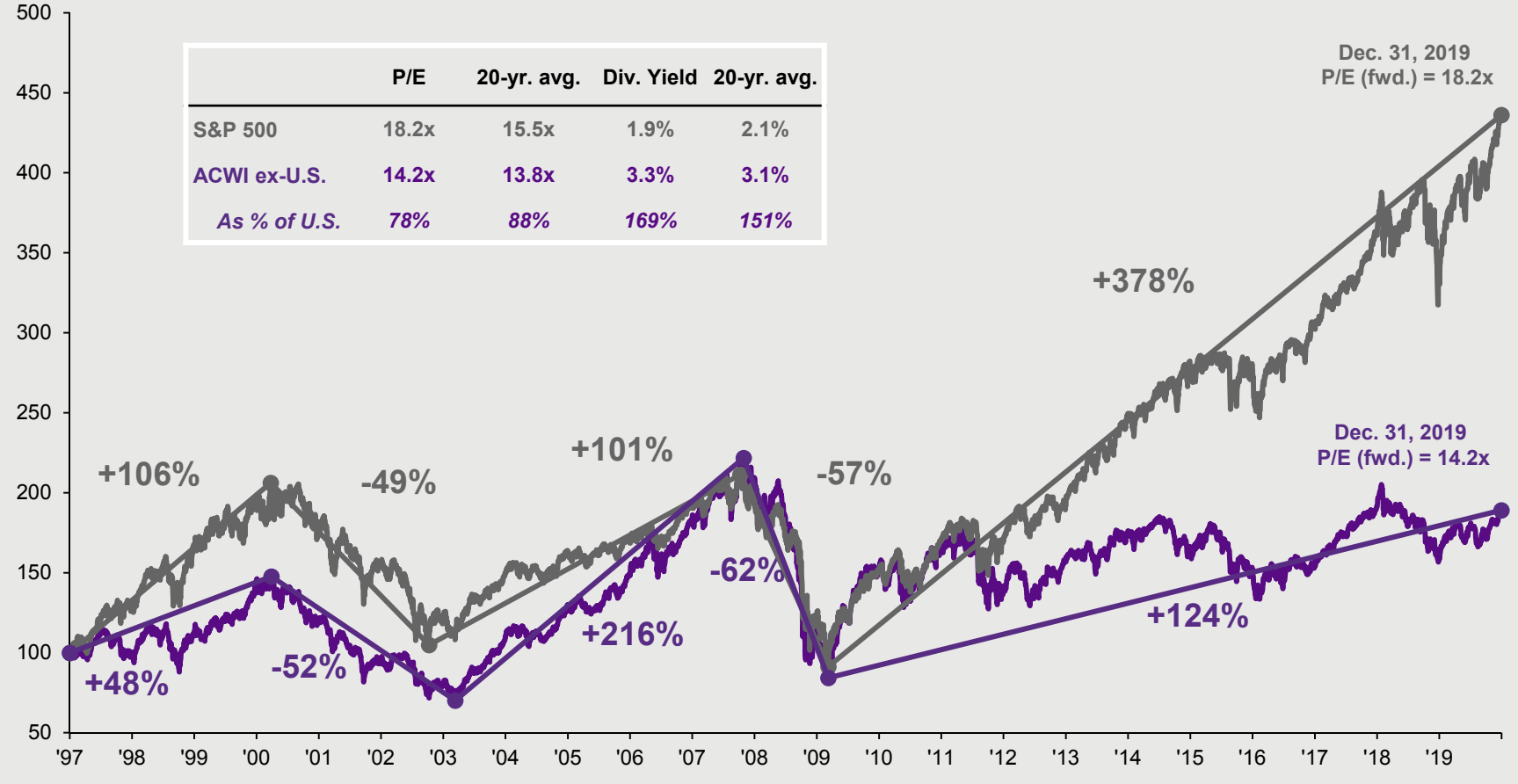
Guide to the Markets – U.S. Data are as of December 31, 2019.



Source: FactSet, J.P. Morgan Asset Management; (Left) Federal Reserve, ICE; (Right) MSCI. Currencies in the U.S. Dollar Index are: British pound, Canadian dollar, euro, Japanese yen, Swedish krona and Swiss franc. Data for the U.S. Dollar Index are back-tested and filled in from March 5, 1973 and January 17, 1986 using the Federal Reserve's nominal trade-weighted broad currency index. Past performance is not a reliable indicator of current and future results. *Guide to the Markets - U.S.* Data are as of December 31, 2019.

MSCI All Country World ex-U.S. and S&P 500 indices

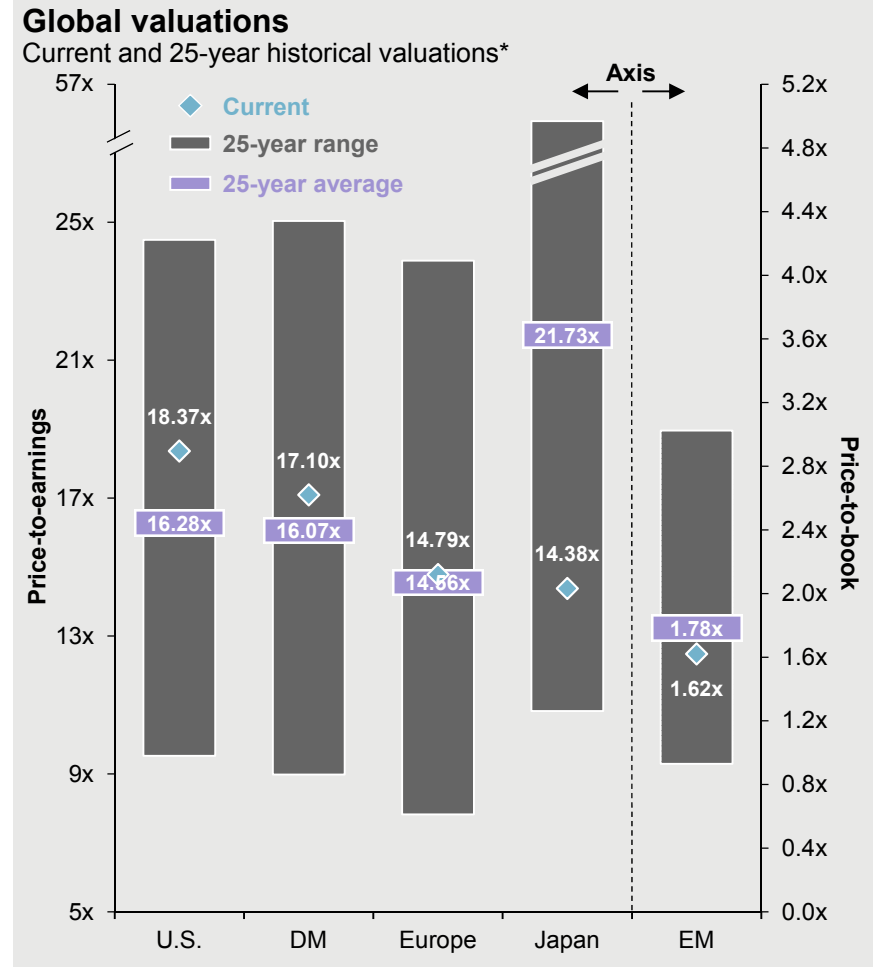
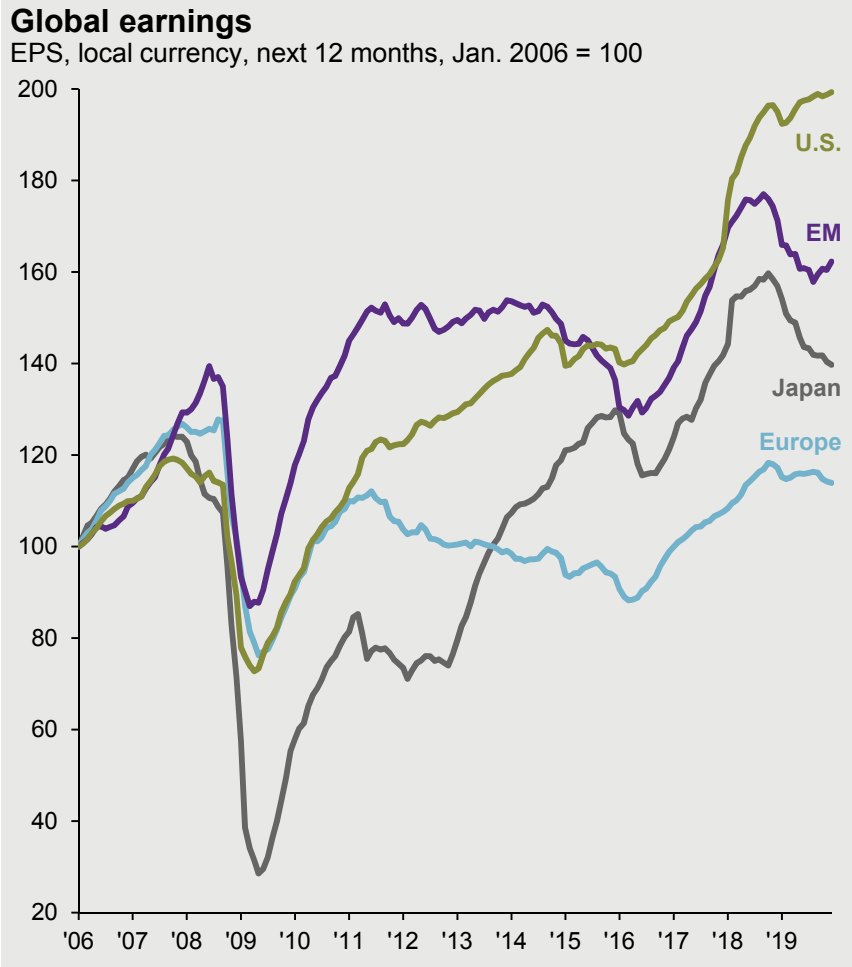
Dec. 1996 = 100, U.S. dollar, price return



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.

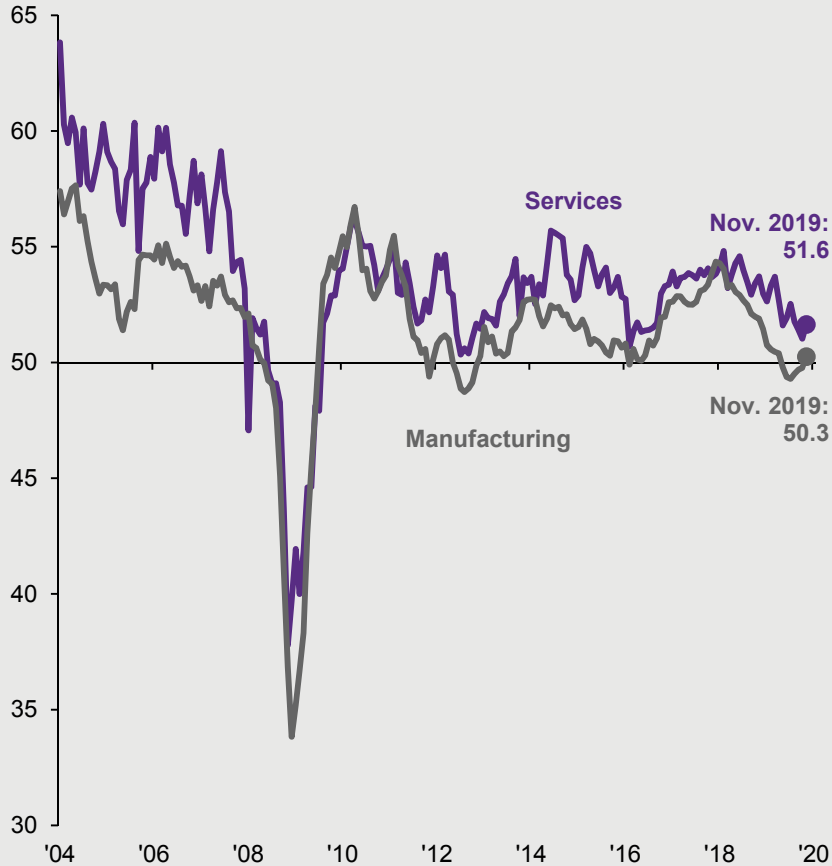
Guide to the Markets – U.S. Data are as of December 31, 2019.



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 46% 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 December 31, 2019.

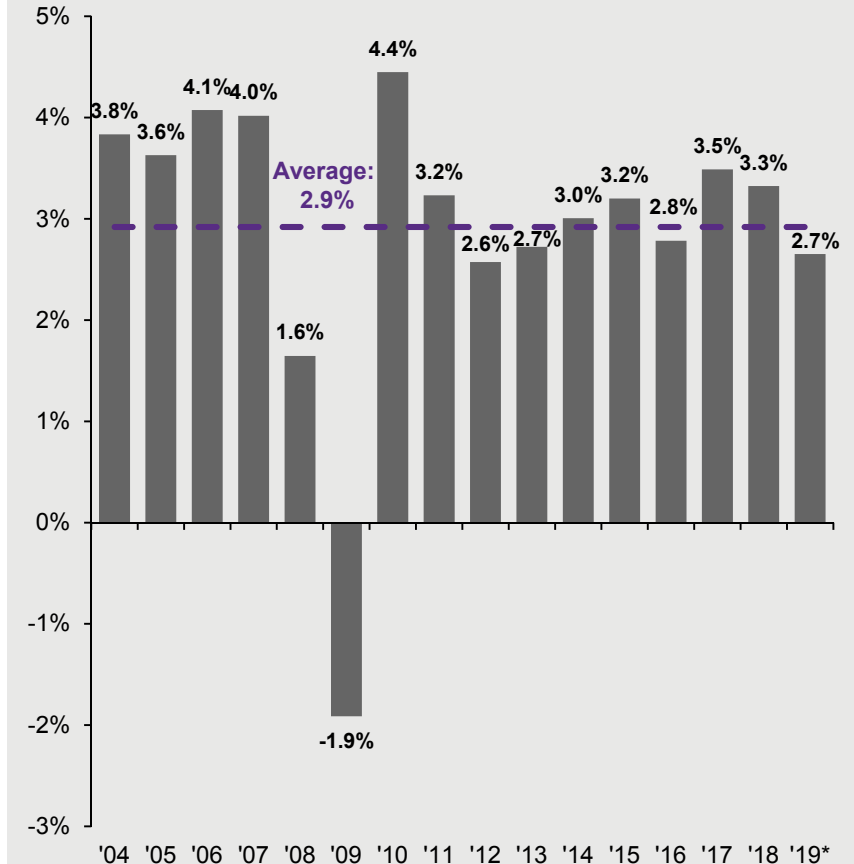
Global PMI for manufacturing and services

Monthly



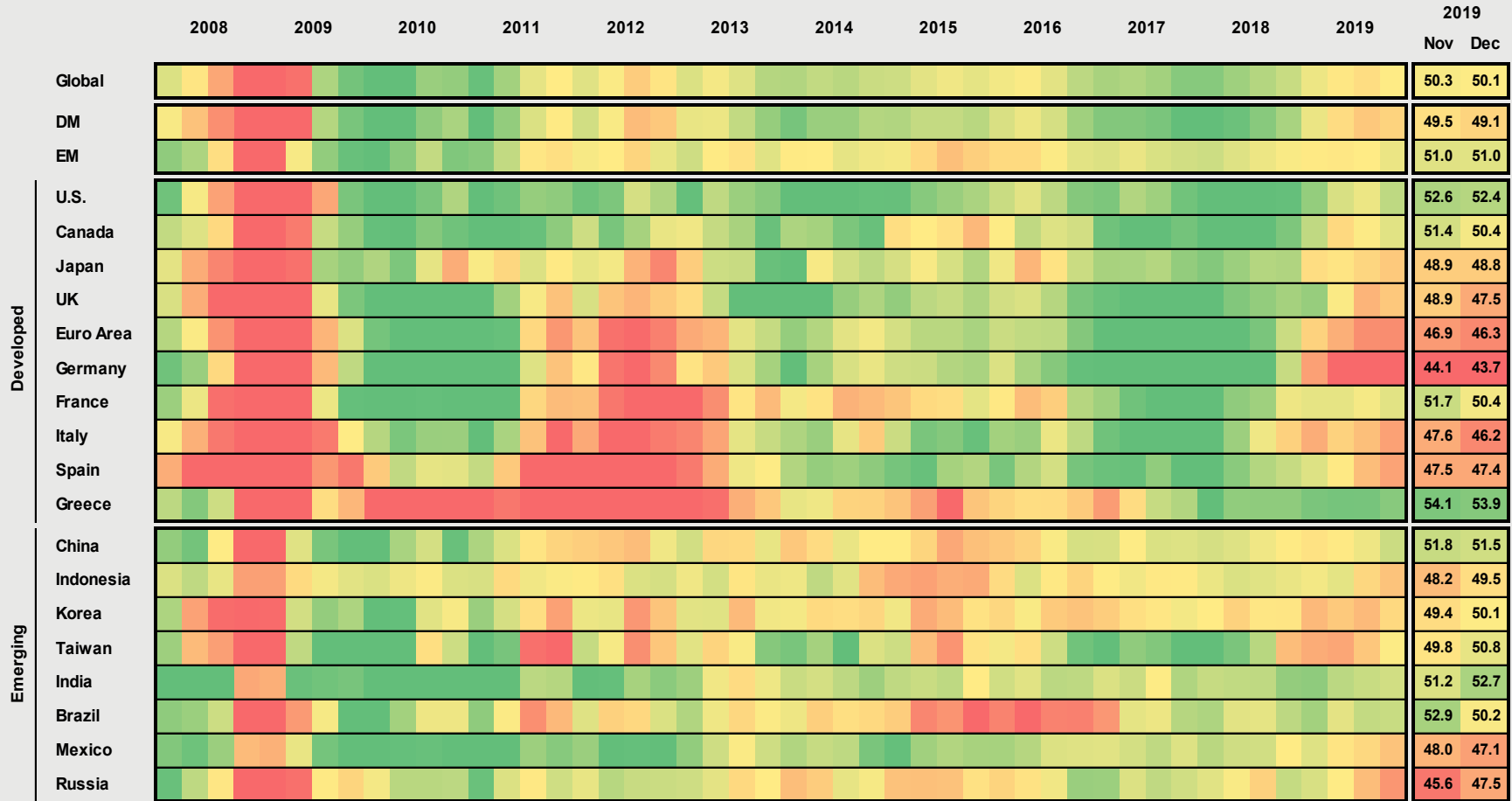
Global real GDP growth

% change, year-over-year, seasonally adjusted annual rate



Source: J.P. Morgan Asset Management; (Left) Markit; (Right) J.P. Morgan Global Economic Research. PMI is the Purchasing Managers' Index. Global GDP growth is a GDP-weighted measure of real GDP at U.S. dollar market exchange rates. *Year-to-date is an average of the first three quarters and 3Q is a forecast. *Guide to the Markets - U.S.* Data are as of December 31, 2019.

Global Purchasing Managers' Index for manufacturing, quarterly



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.

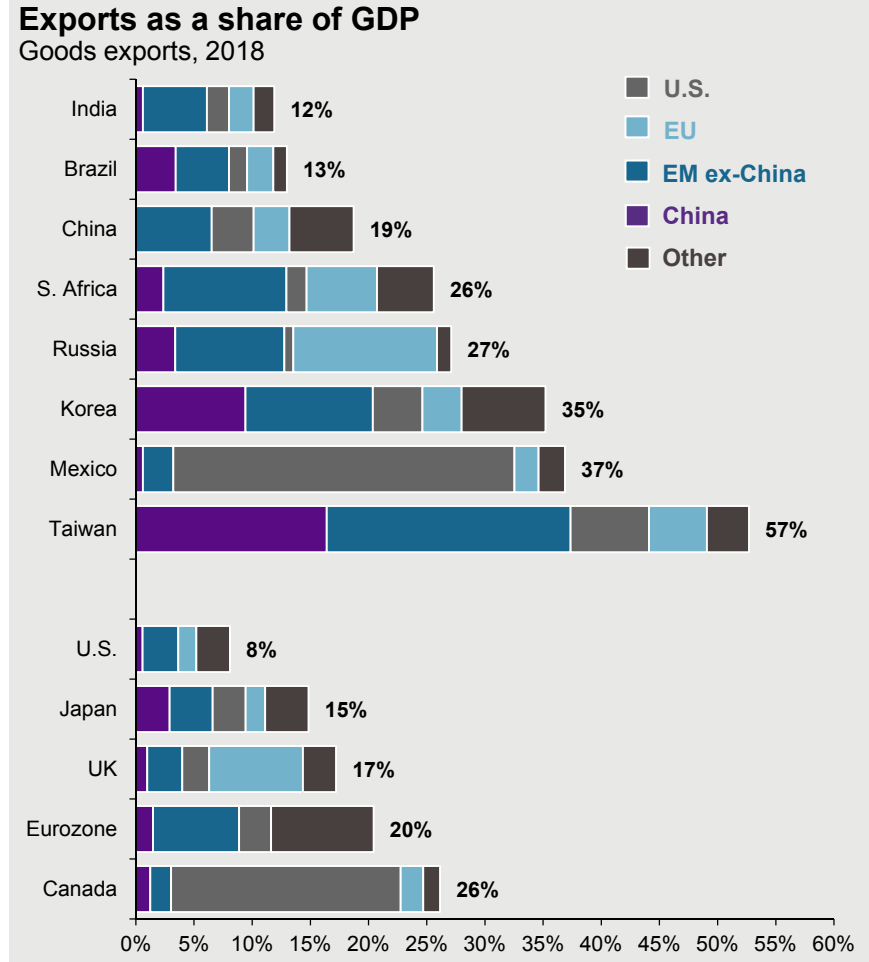
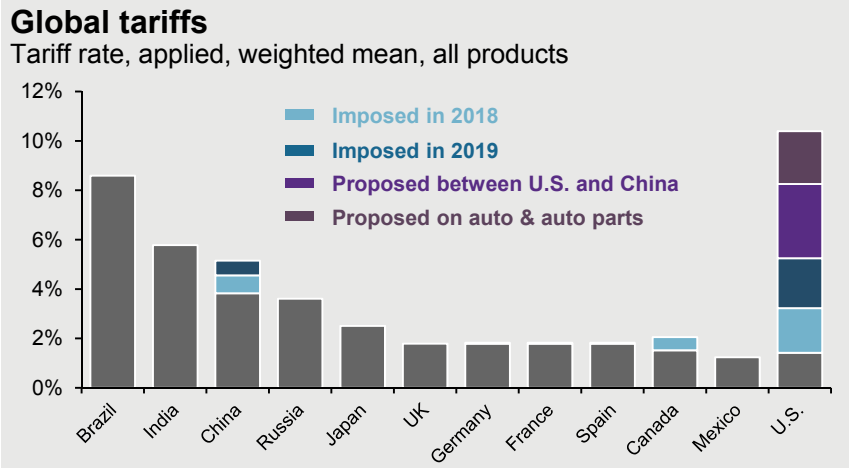
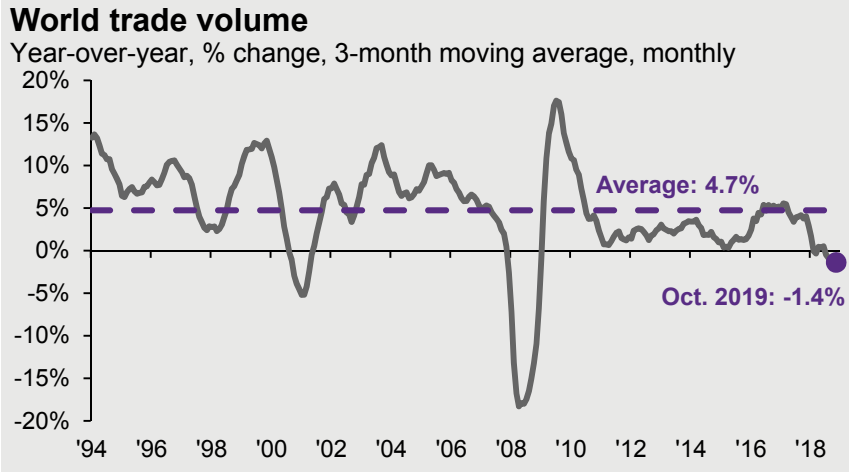
Guide to the Markets – U.S. Data are as of December 31, 2019.

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



International

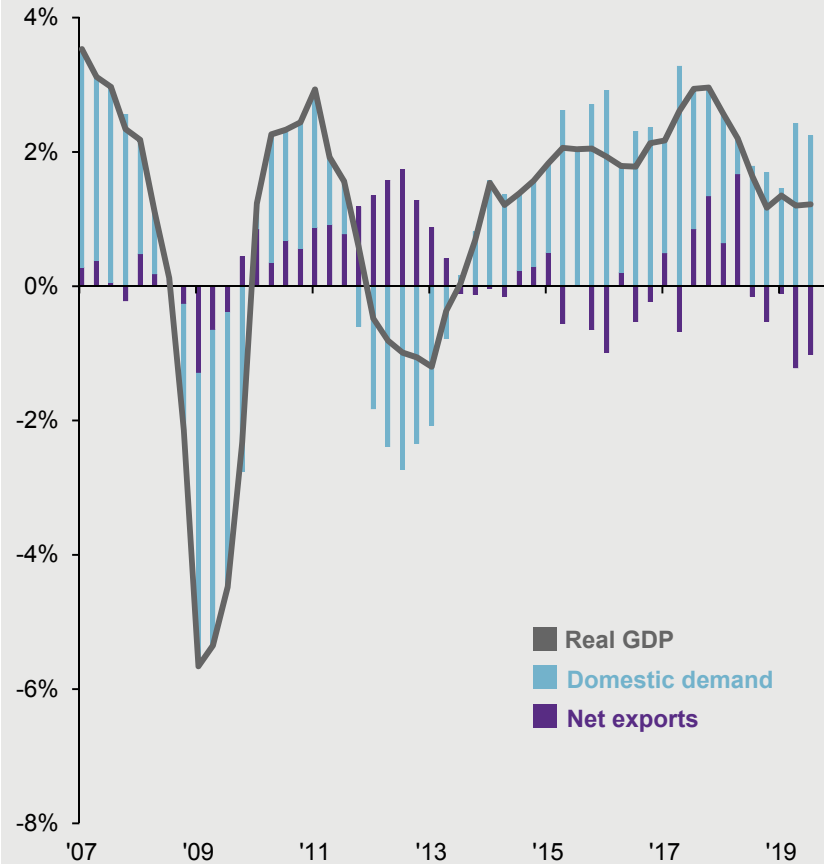
Source: Bank of Mexico, DGBAS, Eurostat, FactSet, Federal Reserve, Goskomstat of Russia, IBGE, India Ministry of Statistics & Programme Implementation, Japan Ministry of Internal Affairs & Communications, Korean National Statistical Office, Melbourne Institute, National Bureau of Statistics China, Statistics 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 determined by percentiles of inflation values over the last 10 years. Deep blue = lowest value, light blue = median, deep red = highest value. DM and EM represent developed markets and emerging markets, respectively. Guide to the Markets – U.S. Data are as of December 31, 2019.



Source: FactSet, J.P. Morgan Asset Management; (Top left) CPB Netherlands Bureau for Economic Policy Analysis; (Bottom left) IMF, USITC, World Bank; (Right) IMF.
 Guide to the Markets – U.S. Data are as of December 31, 2019.

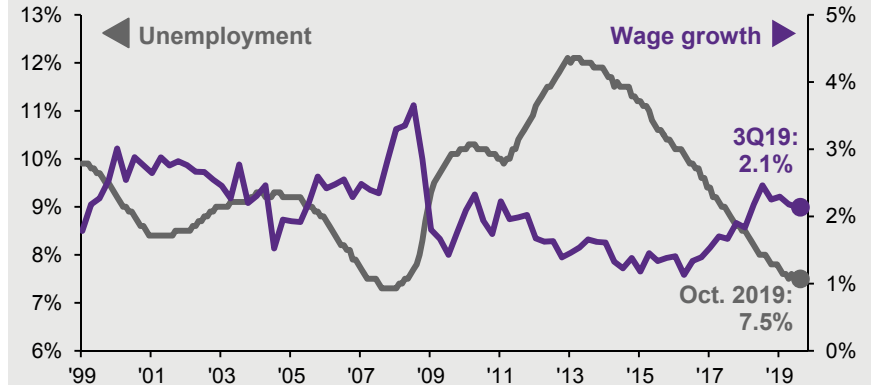
Eurozone GDP growth

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



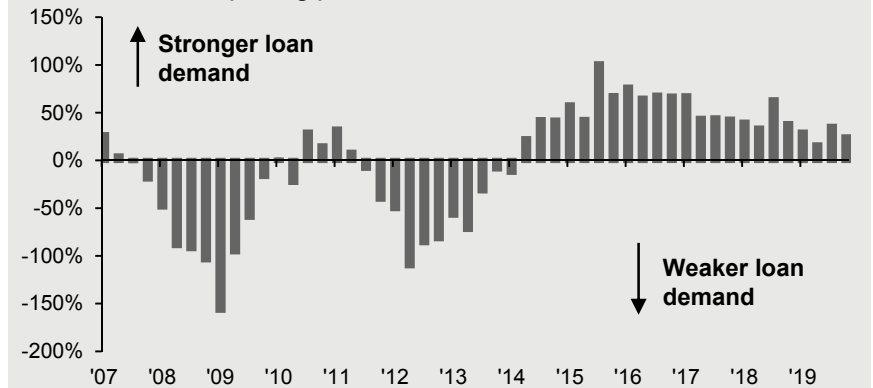
Eurozone unemployment and wage growth

Seasonally adjusted, year-over-year compensation growth

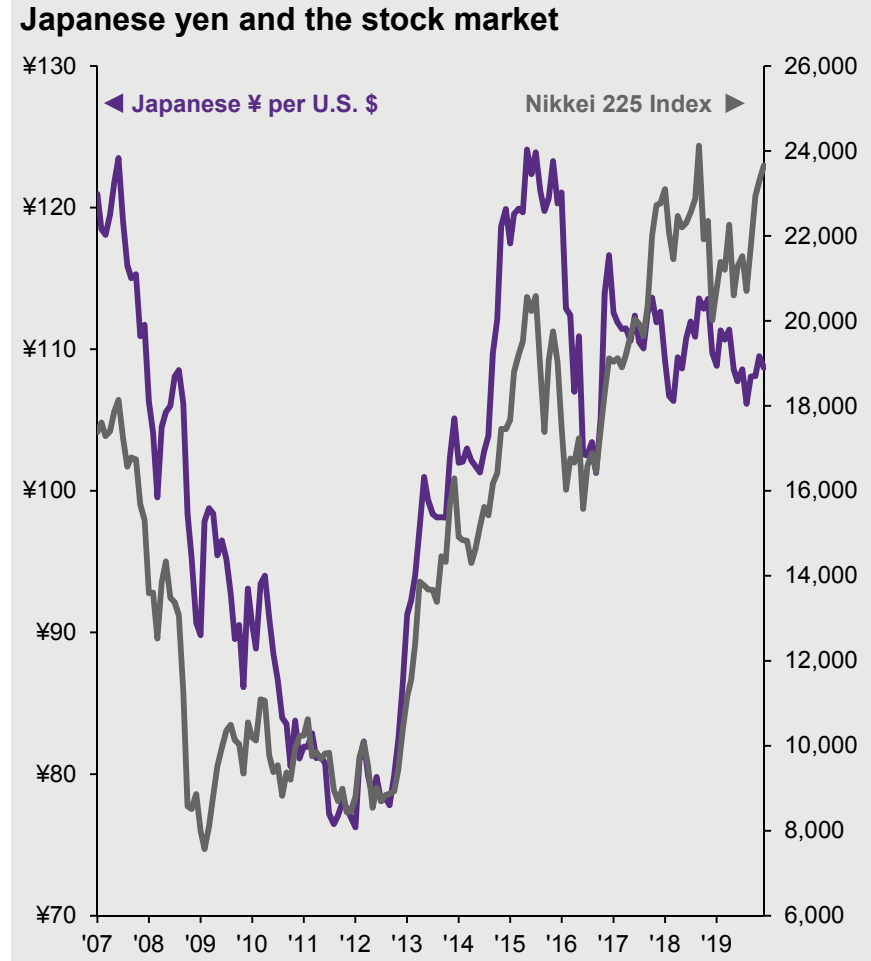
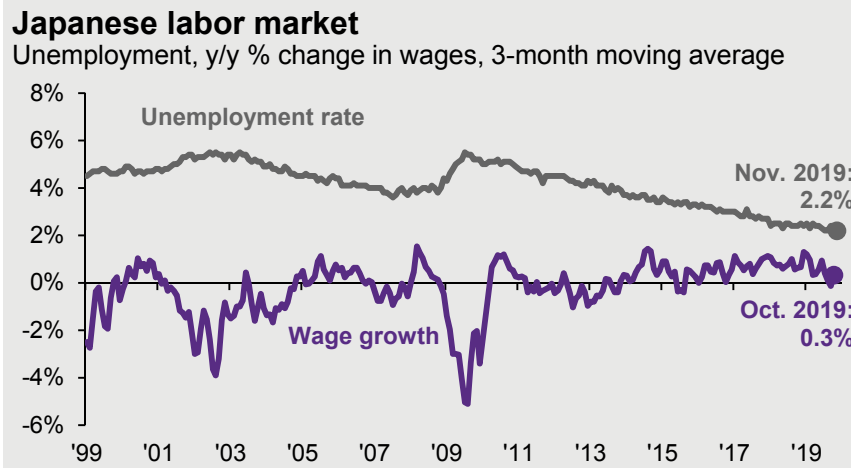
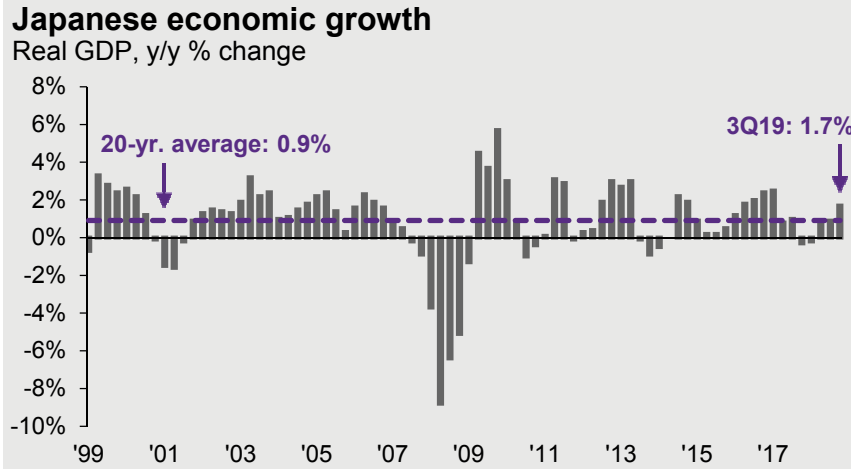


Eurozone credit demand

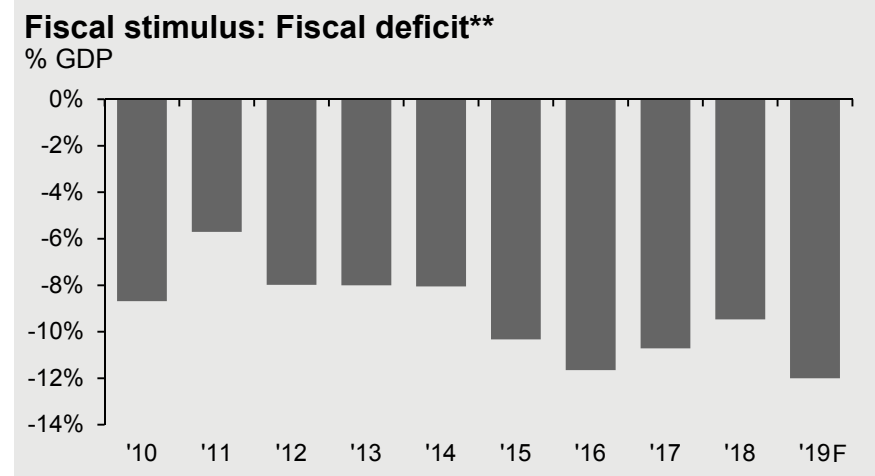
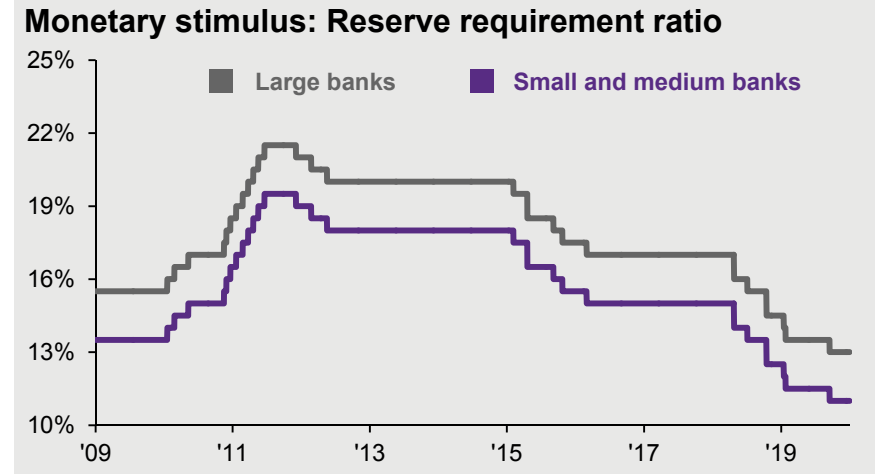
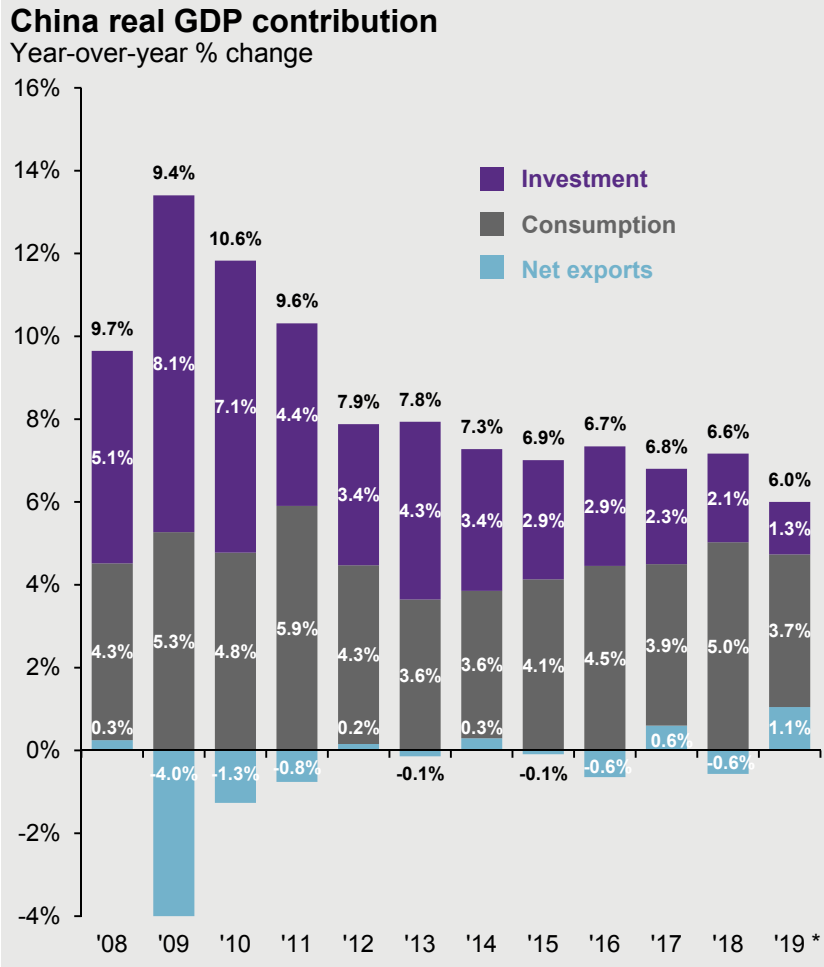
Net % of banks reporting positive loan demand



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



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 December 31, 2019.

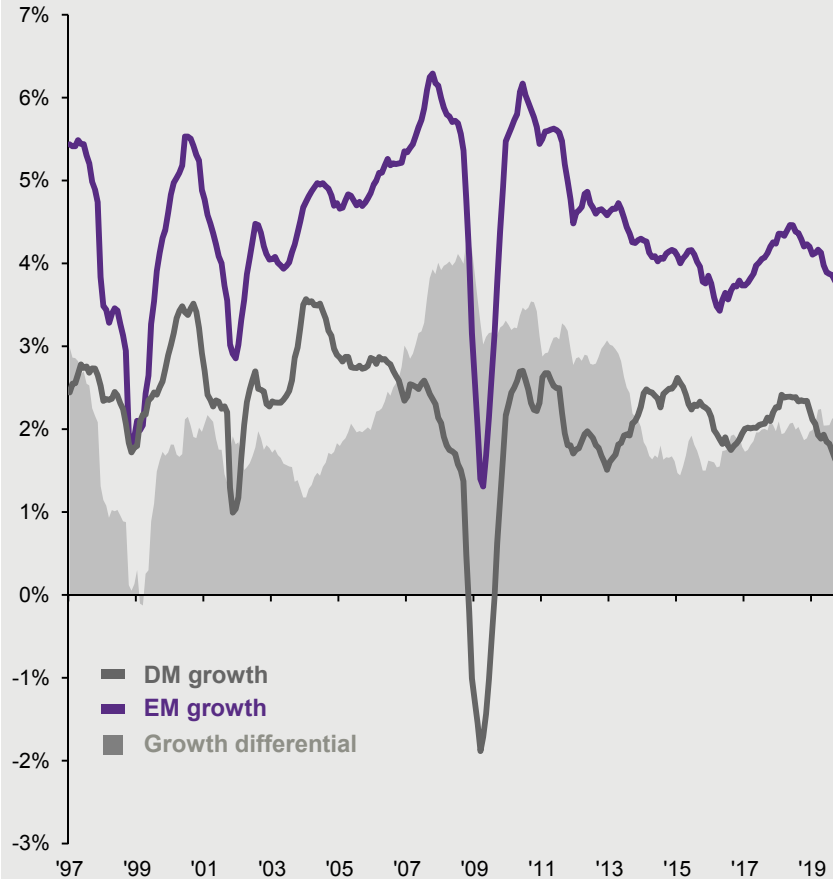


Source: FactSet, J.P. Morgan Asset Management; (Left) CEIC; (Top right) People's Bank of China; (Bottom right) China Agriculture Development Bank, China Development Bank, Ministry of Finance, People's Bank of China, Wind. *2019 China growth represents 3Q19. **The fiscal deficit is a J.P. Morgan Asset Management estimate of the augmented fiscal deficit. It measures the aggregate resources controlled by the government and used to support economic growth. It consists of the official budgetary deficit of the central and local governments, and additional funding raised and spent by local governments through Local Government Financing Vehicles (LGFVs) and various government-guided funds, whose activities are considered quasi-fiscal.

Guide to the Markets – U.S. Data are as of December 31, 2019.

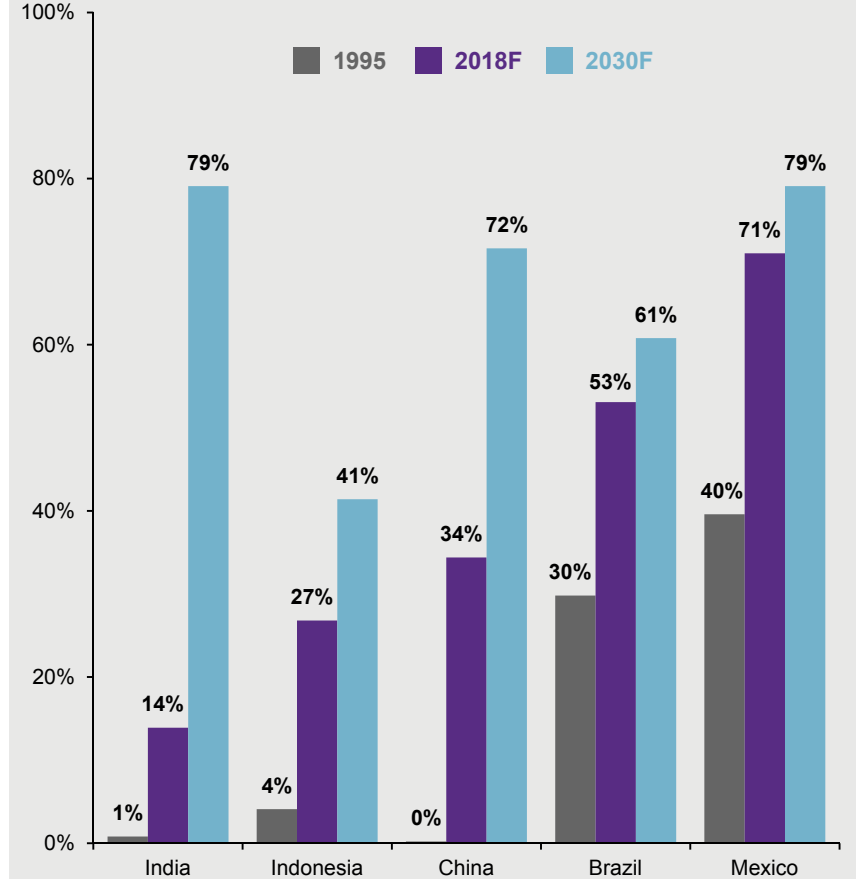
EM vs. DM growth

Monthly, consensus expectations for GDP growth in 12 months



Growth of the middle class

Percent of total population



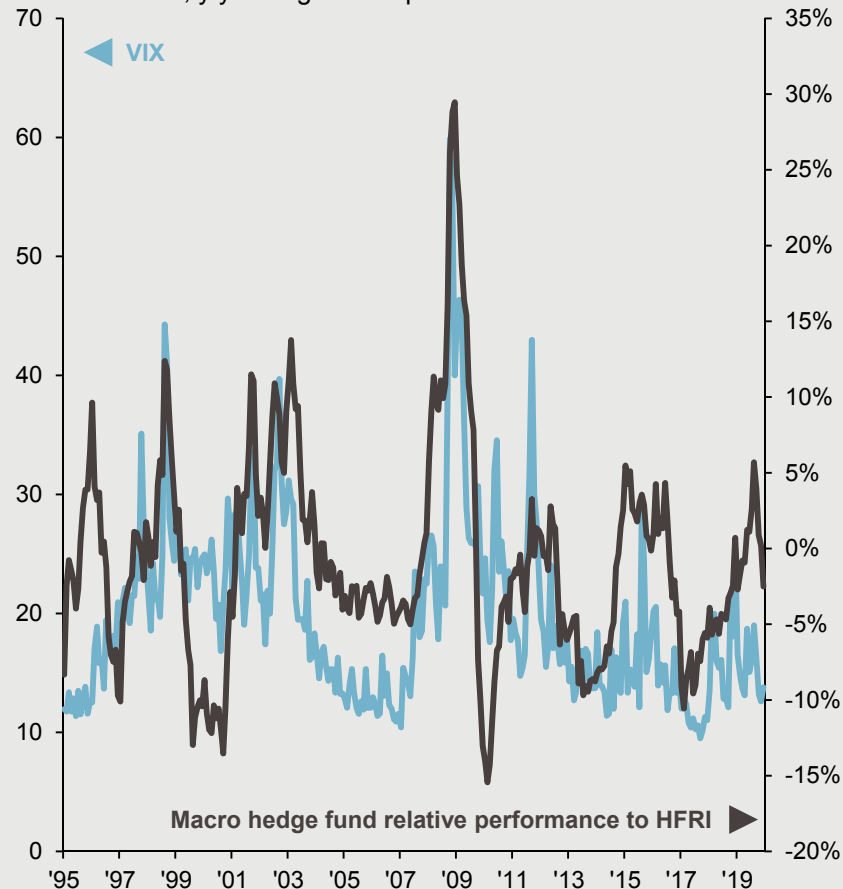
Source: J.P. Morgan Asset Management; (Left) Consensus Economics; (Right) Brookings Institute. "Growth differential" is consensus estimates for EM growth in the next 12 months minus consensus estimates for DM growth in the next 12 months, provided by Consensus Economics. Middle class is defined as \$3,600-\$36,000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

	U.S. Large Cap	EAFE	EME	Bonds	Corp. HY	Munis	Currency.	EMD	Cmdty.	REITs	Hedge funds	Private equity	Ann. Volatility
U.S. Large Cap	1.00	0.85	0.73	-0.29	0.73	-0.21	-0.38	0.40	0.53	0.66	0.85	0.76	13%
EAFE		1.00	0.88	-0.23	0.74	-0.13	-0.58	0.55	0.55	0.49	0.86	0.85	14%
EME			1.00	-0.08	0.76	-0.03	-0.68	0.71	0.60	0.44	0.74	0.78	16%
Bonds				1.00	0.08	0.88	-0.04	0.49	-0.08	0.21	-0.23	-0.33	3%
Corp. HY					1.00	0.05	-0.44	0.75	0.67	0.63	0.74	0.64	6%
Munis						1.00	-0.07	0.53	-0.14	0.26	-0.23	-0.30	4%
Currencies							1.00	-0.54	-0.55	-0.14	-0.32	-0.63	7%
EMD								1.00	0.45	0.49	0.44	0.37	6%
Commodities									1.00	0.30	0.57	0.64	14%
REITs										1.00	0.53	0.43	13%
Hedge funds											1.00	0.79	5%
Private equity												1.00	6%

Source: Barclays Inc., Bloomberg, Cambridge Associates, Credit Suisse/Tremont, FactSet, Federal Reserve, MSCI, 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; REIT: NAREIT All equity Index; Hedge Funds: CS/Tremont Hedge Fund Index; Private equity: Cambridge Associates Global Buyout & Growth Index. Private equity data are reported on a one- to two-quarter lag. All correlation coefficients and annualized volatility are calculated based on quarterly total return data for period 12/31/09 to 12/31/19, except for Private equity, which is based on the period from 6/30/09 to 6/30/19. This chart is for illustrative purposes only.
 Guide to the Markets – U.S. Data are as of December 31, 2019.

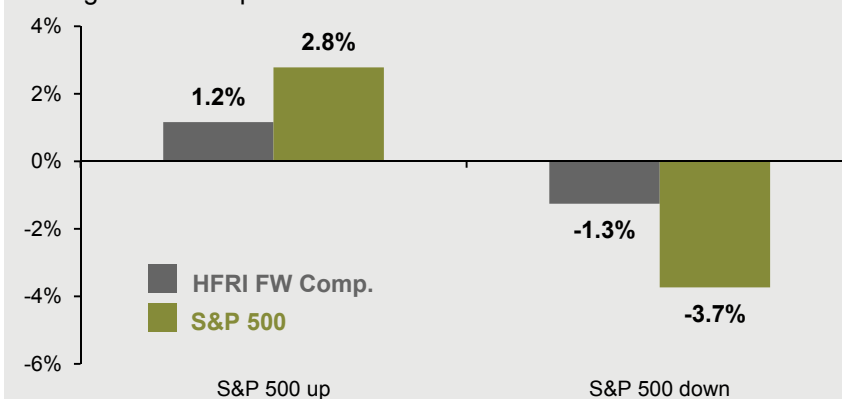
Macro hedge fund relative performance & volatility

VIX index level, y/y change in rel. perf. of HFRI Macro index



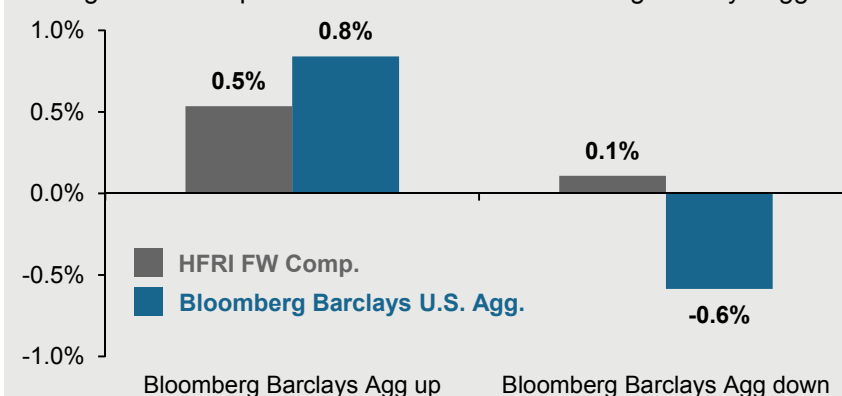
Hedge fund returns in different market environments

Average return in up and down months for S&P 500



Hedge fund returns in different market environments

Average return in up and down months for Bloomberg Barclays Agg.

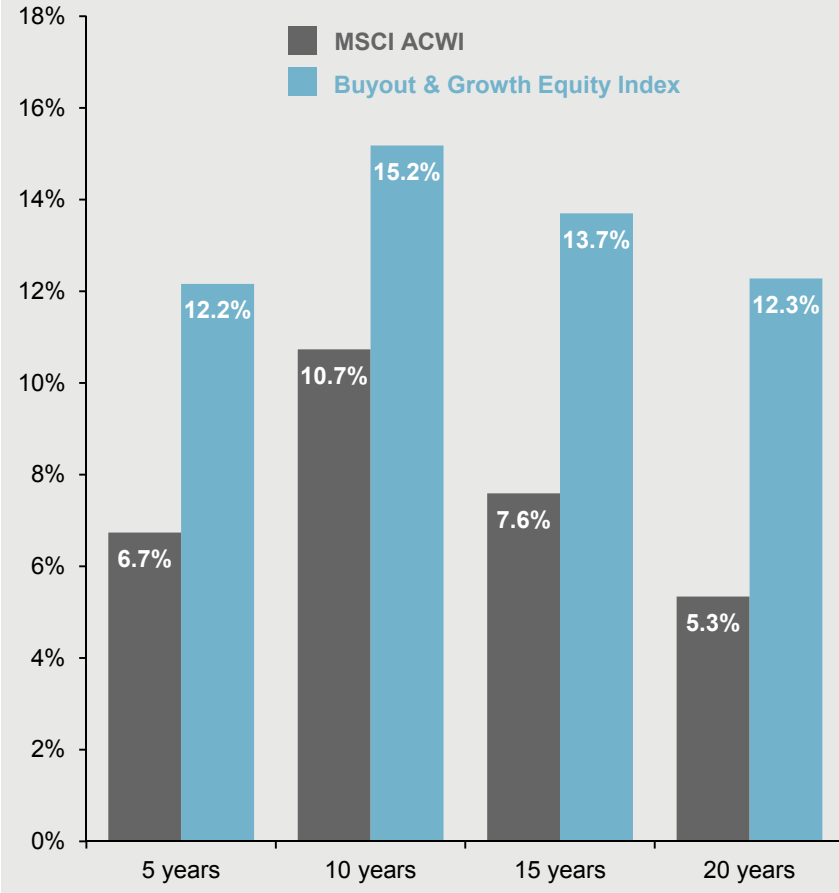


Source: Barclays, Bloomberg, FactSet, Hedge Fund Research Indices (HFRI), Standard & Poor's, J.P. Morgan Asset Management. HFRI Macro Index - Investment managers that trade a broad range of strategies in which the investment process is predicated on movements in underlying economic variables and the impact these have on equity, fixed income, hard currency and commodity markets. Managers employ a variety of techniques, both discretionary and systematic analysis, combinations of top down and bottom up theses, quantitative and fundamental approaches and long- and short-term holding periods.

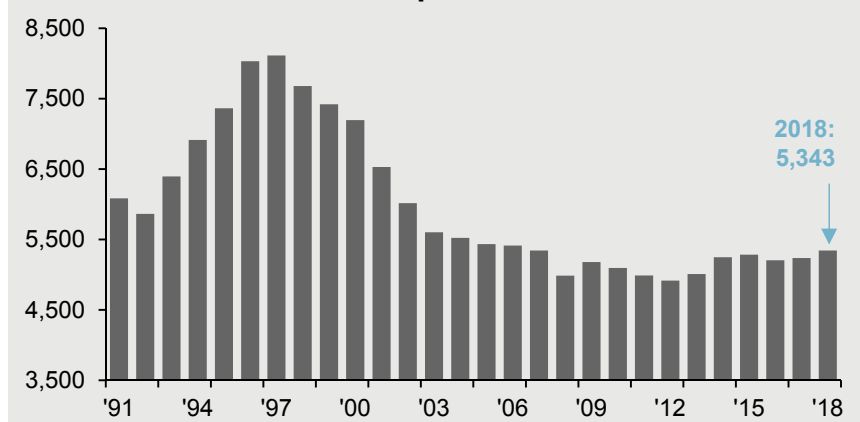
Guide to the Markets – U.S. Data are as of December 31, 2019.

Public vs. private equity returns

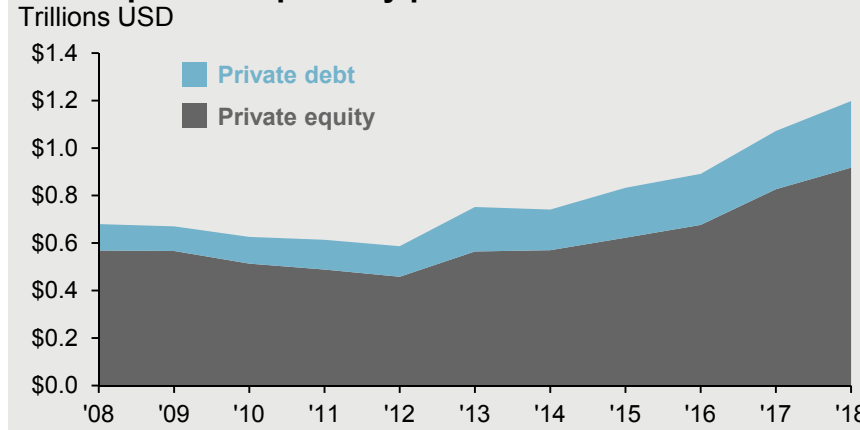
MSCI AC World total return and Global Buyout & Growth Equity Index*



Number of U.S. listed companies**



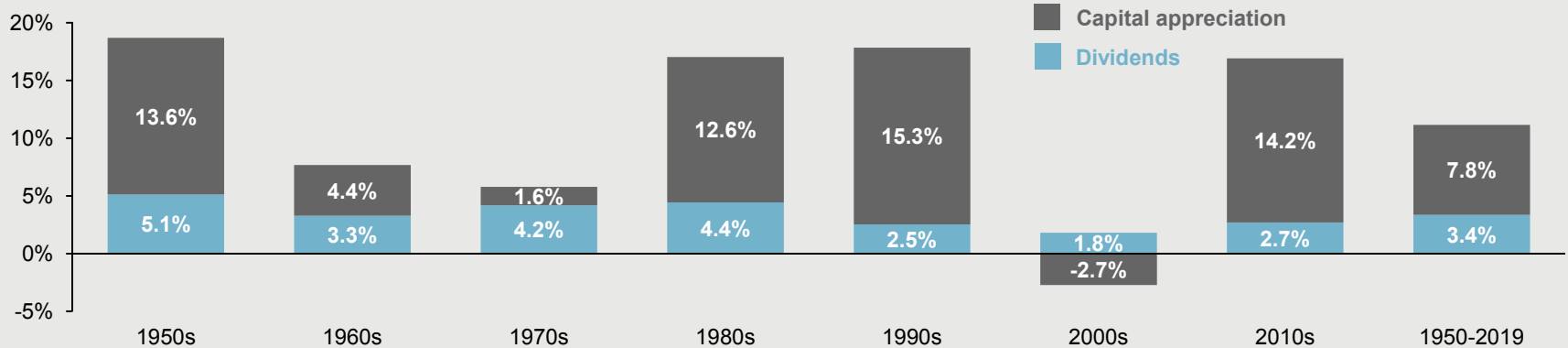
Global private capital dry powder



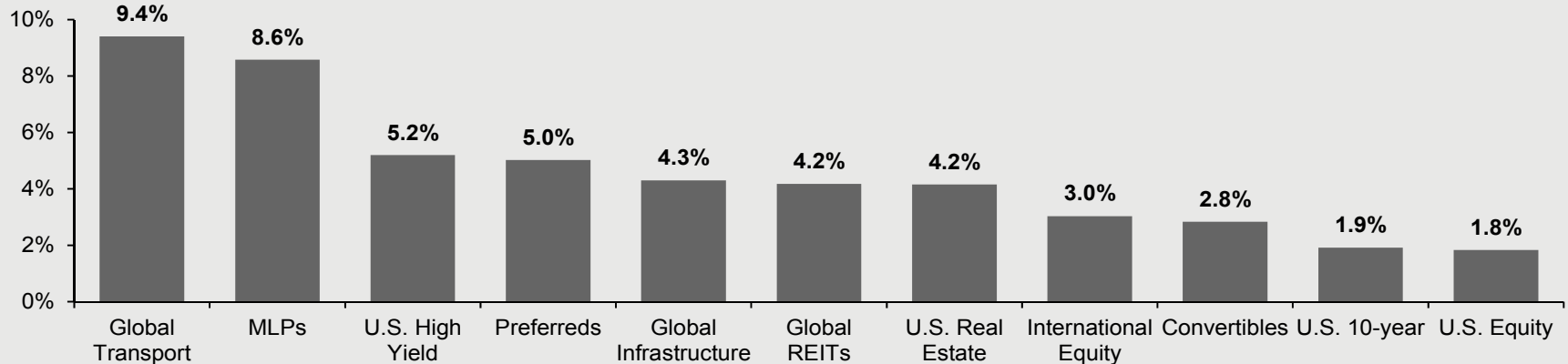
Sources: Cambridge Associates, Prequin, Standard & Poor's, World Federation of Exchanges, J.P. Morgan Asset Management.
 *Global Buyout & Growth Equity and MSCI AC World total return data are as of June 30, 2019. **Number of listed U.S. companies is represented by the sum of number of companies listed on the NYSE and the NASDAQ.
 Guide to the Markets – U.S. Data are as of December 31, 2019.

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

Average annualized returns



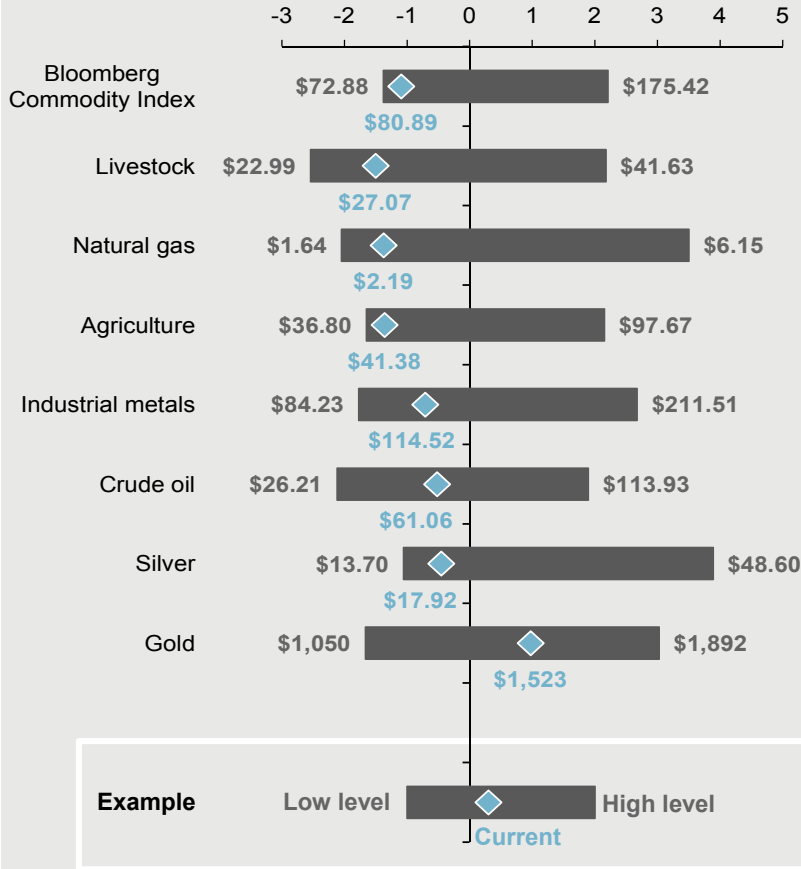
Asset class yields



Source: FactSet, Standard & Poor's, J.P. Morgan Asset Management; (Top) Ibbotson; (Bottom) Alerian, BAML, Barclays, Bloomberg, Clarkson, Drewry Maritime Consultants, Federal Reserve, FTSE, MSCI, NCREIF. Dividend vs. capital appreciation returns are through 12/31/19. Yields are as of December 31, 2019, except Global Transport, U.S. Real Estate (9/30/19), and Global Infrastructure (6/30/19). Global Transport: Levered yields for transport assets are calculated as the difference between charter rates (rental income), operating expenses, debt amortization and interest expenses, as a percentage of equity value. Yields for each of the sub-vessel types above are calculated and respective weightings are applied to each of the sub-sectors to arrive at the current levered yields for Global Transportation; MLPs: Alerian MLP ETF; Preferreds: BAML Hybrid Preferred Securities; U.S. High Yield: Bloomberg US Corporate High Yield; Global Infrastructure: MSCI Global Infrastructure Asset Index-Low risk; U.S. Real Estate: NCREIF-ODCE Index; Global REITs: FTSE NAREIT Global REITs; Convertibles: Bloomberg Barclays U.S. Convertibles Composite; International Equity: MSCI AC World ex-U.S.; U.S. 10-year: Tullett Prebon; U.S. Equity: MSCI USA. *Guide to the Markets - U.S.* Data are as of December 31, 2019.

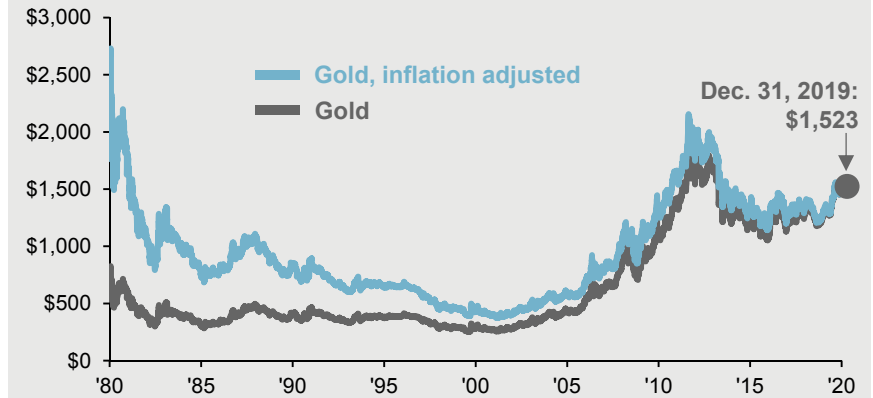
Commodity prices

Commodity price z-scores



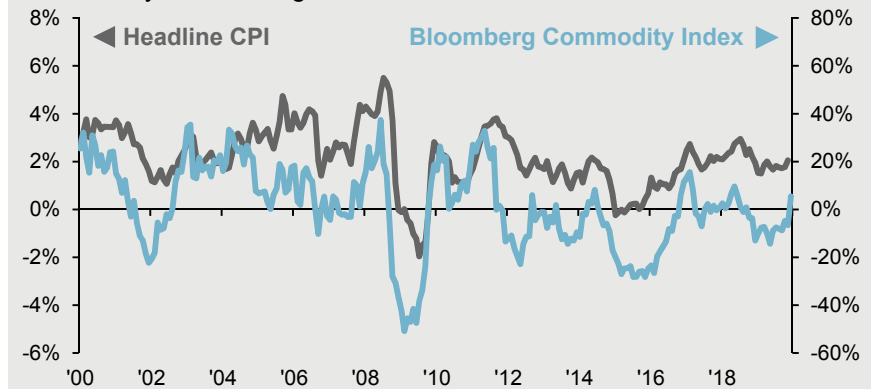
Gold prices

USD per ounce



Commodity prices and inflation

Year-over-year % change



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 December 31, 2019.

Asset class returns

GTM - U.S. | 60

															2005 - 2019	
2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Ann.	Vol.
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%	Large Cap 31.5%	Large Cap 9.0%	REITs 22.2%
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%	REITs 28.7%	REITs 8.3%	EM Equity 22.1%
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%	Small Cap 25.5%	Small Cap 7.9%	Comdty. 18.6%
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%	DM Equity 22.7%	EM Equity 7.8%	Small Cap 17.7%
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%	Asset Alloc. 19.5%	High Yield 7.2%	DM Equity 17.3%
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%	EM Equity 18.9%	Asset Alloc. 6.6%	Large Cap 14.0%
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%	High Yield 12.6%	DM Equity 5.3%	High Yield 10.9%
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 -1.8%	Small Cap -4.4%	Fixed Income 2.6%	Fixed Income 3.5%	Comdty. -11.2%	Fixed Income 8.7%	Fixed Income 4.1%	Asset Alloc. 10.0%
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%	Comdty. 7.7%	Cash 1.3%	Fixed Income 3.4%
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 0.3%	Cash 0.8%	EM Equity -14.2%	Cash 2.2%	Comdty. -2.6%	Cash 1.0%

Source: Barclays, Bloomberg, FactSet, MSCI, NAREIT, Russell, Standard & Poor's, J.P. Morgan Asset Management.

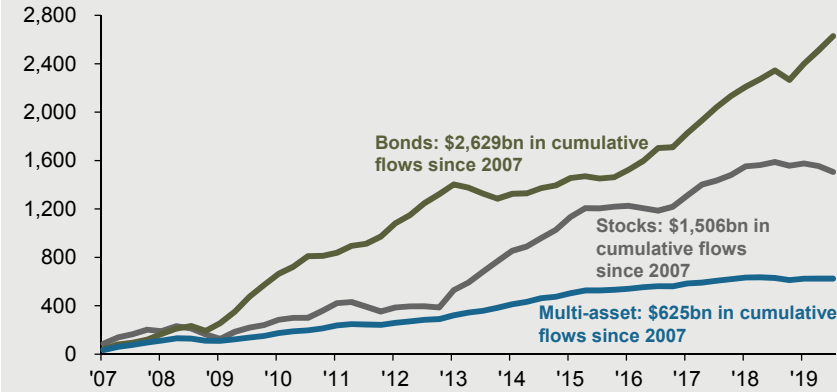
Large cap: S&P 500, Small cap: Russell 2000, EM Equity: MSCI EME, DM Equity: MSCI EAFE, Comdty: Bloomberg Commodity Index, High Yield: Bloomberg Barclays Global HY Index, Fixed Income: Bloomberg Barclays US Aggregate, REITs: NAREIT Equity REIT Index, Cash: Bloomberg Barclays 1-3m Treasury. The "Asset 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 12/31/04 - 12/31/19. Please see disclosure page at end for index definitions. All data represents total return for stated period. The "Asset Allocation" portfolio is for illustrative purposes only. Past performance is not indicative of future returns.

Guide to the Markets - U.S. Data are as of December 31, 2019.

USD billions	AUM	Registered product flows																	
		YTD	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002
U.S. equity	9,268	(61)	(4)	22	(14)	(15)	107	176	(33)	(28)	32	22	(4)	19	72	111	173	142	58
World equity	3,575	3	84	244	13	208	150	202	62	21	85	56	(34)	185	169	133	88	40	12
Taxable bond	4,261	368	122	391	216	45	76	19	299	169	226	309	60	106	53	45	28	45	102
Tax-free bond	848	95	11	33	31	21	33	(54)	52	(8)	14	71	12	14	17	8	(6)	(3)	12
Multi-asset	2,714	18	(10)	60	29	57	91	94	49	29	62	39	15	97	76	81	81	50	22
Liquidity	3,414	472	240	115	145	48	40	31	(8)	(58)	(345)	(236)	642	503	164	50	(51)	(90)	0

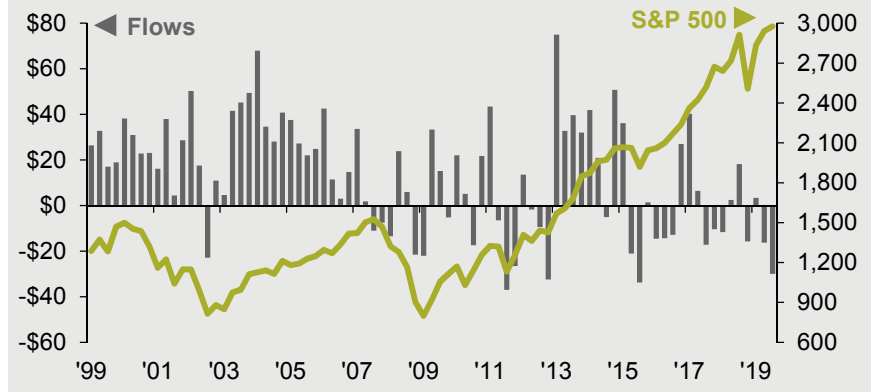
Cumulative flows into long-term asset products

Mutual fund and ETF flows, quarterly, USD billions



Flows into U.S. equity funds & S&P 500 performance

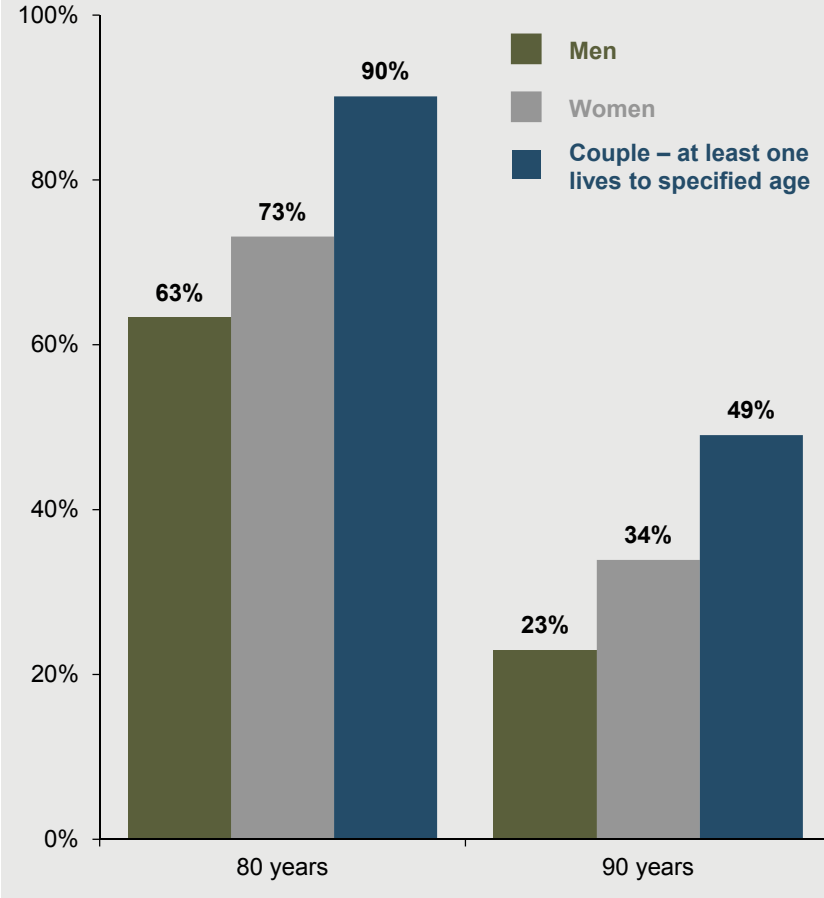
Mutual fund and ETF flows, price index, quarterly, USD billions



Source: Strategic Insight Simfund, J.P. Morgan Asset Management. All data include flows through November 2019 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 December 31, 2019.

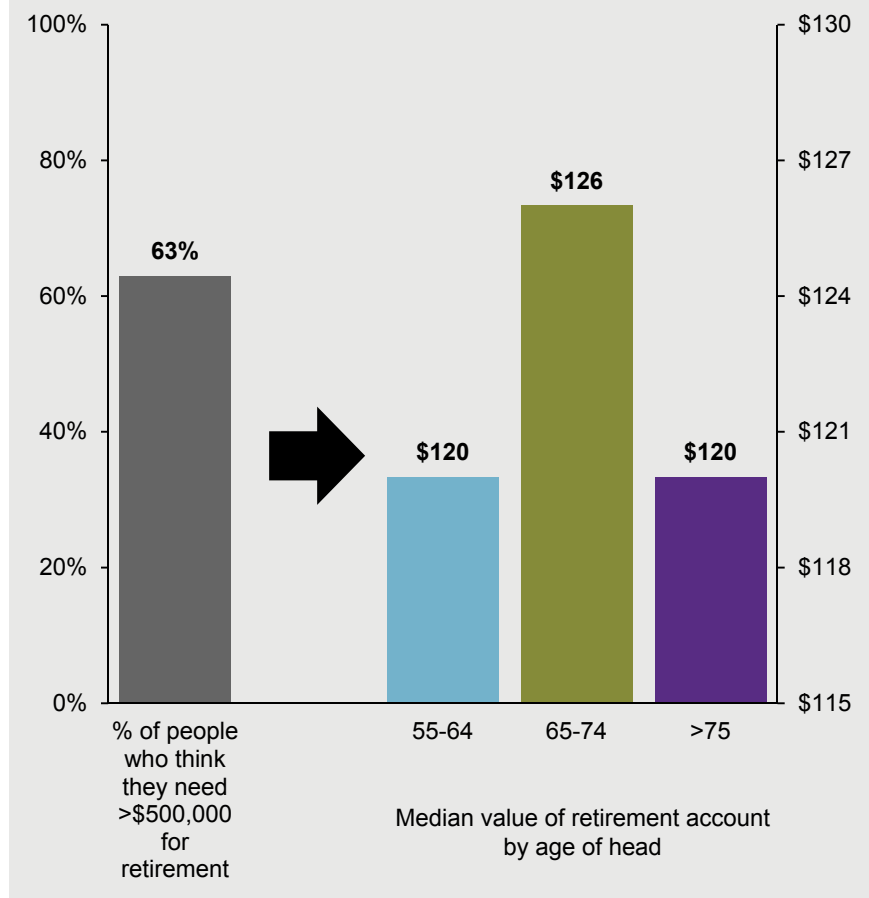
Probability of reaching ages 80 and 90

Persons aged 65, by gender, and combined couple



Retirement savings gap

Anticipated amount needed vs. actual savings, thousands



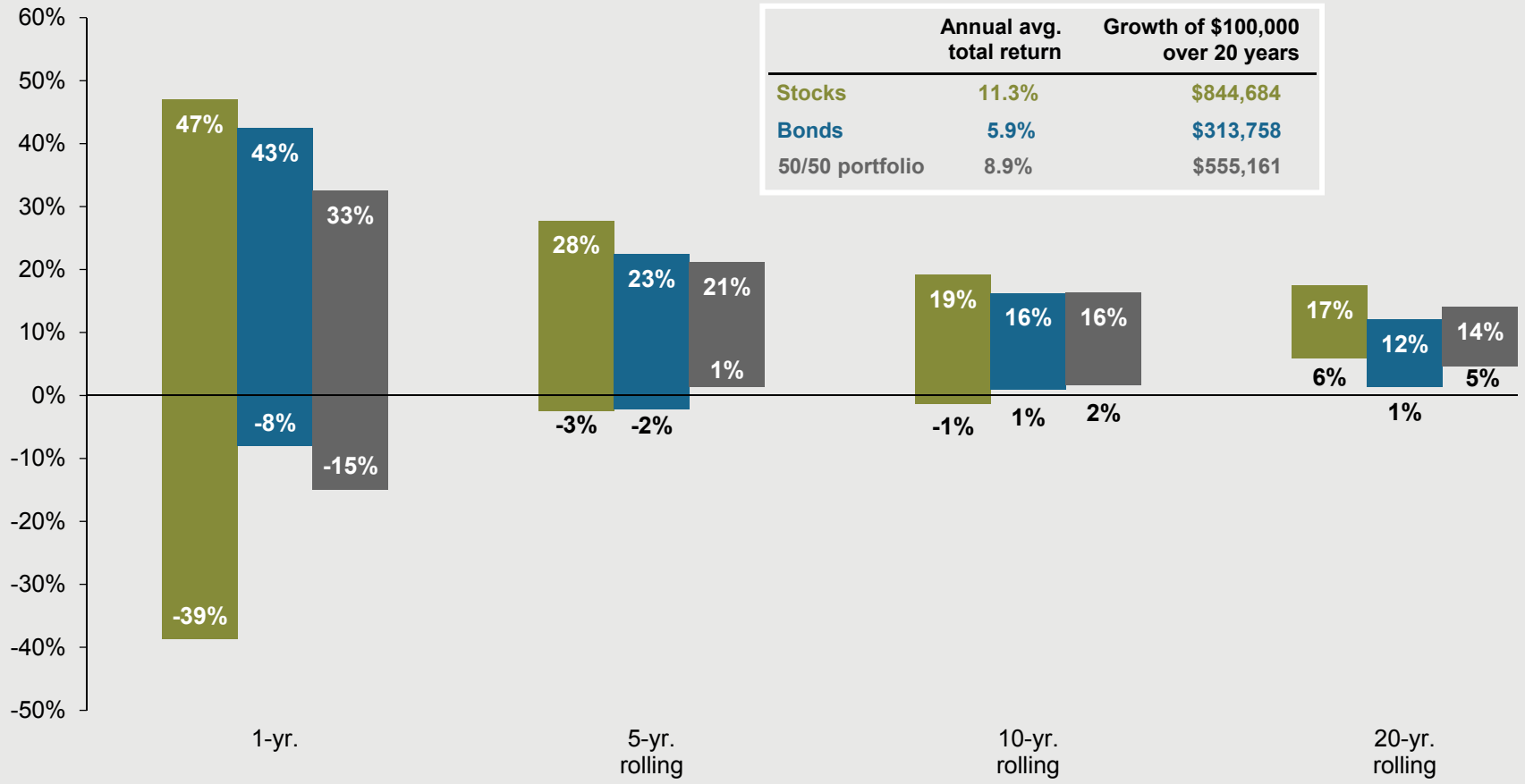
Source: J.P. Morgan Asset Management; (Left) SSA 2016 Life Tables; (Right) 2019 Retirement Confidence Survey, Employee Benefit Research Institute and Greenwald & Associates; 2016 Survey of Consumer Finances, Federal Reserve.

EBRI survey was conducted from January 8, 2019 to January 23, 2019 through online interviews with 2,000 individuals (1,000 workers and 1,000 retirees) ages 25 and older in the United States.

Guide to the Markets – U.S. Data are as of December 31, 2019.

Range of stock, bond and blended total returns

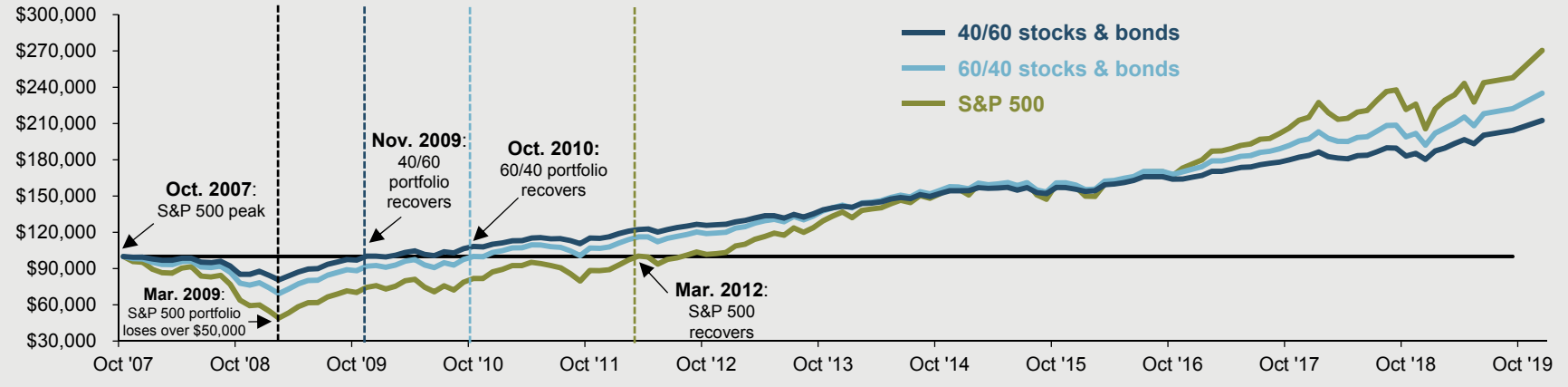
Annual total returns, 1950-2019



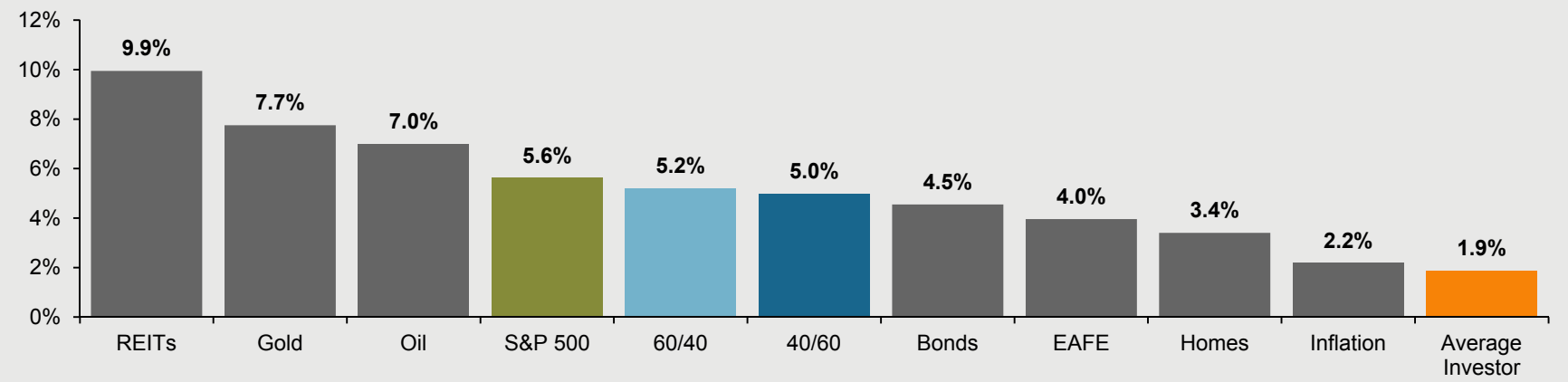
Source: Barclays, Bloomberg, FactSet, Federal Reserve, Robert Shiller, Strategas/lbbotson, J.P. Morgan Asset Management. Returns shown are based on calendar year returns from 1950 to 2019. Stocks represent the S&P 500 Shiller Composite and Bonds represent Strategas/lbbotson for periods from 1950 to 2010 and Bloomberg Barclays Aggregate thereafter. Growth of \$100,000 is based on annual average total returns from 1950 to 2019.

Guide to the Markets – U.S. Data are as of December 31, 2019.

Portfolio returns: Equities vs. equity and fixed income blend



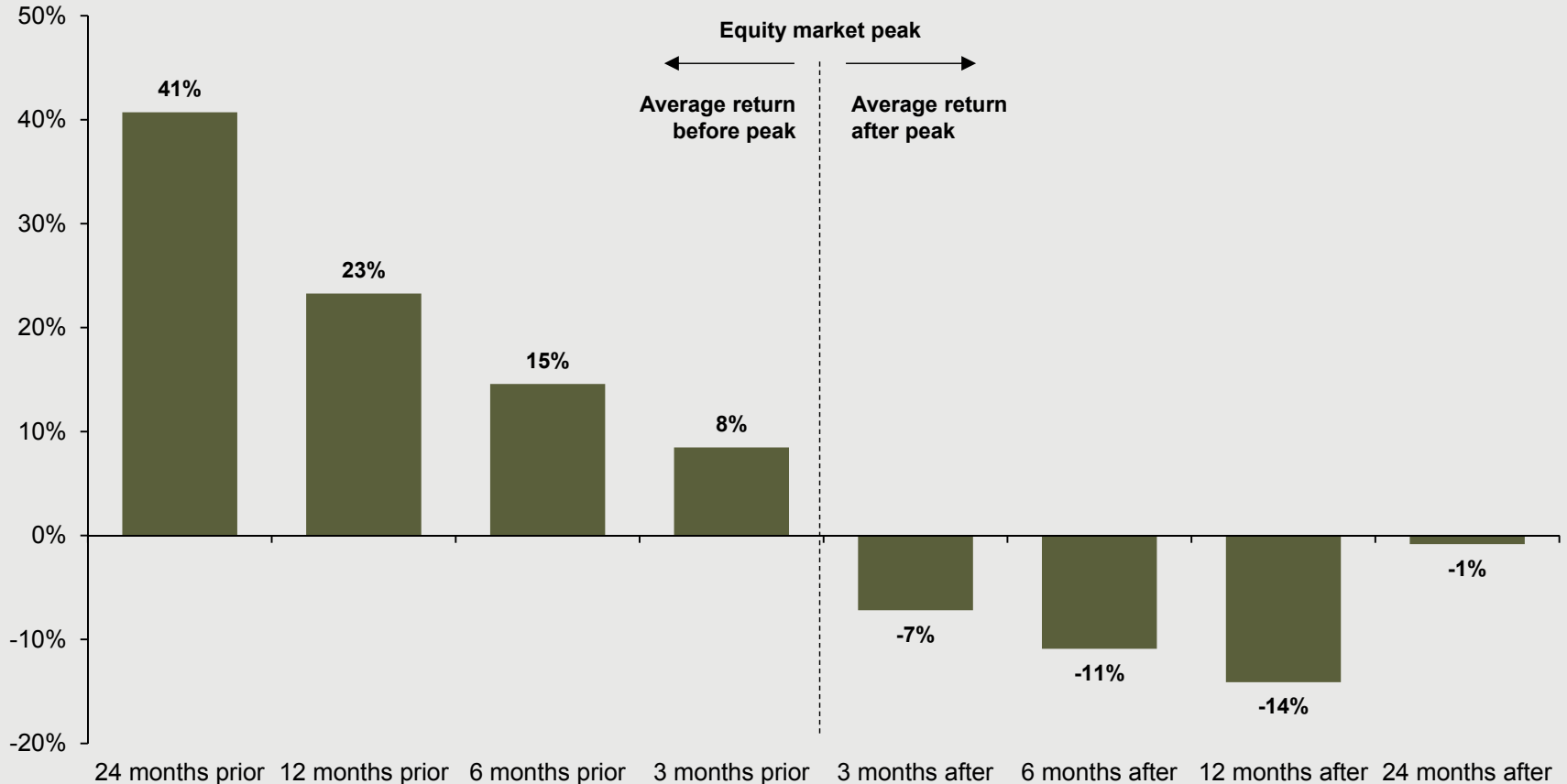
20-year annualized returns by asset class (1999 – 2018)



Source: J.P. Morgan Asset Management; (Top) Barclays, Bloomberg, FactSet, Standard & Poor's; (Bottom) Dalbar Inc. Indices used are as follows: REITs: NAREIT Equity REIT Index, EAFE: MSCI EAFE, Oil: WTI Index, Bonds: Bloomberg Barclays U.S. Aggregate Index, Homes: median sale price of existing single-family homes, Gold: USD/troy oz., Inflation: CPI. 60/40: A balanced portfolio with 60% invested in S&P 500 Index and 40% invested in high-quality U.S. fixed income, represented by the Bloomberg Barclays U.S. Aggregate Index. The portfolio is rebalanced annually. Average asset allocation investor return is based on an analysis by Dalbar Inc., which utilizes the net of aggregate mutual fund sales, redemptions and exchanges each month as a measure of investor behavior. Returns are annualized (and total return where applicable) and represent the 20-year period ending 12/31/18 to match Dalbar's most recent analysis. *Guide to the Markets – U.S.* Data are as of December 31, 2019.

Average return leading up to and following equity market peaks

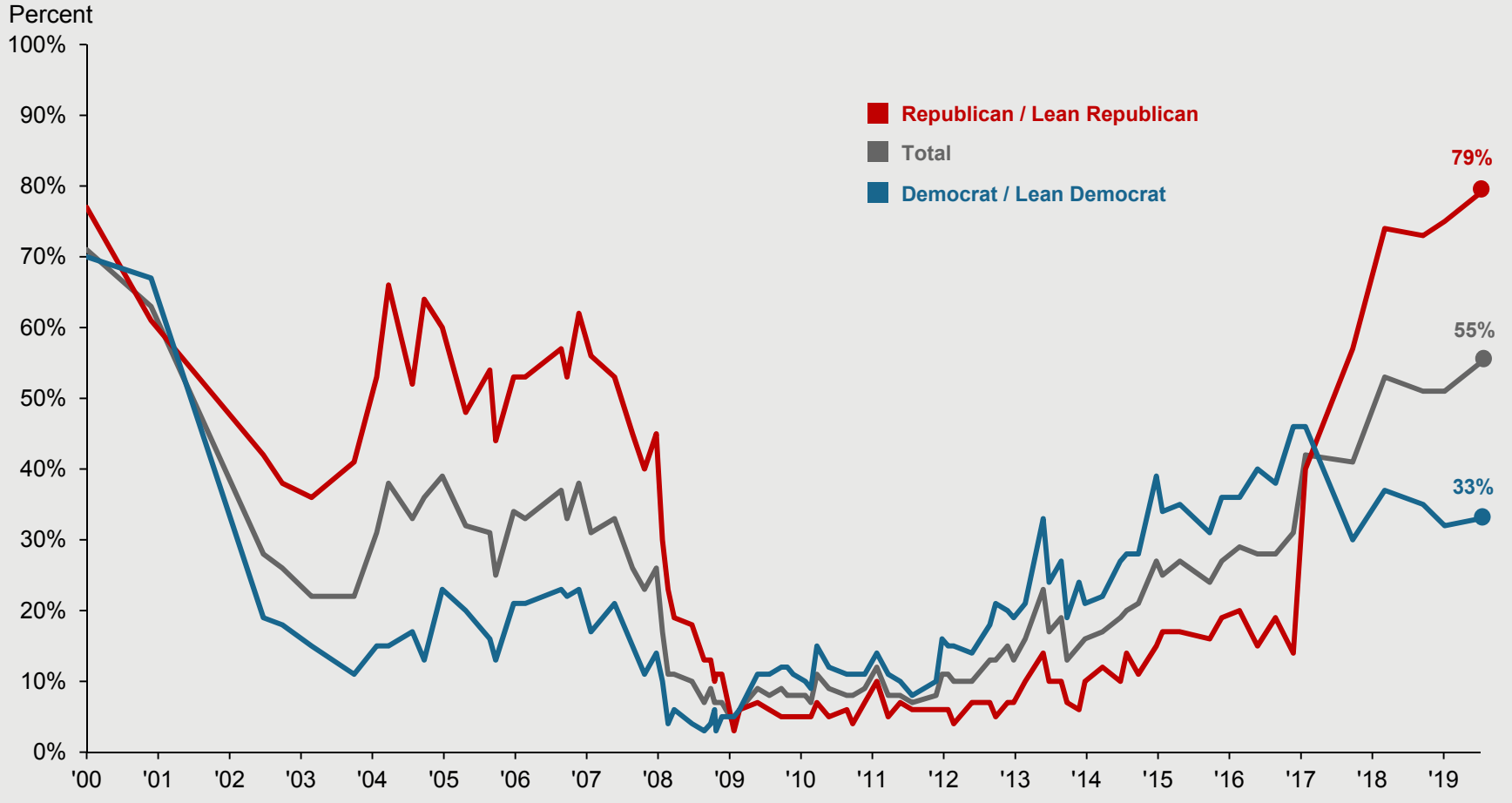
S&P 500 total return index, 1945 - 2019



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. *Guide to the Markets - U.S.* Data are as of December 31, 2019.

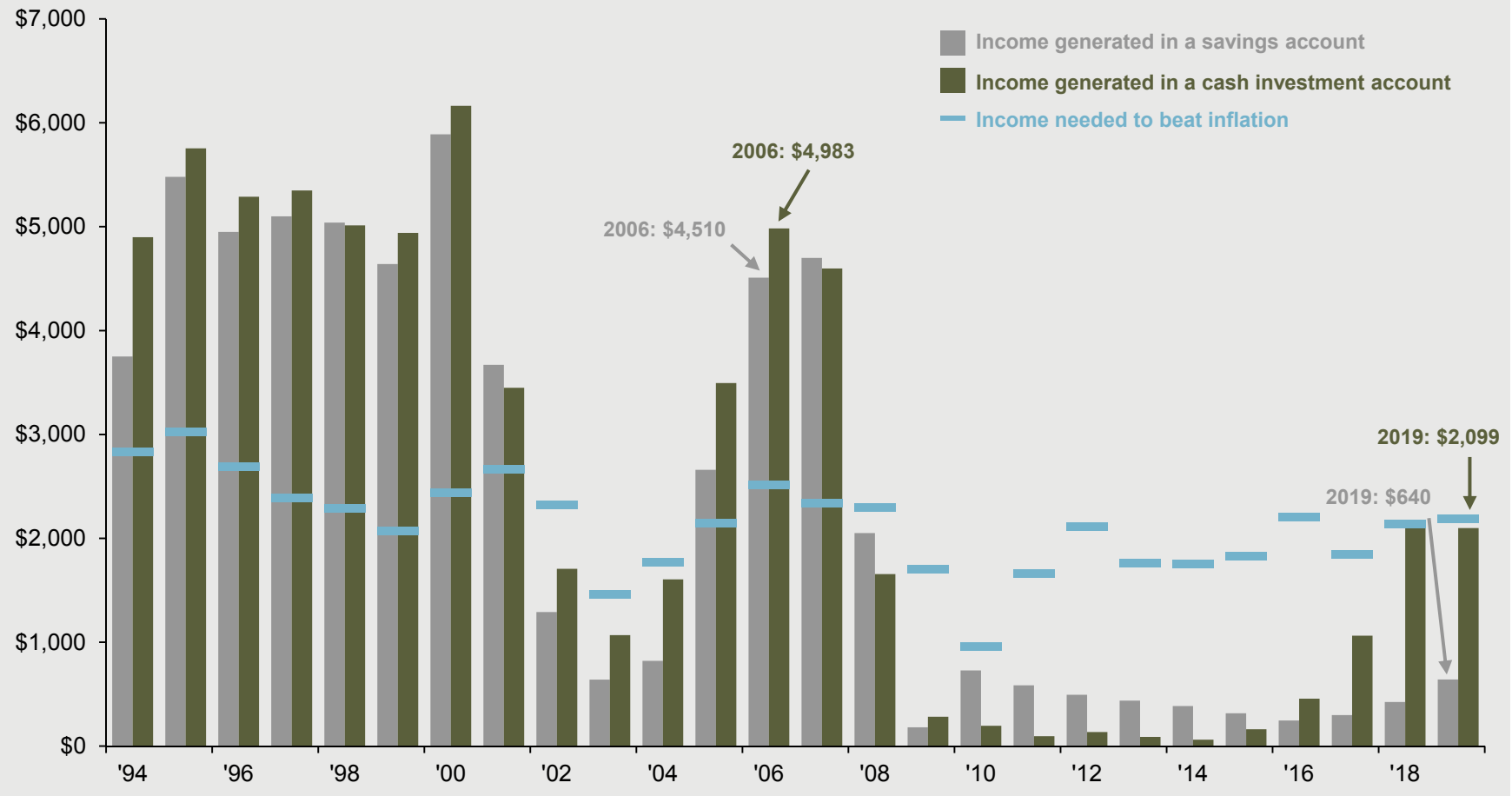
Investing principles

Percentage of Republicans and Democrats who rate national economic conditions as excellent or good



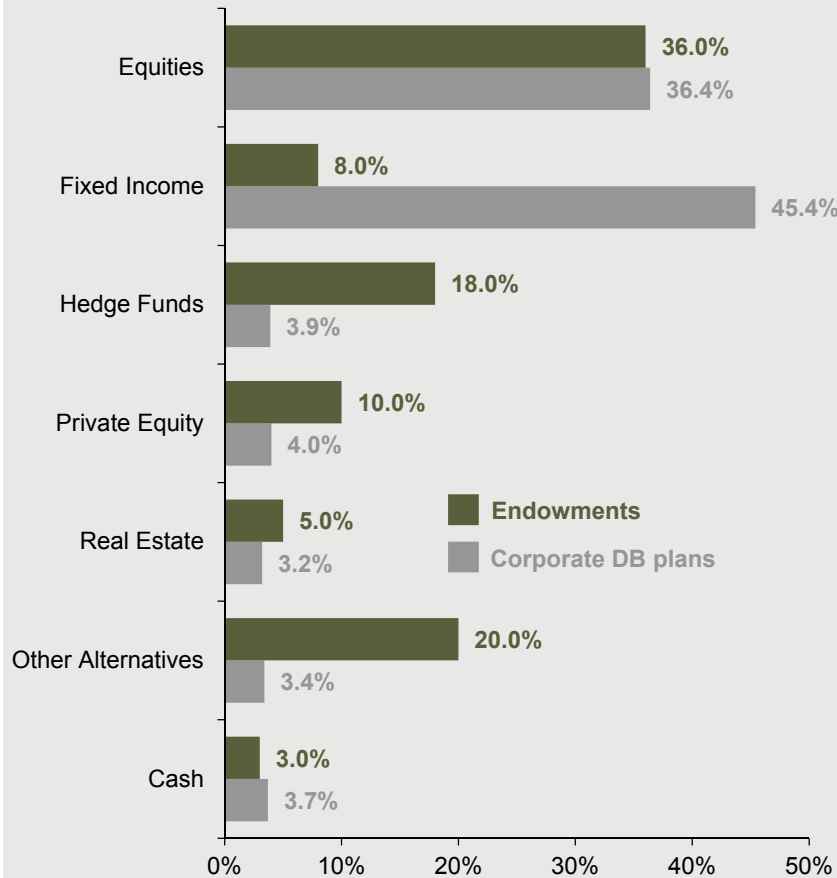
Source: Pew Research Center, J.P. Morgan Asset Management. Pew Research Center, July 2019, "Public's Views of Nation's Economy Remain Positive and Deeply Partisan." Question: Thinking about the nation's economy, How would you rate economic conditions in this country today... as excellent, good, only fair, or poor?
 Guide to the Markets - U.S. Data are as of December 31, 2019.

Income earned on \$100,000 in a savings account vs. a cash investment account*

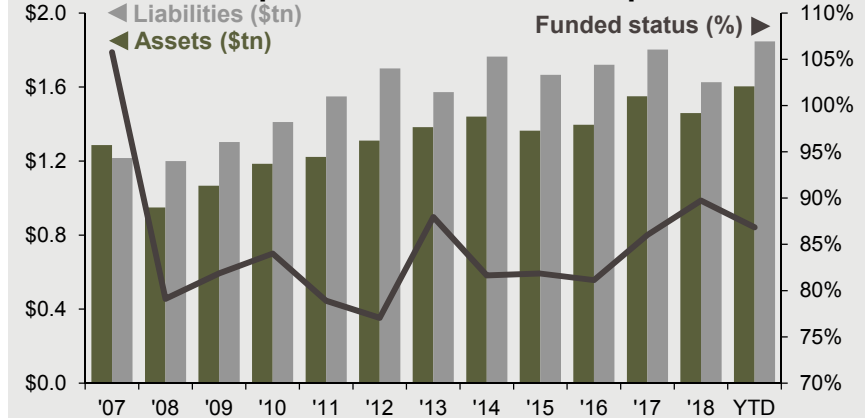


Source: Bankrate.com, FactSet, Federal Reserve System, J.P. Morgan Asset Management,
 *Savings account is based on the national average annual percentage rate (APR) on money-market accounts from Bankrate.com from 2010 onward. Prior to 2010, money market yield is based on taxable money market funds return data from the Federal Reserve. Investment account return is based on the average yield-to-worst on a 6-month U.S. Treasury over the calendar year. Annual income is for illustrative purposes and is calculated based on the 6-month Treasury yield and money market 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 December 31, 2019.

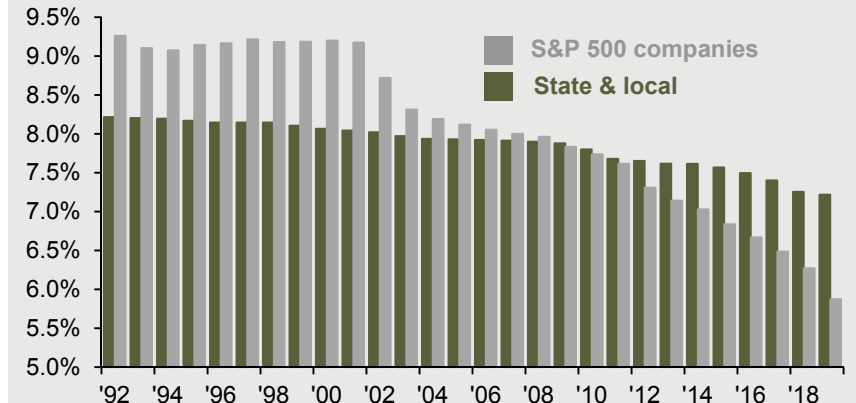
Asset allocation: Corporate DB plans vs. endowments



Defined benefit plans: Milliman 100 companies



Pension return assumptions



Source: J.P. Morgan Asset Management; (Left) NACUBO (National Association of College and University Business Officers), Towers Watson; (Top right) Milliman Pension Funding Index; (Bottom right) Census for Governments, Compustat, FactSet, S&P 500 corporate 10-Ks. Endowment asset allocation as of 2018. Corporate DB plan asset allocation as of 2017. Endowments represents dollar-weighted average data of 800 colleges and universities. Corporate DB plans represents aggregate asset allocation of Fortune 1000 pension plans. Pension return assumptions based on all available and reported data from S&P 500 Index companies. State and local pension return assumptions are weighted by plan size. Pension assets, liabilities and funded status based on Milliman 100 companies reporting pension data as of November 30, 2019. All information is shown for illustrative purposes only.

Guide to the Markets – U.S. Data are as of December 31, 2019.

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 bonds (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) 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 and 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 December 31, 2019 or most recently available.

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