MARKET INSIGHTS

Guide to the Markets®

U.S. | 1Q 2022
As of December 31, 2021

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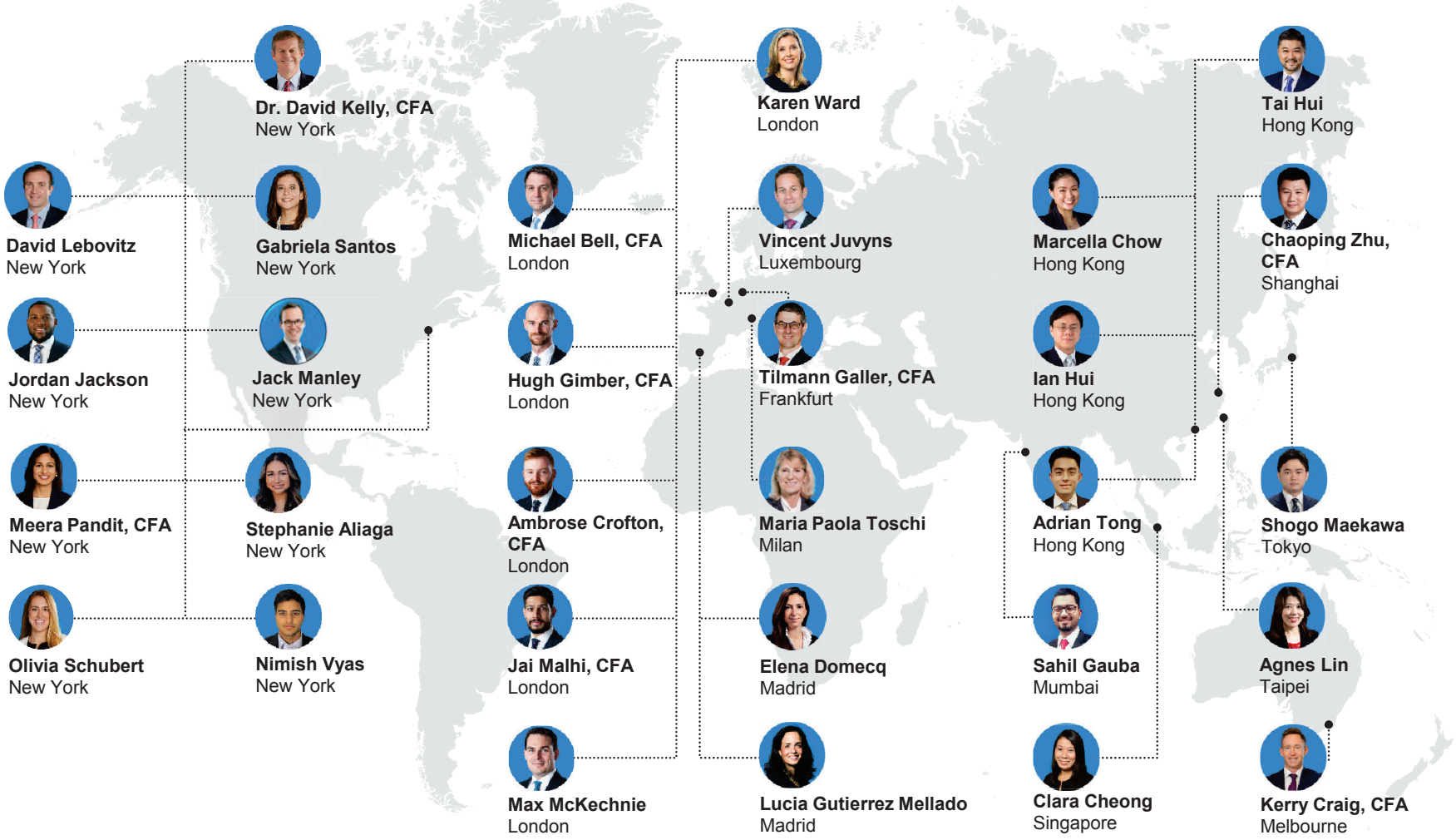
Global Market Insights Strategy Team



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S&P 500 Index at inflection points

S&P 500 Price Index

Characteristic	3/24/2000	10/9/2007	2/19/2020	12/31/2021
Index Level	1,527	1,565	3,386	4,766
P/E Ratio (fwd.)	25.2x	15.1x	19.2x	21.2x
Dividend Yield	1.4%	1.9%	1.9%	1.4%
10-yr. Treasury	6.2%	4.7%	1.6%	1.5%

Source: Compustat, FactSet, Federal Reserve, Refinitiv Datastream, 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 J.P. Morgan Asset Management estimates. Returns are cumulative and based on S&P 500 Index price movement only, and do not include the reinvestment of dividends. Past performance is not indicative of future returns.
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S&P 500 valuation measures

S&P 500 Index: Forward P/E ratio

Valuation measure	Description	Latest	25-year avg.*	Std. dev. Over-/under-Valued
P/E	Forward P/E	21.18x	16.83x	1.30
CAPE	Shiller's P/E	40.9	27.86	2.05
Div. Yield	Dividend yield	1.35%	2.00%	1.97
P/B	Price to book	4.41	3.08	1.66
P/CF	Price to cash flow	16.17	11.11	2.30
EY Spread	EY minus Baa yield	1.35%	0.16%	-0.60

Source: FactSet, FRB, Robert Shiller, Refinitiv Datastream, 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 December 1996, and J.P. Morgan Asset Management for December 31, 2021. Current next 12-months consensus earnings estimates are $228. 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-months 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 availability.
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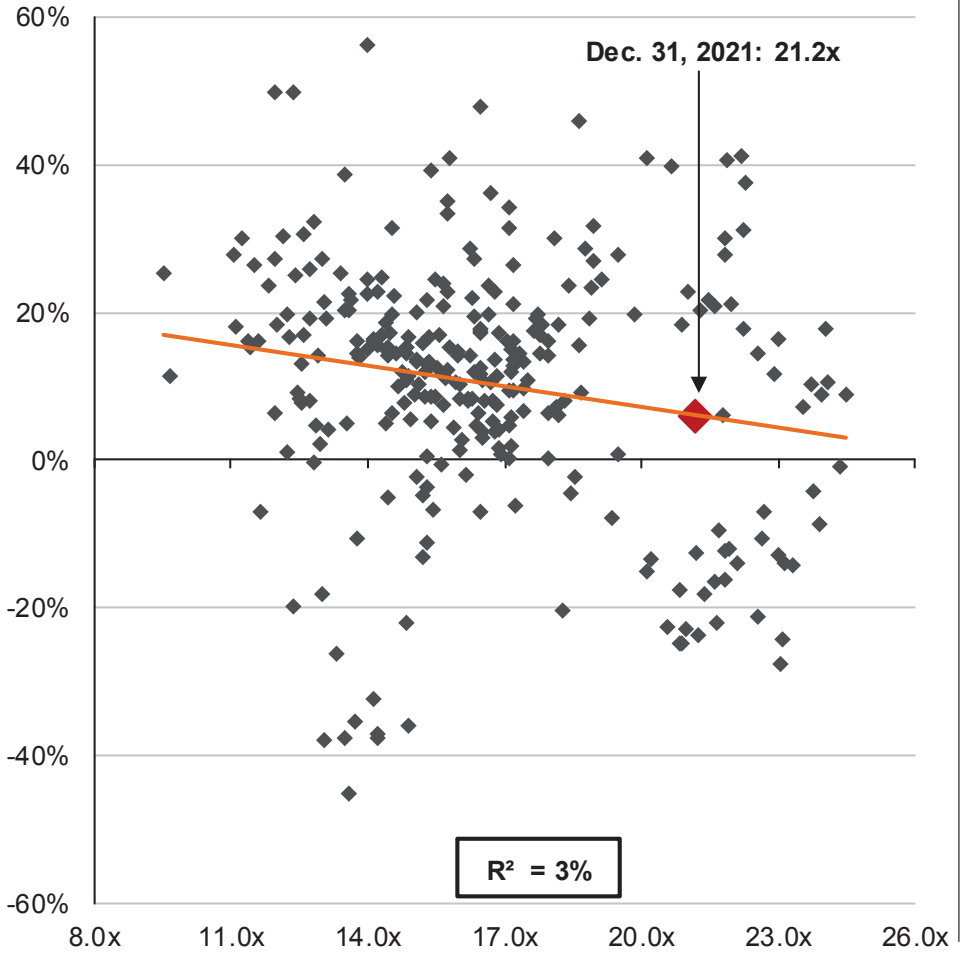
P/E ratios and equity returns

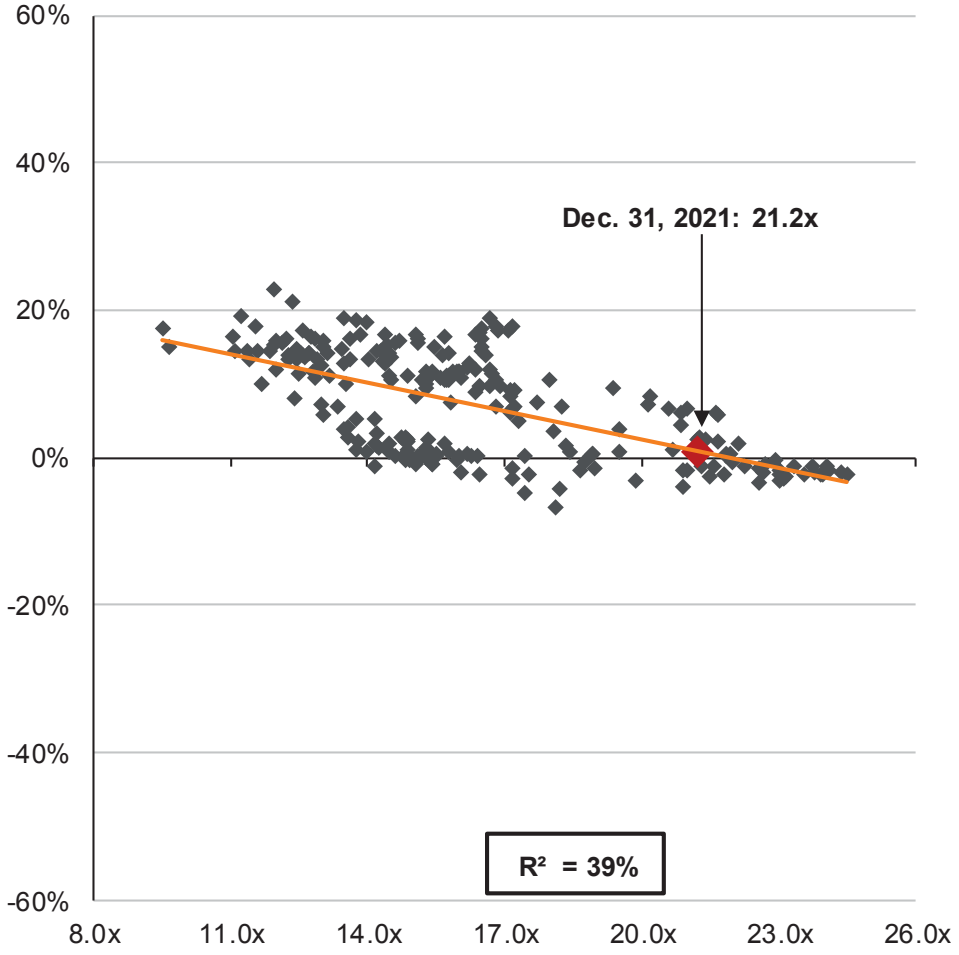
Forward P/E and subsequent 1-yr. returns

S&P 500 Total Return Index



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

S&P 500 Total Return Index



Source: FactSet, Refinitiv Datastream, Standard & Poor's, Thomson Reuters, J.P. Morgan Asset Management.
Returns are 12-month and 60-month annualized total returns, measured monthly, beginning 11/30/96. R^2 represents the percent of total variation in total returns that can be explained by forward price-to-earnings ratios. Price-to-earnings is price divided by consensus analyst estimates of earnings per share for the next 12 months as provided by IBES since December 1996, and J.P. Morgan Asset Management for December 31, 2021.
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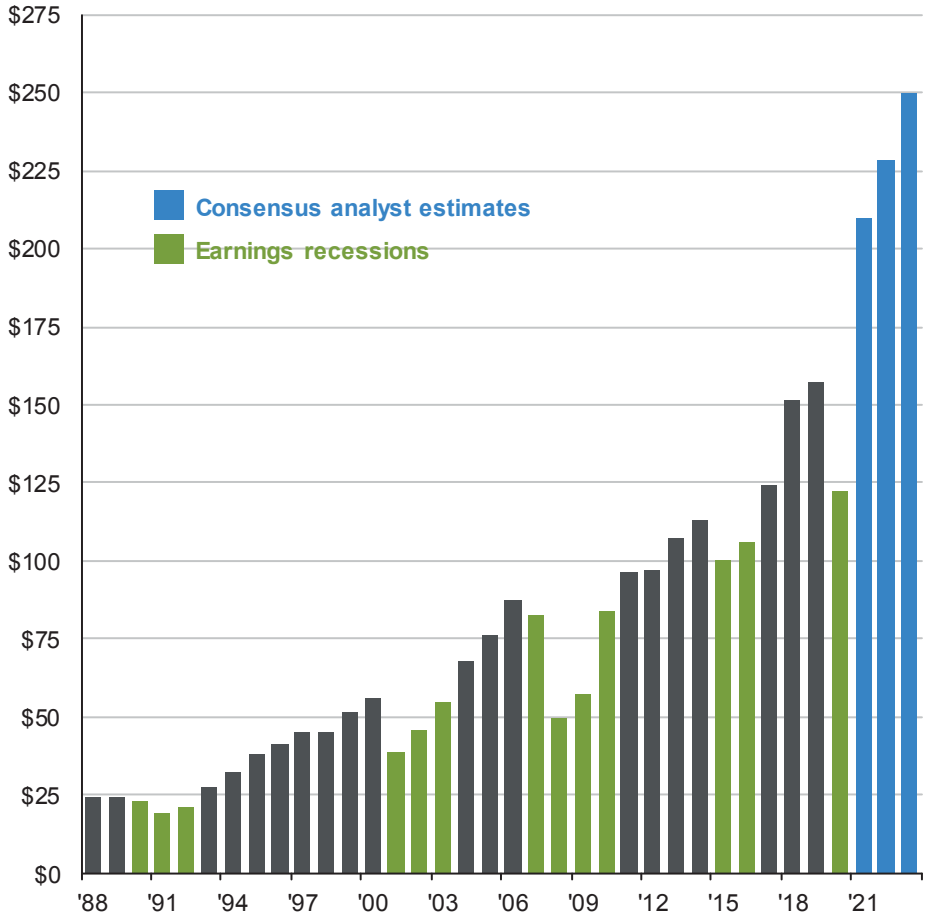
Corporate profits and sources of total return

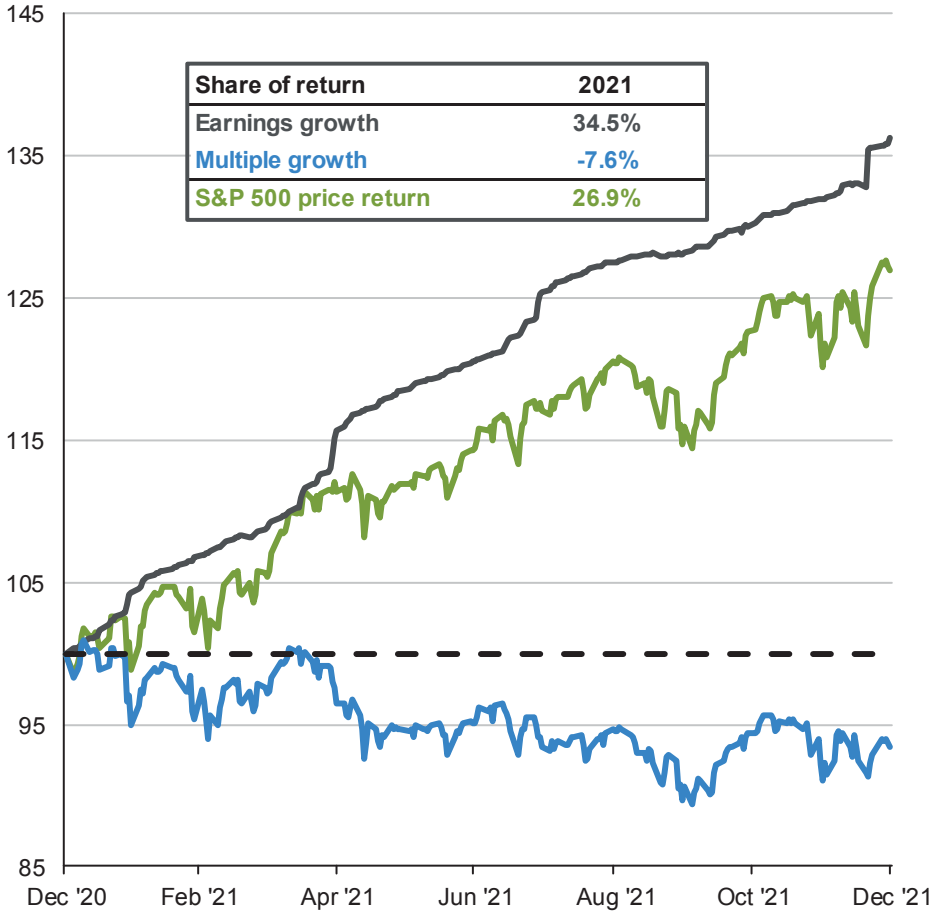
S&P 500 earnings per share

Index annual operating earnings



Percent change in S&P 500, earnings and valuations

Year-to-date, indexed to 100



Source: FactSet, Compustat, Standard & Poor's, J.P. Morgan Asset Management.
Historical EPS levels are based on annual operating earnings per share. Earnings estimates are based on estimates from Standard & Poor's and FactSet Market Aggregates. Past performance is not indicative of future returns.
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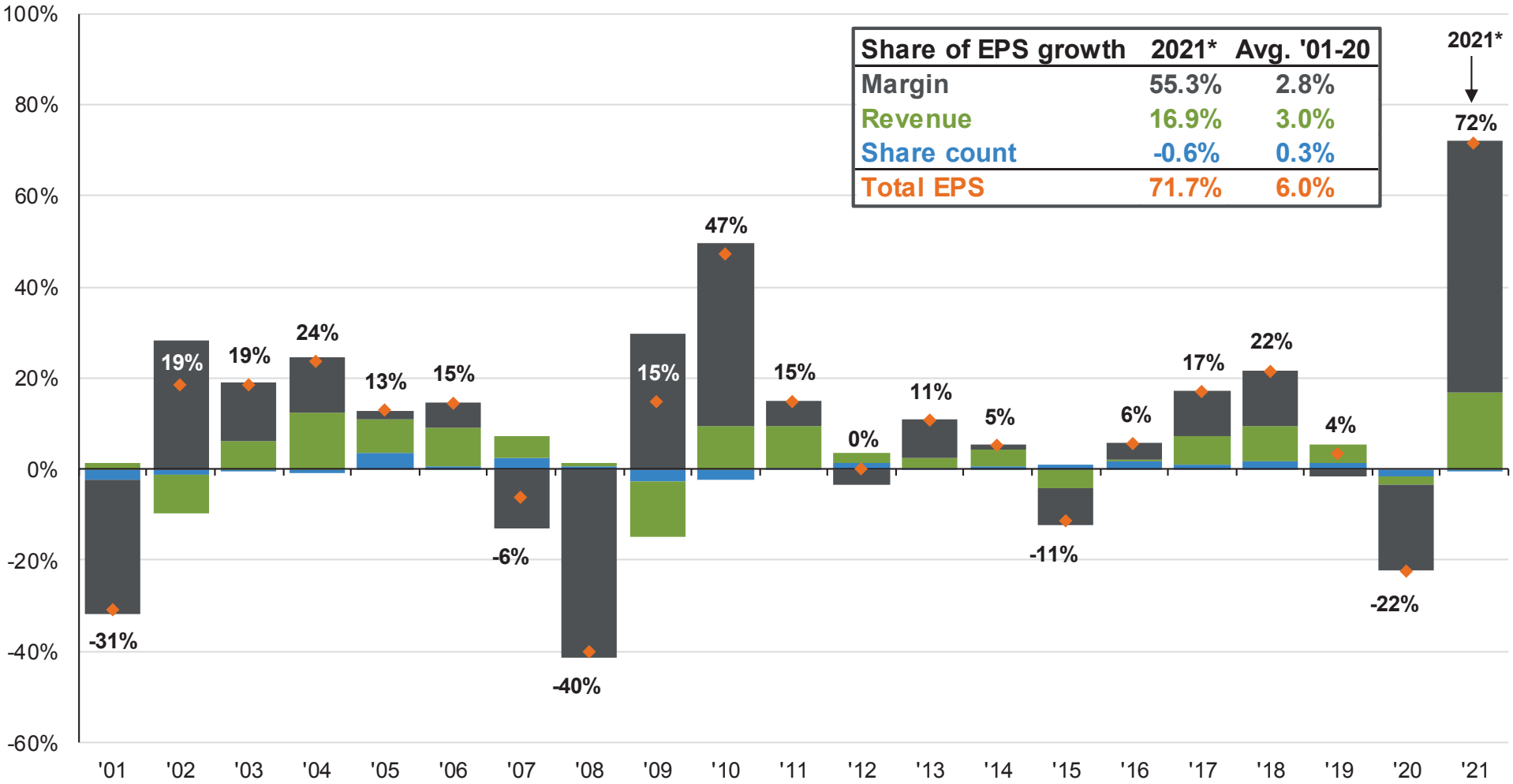
Sources of earnings per share growth

S&P 500 year-over-year operating EPS growth
Annual growth broken into revenue, changes in profit margin & changes in share count



Share of EPS growth	2021*	Avg. '01-20
Margin	55.3%	2.8%
Revenue	16.9%	3.0%
Share count	-0.6%	0.3%
Total EPS	71.7%	6.0%

Source: FactSet, Compustat, Standard & Poor's, J.P. Morgan Asset Management.
EPS levels are based on annual operating earnings per share. Percentages may not sum due to rounding. Past performance is not indicative of future returns. *2021 earnings estimates are based on forecasts from FactSet Market Aggregates.
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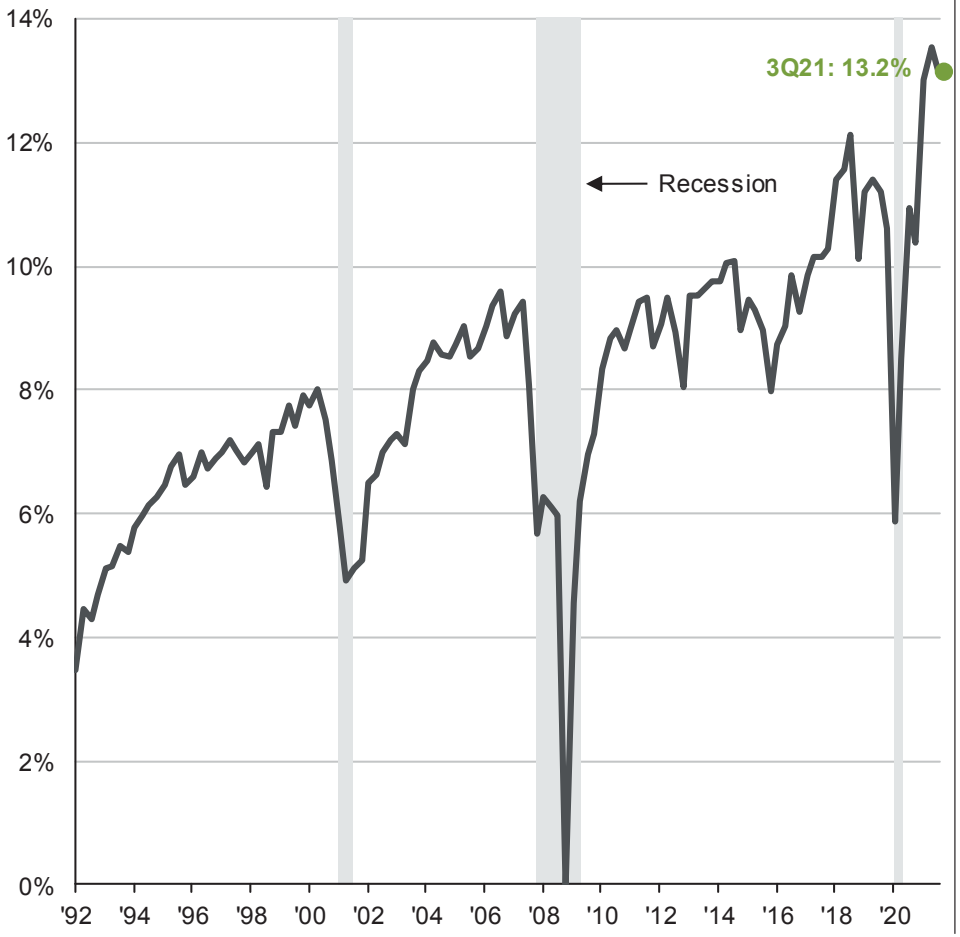
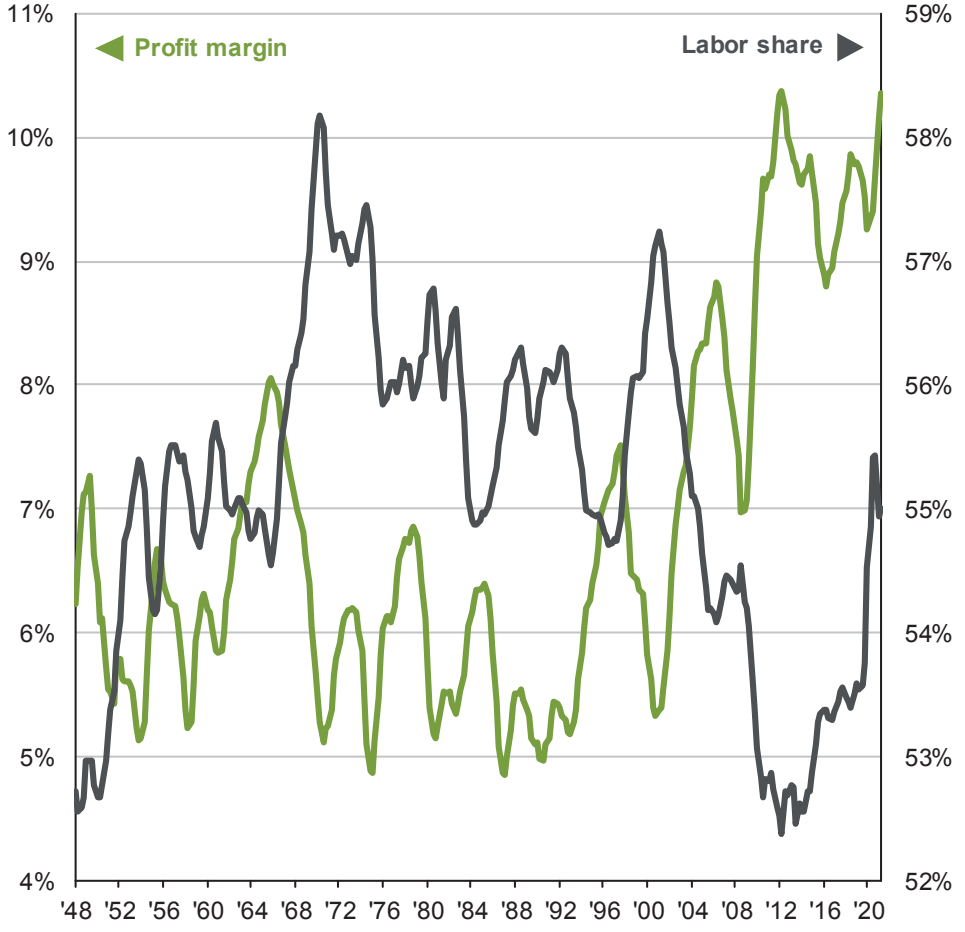
Profit margins and wages

S&P 500 profit margins
Quarterly operating earnings/sales



Labor share of income and profit margins*
Compensation and adjusted after-tax corporate profits, SAAR



Source: BEA, Compustat, FactSet, Standard & Poor's, J.P. Morgan Asset Management. Past performance is not indicative of future returns. *Labor share of income and profit margins are shown on a 4-quarter moving average basis.
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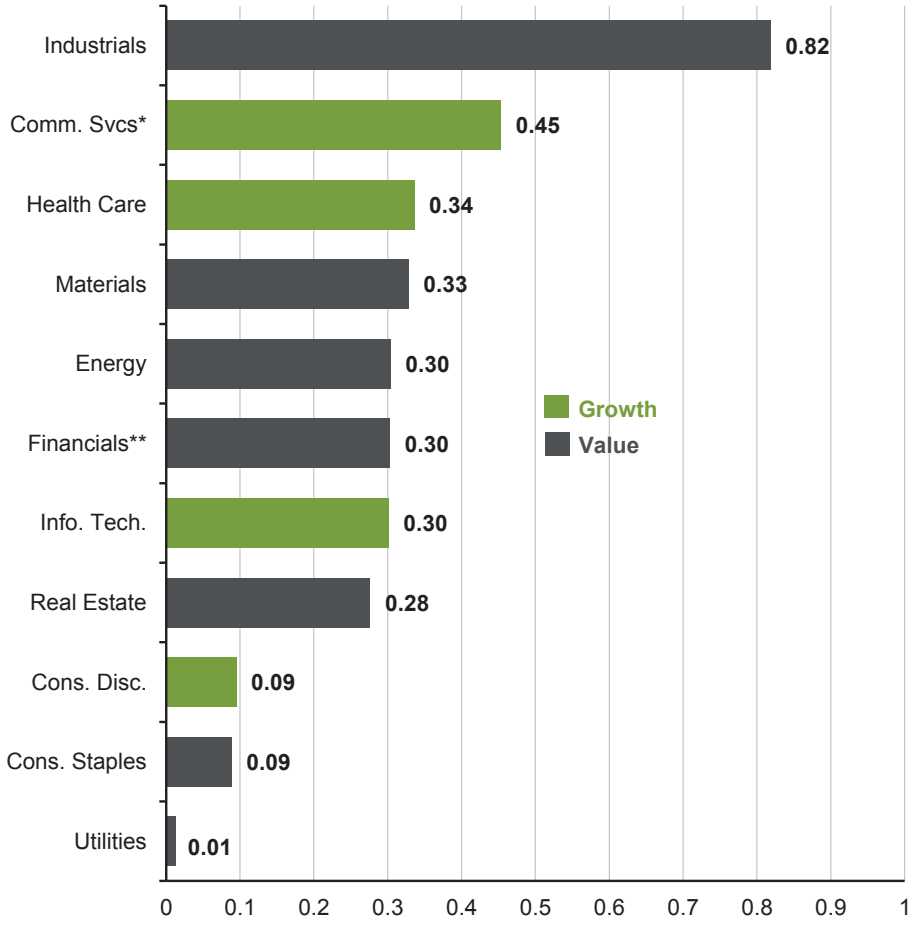
Value vs. Growth

Value vs. Growth relative valuations
Rel. fwd. P/E ratio of Value vs. Growth, 1997 - present

	Forward PE		Div. yield**	
Style	Current	Long-term avg.*	Current	Long-term avg.*
Value	15.77x	14.09x	2.00%	2.60%
Growth	30.61x	20.63x	0.71%	1.33%

S&P 500 sector earnings correlation to real GDP
1Q 2009 – 3Q 2021



Source: FactSet, FTSE Russell, NBER, J.P. Morgan Asset Management.
(Left) Growth is represented by the Russell 1000 Growth Index and Value is represented by the Russell 1000 Value Index. *Long-term averages are calculated monthly since December 1997. **Dividend yield is calculated as the next 12-month consensus dividend divided by most recent price. (Right) *Communication services correlation is since 3Q13 and based on backtested data by JPMAM. **Financials correlation is since 4Q19.
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S&P 500: Index concentration, valuations and earnings

P/E ratio of the top 10 and remaining stocks in the S&P 500
Next 12 months

	Current	Average	% of avg.
Top 10	33.2x	19.8x	168%
Remaining stocks	19.7x	15.7x	126%
S&P 500	21.2x	16.4x	129%

Weight of the top 10 stocks in the S&P 500
% of market capitalization of the S&P 500

Earnings contribution of the top 10 in the S&P 500
Based on last 12 months' earnings

Source: FactSet, Standard & Poor's, J.P. Morgan Asset Management.
The top 10 S&P 500 companies are based on the 10 largest index constituents at the beginning of each month. The weight of each of these companies is revised monthly. As of 12/1/2021, the top 10 companies in the index were AAPL(6.8%), MSFT (6.5%), AMZN (3.9%), TSLA (2.3%), GOOGL (2.2%), GOOG (2.1%), NVDA(2.1%), FB (1.9%), BRK.B (1.3%), JPM (1.2%), and JNJ (1.2%). The remaining stocks represent the rest of the 494 companies in the S&P 500.
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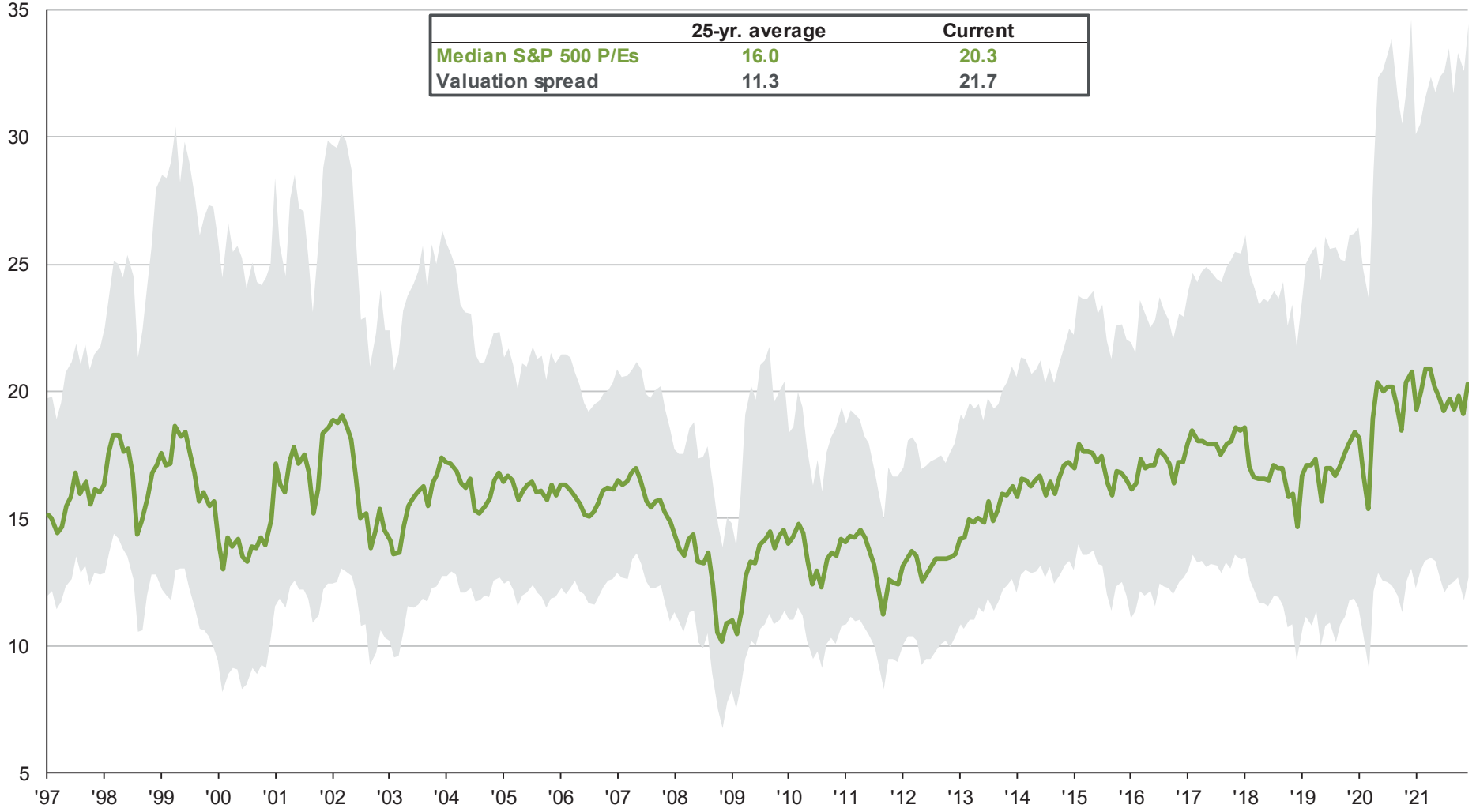
S&P 500: Valuation dispersion

Valuation dispersion between the 20th and 80th percentile of S&P 500 stocks



Source: Compustat, FactSet, Standard & Poor's, J.P. Morgan Asset Management.
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Returns and valuations by style

10-year annualized

	Value	Blend	Growth
Large	13.0%	16.6%	19.8%
Mid	13.4%	14.9%	16.6%
Small	12.0%	13.2%	14.1%

2021

	Value	Blend	Growth
Large	25.2%	28.7%	27.6%
Mid	28.3%	22.6%	12.7%
Small	28.3%	14.8%	2.8%

Since market peak (February 2020)

	Value	Blend	Growth
Large	27.1%	45.0%	61.7%
Mid	32.4%	38.3%	42.9%
Small	37.1%	35.6%	31.7%

Since market low (March 2020)

	Value	Blend	Growth
Large	105.5%	119.0%	136.0%
Mid	134.1%	131.5%	122.2%
Small	141.1%	128.5%	114.1%

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

	Value	Blend	Growth
Large	15.8 / 13.7	21.2 / 15.5	30.6 / 18.5
Mid	15.7 / 14.5	19.4 / 16.4	33.7 / 20.4
Small	15.9 / 17.0	23.4 / 21.4	43.3 / 35.5

	Value	Blend	Growth
Large	115.0%	135.3%	165.1%
Mid	108.2%	118.2%	165.1%
Small	93.5%	109.1%	121.9%

Source: FactSet, Refinitiv Datastream, 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 from 2/19/20 to December 31, 2021. Since Market Low represents period from 3/23/20 to December 31, 2021. 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 and J.P. Morgan Asset Management.
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Returns and valuations by sector

	Energy	Materials	Financials	Industrials	Cons. Disc.	Tech.	Comm. Services*	Real Estate	Health Care	Cons. Staples	Utilities	S&P 500 Index	
S&P weight	**2.7%**	**2.6%**	**10.7%**	**7.8%**	**12.5%**	**29.2%**	**10.2%**	**2.8%**	**13.3%**	**5.9%**	**2.5%**	**100.0%**	Weight
Russell Growth weight	0.3%	1.0%	2.4%	5.8%	18.4%	46.1%	11.6%	1.8%	8.7%	4.0%	0.0%	100.0%	
Russell Value weight	5.1%	3.8%	20.7%	11.5%	5.7%	10.2%	7.3%	5.1%	18.0%	7.4%	5.1%	100.0%	
Russell 2000 weight	4.4%	3.8%	16.0%	15.2%	11.3%	14.5%	3.1%	7.4%	18.1%	3.4%	2.7%	100.0%	
4Q21	8.0	15.2	4.6	8.6	12.8	16.7	0.0	16.8	11.2	13.3	12.9	11.0	Return %)
2021	54.6	27.3	35.0	21.1	24.4	34.5	21.6	42.5	26.1	18.6	17.7	28.7	
Since market peak (February 2020)	12.6	56.0	31.3	30.3	55.9	72.7	41.1	27.0	40.1	28.1	8.9	45.0	
Since market low (March 2020)	155.5	144.1	130.0	123.4	128.3	150.9	97.6	104.7	94.4	68.6	69.2	119.0	
Beta to S&P 500	1.5	1.1	1.2	1.1	1.1	1.1	0.9*	0.7	0.8	0.7	0.4	1.0	β
Correl. To Treas. Yields	0.6	0.4	0.6	0.5	0.3	0.1	0.3*	0.3	0.1	0.2	0.2	0.4	ρ
Foreign % of sales	51.3	56.8	30.1	43.8	34.0	58.2	44.7	-	38.5	32.7	-	42.9	%
NTM earnings growth	26.8%	4.0%	-9.0%	35.8%	29.9%	9.9%	6.6%	6.9%	6.8%	6.2%	1.5%	8.5%	EPS
20-yr. avg.	**84.4%**	**18.7%**	**21.7%**	**13.4%**	**16.7%**	**14.4%**	**10.6%***	**6.4%**	**9.0%**	**8.1%**	**4.1%**	**11.6%**	
Forward P/E ratio	11.0x	17.0x	14.9x	20.7x	31.4x	28.2x	20.6x	24.5x	17.4x	21.9x	11.8x	21.2x	P/E
20-yr. avg.	**14.2x**	**14.8x**	**12.4x**	**16.2x**	**18.9x**	**18.5x**	**19.7x***	**16.2x**	**15.3x**	**17.1x**	**14.9x**	**15.5x**	
Buyback yield	0.4%	1.4%	2.7%	1.4%	0.7%	2.0%	2.4%	-1.2%	1.2%	1.3%	-1.1%	1.6%	Bbk
20-yr. avg.	**1.5%**	**0.7%**	**0.1%**	**2.1%**	**2.3%**	**2.8%**	**1.2%**	**-1.1%**	**1.9%**	**1.8%**	**-1.0%**	**1.6%**	
Dividend yield	4.1%	1.8%	1.9%	1.5%	0.6%	0.8%	0.8%	2.4%	1.5%	2.5%	3.0%	1.4%	Div
20-yr. avg.	**2.7%**	**2.5%**	**2.3%**	**2.2%**	**1.4%**	**1.1%**	**1.3%***	**4.1%**	**1.9%**	**2.8%**	**4.0%**	**2.1%**	

Source: FactSet, Refinitiv Datastream, 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 from 2/19/20 to December 31, 2021. Since market low represents period from March 23, 2020 to December 31, 2021. 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 data availability. Next 12 months (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 and J.P. Morgan Asset Management. 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-months 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

2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2007 - 2021 Ann.	2007 - 2021 Vol.
Momen. 17.8%	Min. Vol. -25.7%	Value 38.8%	Small Cap 26.9%	High Div. 14.3%	Cyclical 20.1%	Value 43.2%	Value 17.7%	Momen. 9.3%	Small Cap 21.3%	Momen. 37.8%	Min. Vol. 1.5%	Cyclical 36.3%	Momen. 29.6%	Value 29.2%	Momen. 11.8%	Small Cap 22.5%
Defens. 17.7%	Defens. -26.7%	Cyclical 36.9%	Multi-Factor 18.3%	Min. Vol. 12.9%	Value 16.8%	Small Cap 38.8%	Min. Vol. 16.5%	Min. Vol. 5.6%	High Div. 16.3%	Cyclical 27.3%	Momen. -1.6%	Quality 34.4%	Cyclical 27.8%	Cyclical 27.6%	Quality 11.5%	Value 20.7%
Quality 10.1%	High Div. -27.6%	Multi-Factor 29.8%	Momen. 18.2%	Defens. 10.1%	Small Cap 16.3%	Multi-Factor 37.4%	High Div. 14.9%	Quality 4.6%	Value 15.9%	Quality 22.5%	High Div. -2.3%	Momen. 28.1%	Small Cap 20.0%	Quality 27.2%	Cyclical 11.2%	Cyclical 19.9%
Multi-Factor 5.5%	Quality -31.2%	Small Cap 27.2%	Cyclical 17.9%	Quality 7.5%	Multi-Factor 15.7%	Cyclical 35.0%	Multi-Factor 14.8%	Cyclical 2.6%	Cyclical 14.0%	Value 22.2%	Defens. -2.9%	Min. Vol. 28.0%	Quality 17.1%	Multi-Factor 25.1%	Min. Vol. 10.5%	Momen. 17.7%
Min. Vol. 4.3%	Small Cap -33.8%	Quality 24.9%	High Div. 15.9%	Multi-Factor 7.3%	Momen. 15.1%	Momen. 34.8%	Momen. 14.7%	High Div. 0.7%	Multi-Factor 13.7%	Multi-Factor 21.5%	Cyclical -5.3%	Value 27.7%	Multi-Factor 11.4%	Defens. 25.0%	Multi-Factor 10.1%	Multi-Factor 17.7%
Value 1.1%	Value -36.9%	High Div. 18.4%	Min. Vol. 14.7%	Momen. 6.1%	Quality 12.8%	Quality 34.3%	Cyclical 13.6%	Multi-Factor 0.4%	Min. Vol. 10.7%	High Div. 19.5%	Quality -5.6%	Multi-Factor 26.6%	Min. Vol. 5.8%	High Div. 21.9%	High Div. 9.4%	Quality 15.7%
High Div. 0.0%	Multi-Factor -39.3%	Min. Vol. 18.4%	Quality 14.2%	Value -2.7%	Min. Vol. 11.2%	High Div. 28.9%	Defens. 13.0%	Defens. -0.9%	Quality 9.4%	Min. Vol. 19.2%	Multi-Factor -9.7%	Small Cap 25.5%	Defens. 5.2%	Min. Vol. 21.0%	Defens. 9.1%	High Div. 15.1%
Cyclical -0.8%	Momen. -40.9%	Momen. 17.6%	Value 12.7%	Cyclical -3.4%	Defens. 10.7%	Defens. 28.9%	Quality 10.7%	Small Cap -4.4%	Defens. 7.7%	Small Cap 14.6%	Small Cap -11.0%	High Div. 22.5%	High Div. 1.7%	Small Cap 14.8%	Value 9.1%	Defens. 13.9%
Small Cap -1.6%	Cyclical -44.8%	Defens. 16.5%	Defens. 12.0%	Small Cap -4.2%	High Div. 10.6%	Min. Vol. 25.3%	Small Cap 4.9%	Value -6.4%	Momen. 5.1%	Defens. 12.3%	Value -11.1%	Defens. 21.4%	Value -0.2%	Momen. 12.9%	Small Cap 8.7%	Min. Vol. 13.2%

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, 2021.

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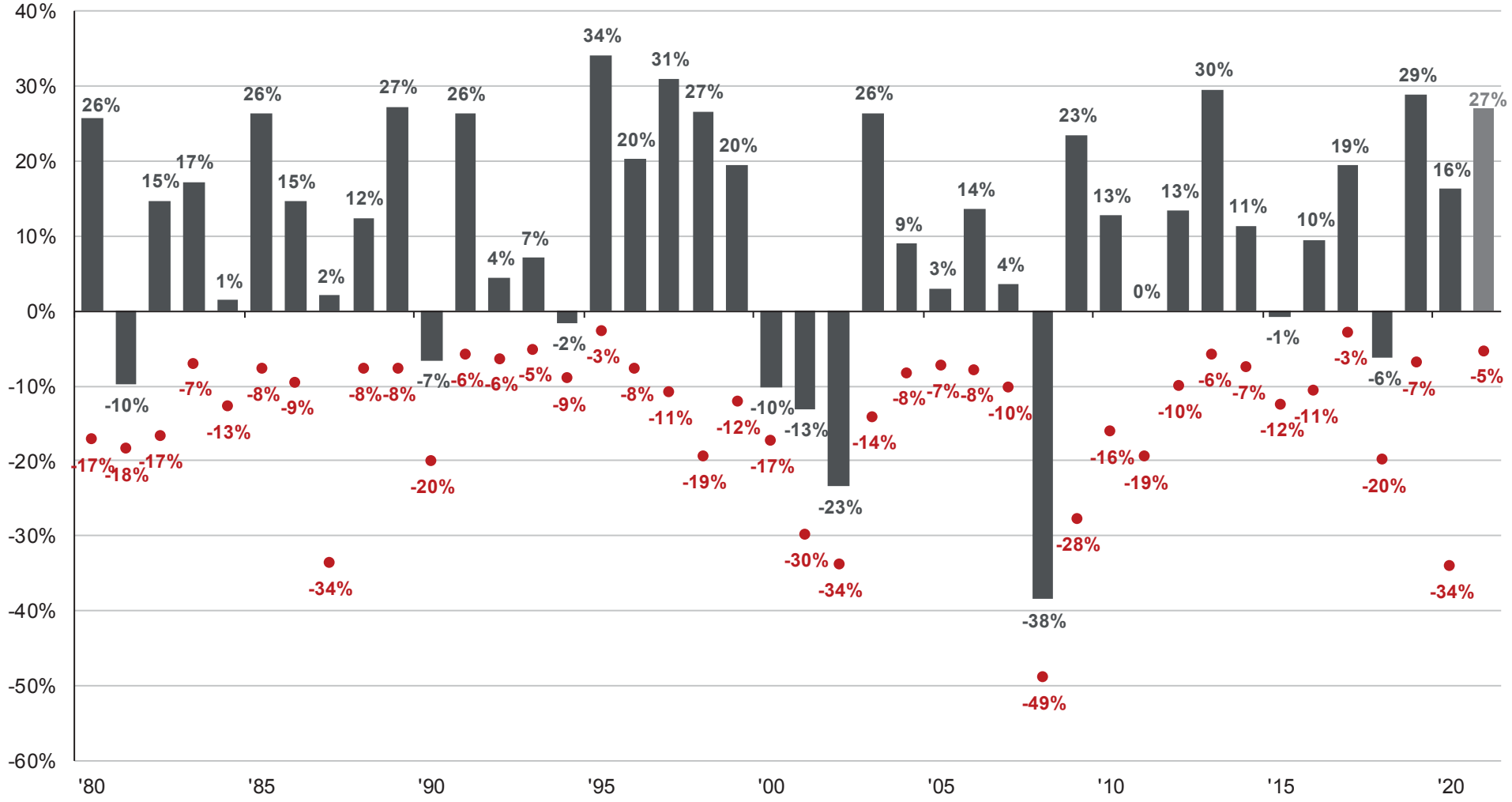
Annual returns and intra-year declines

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

Despite average intra-year drops of 14.0%, annual returns were positive in 32 of 42 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 2021, over which time period the average annual return was 9.4%.
Guide to the Markets – U.S. Data are as of December 31, 2021.

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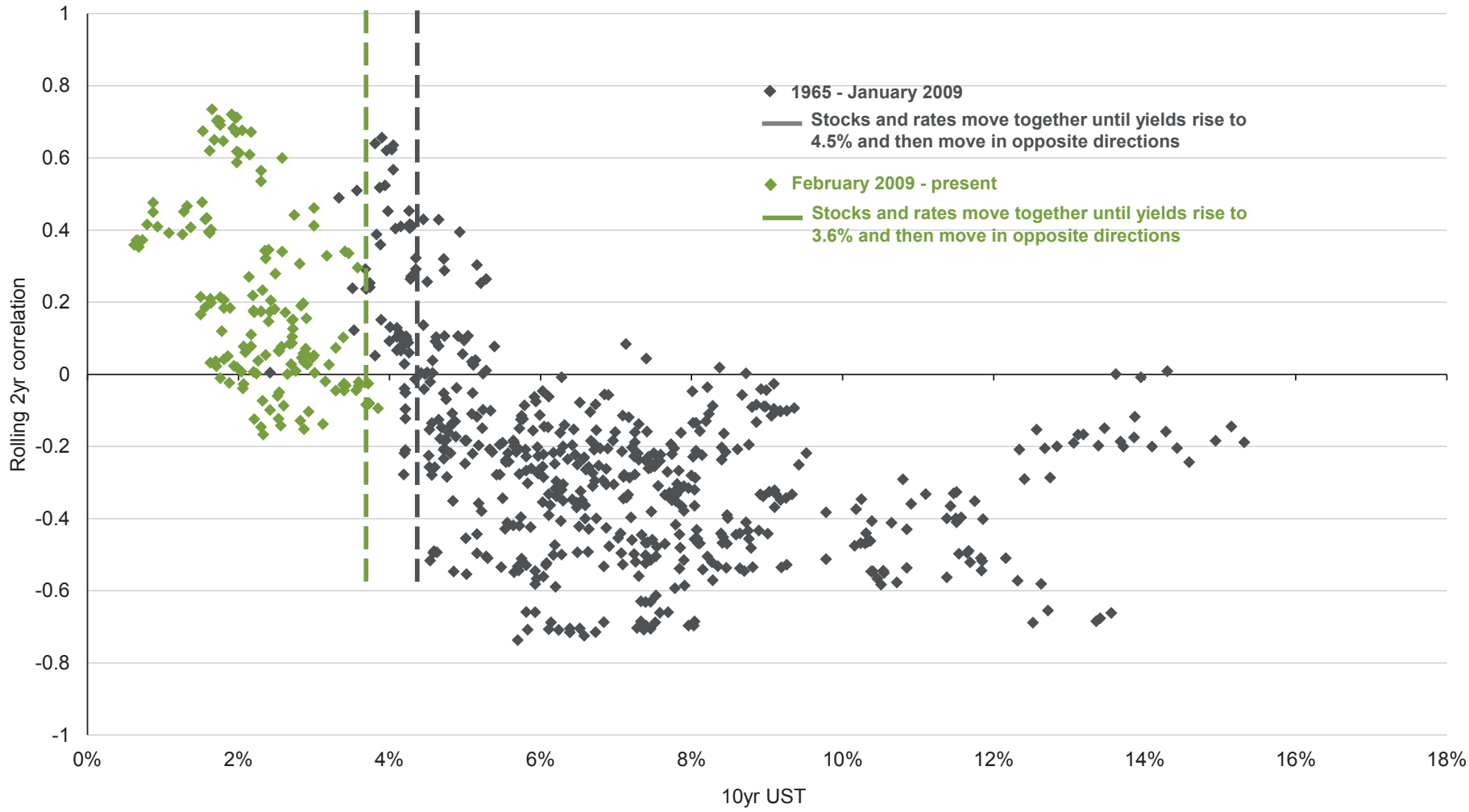
Interest rate and equities

Stock returns and interest rate movements before and after the Global Financial Crisis
Monthly S&P 500 returns, 10yr U.S. Treasury, rolling 2yr correlations, 1965 – present



Source: FactSet, J.P. Morgan Asset Management. X-intercept for each data set is calculated using a quadratic regression where interest rates are the independent variable and the rolling 2-year correlation of stock returns and interest rate movements is the dependent variable.
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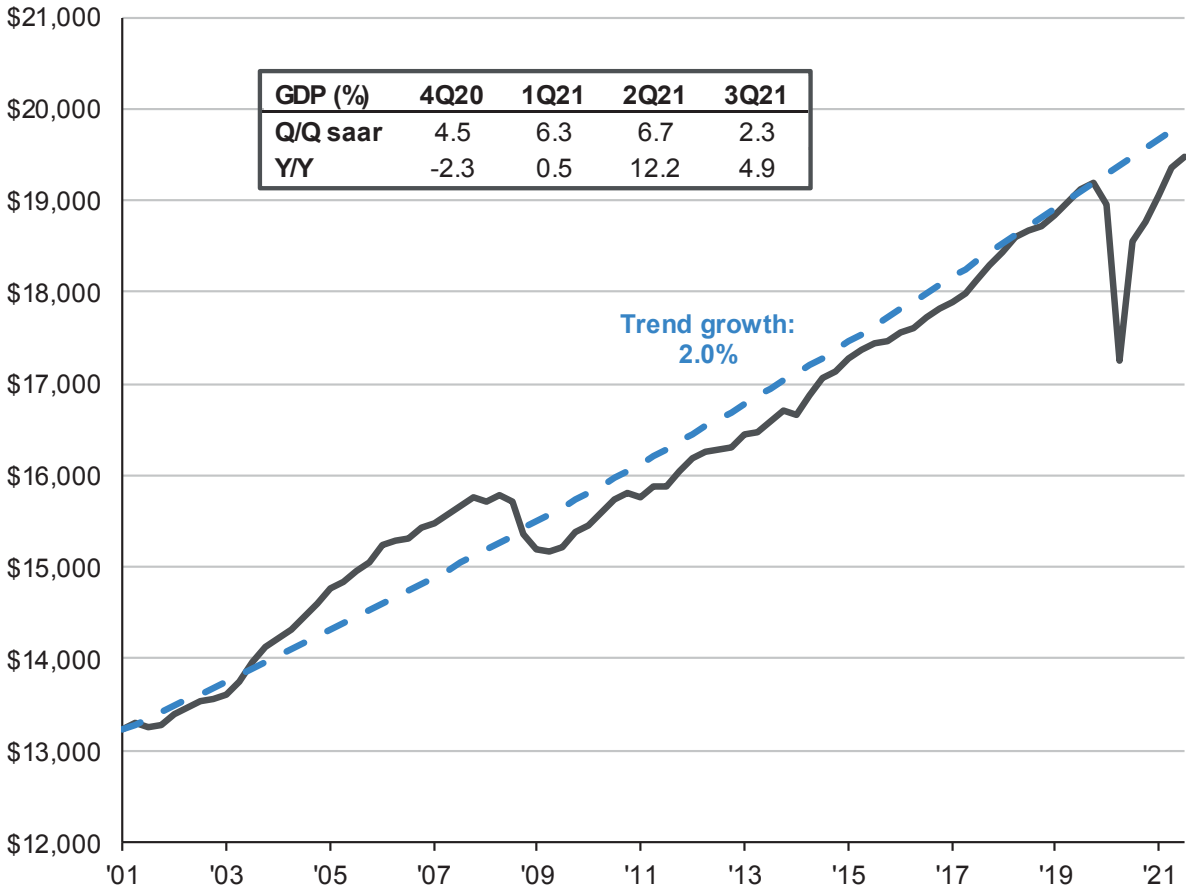
Economic growth and the composition of GDP

Real GDP

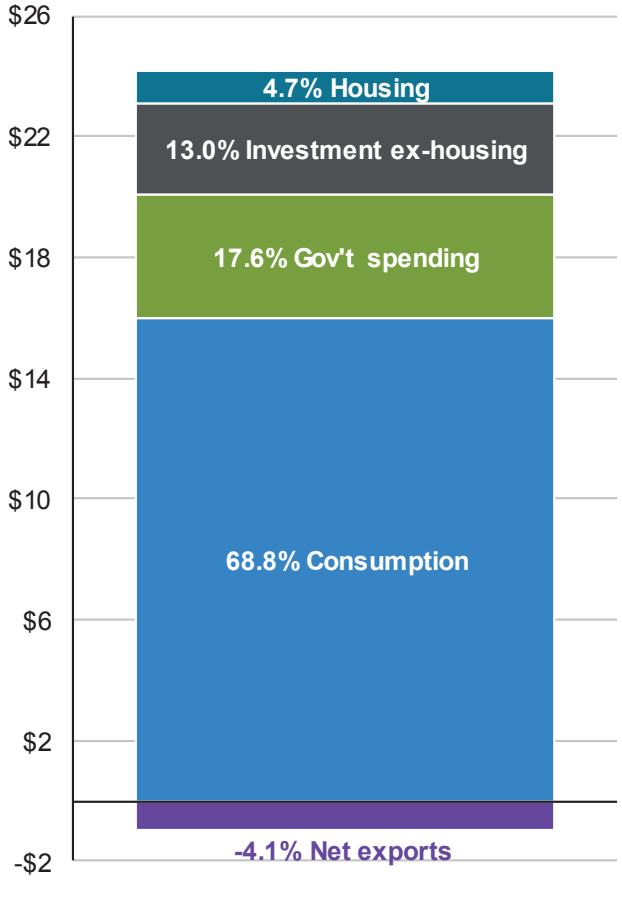
Billions of chained (2012) dollars, seasonally adjusted at annual rates

GDP (%)	4Q20	1Q21	2Q21	3Q21
Q/Q saar	4.5	6.3	6.7	2.3
Y/Y	-2.3	0.5	12.2	4.9



Components of GDP

3Q21 nominal GDP, USD trillions



Source: BEA, FactSet, J.P. Morgan Asset Management. Values may not sum to 100% due to rounding. Trend growth is measured as the average annual growth rate from business cycle peak 1Q01 to business cycle peak 4Q19. *Guide to the Markets – U.S.* Data are as of December 31, 2021.

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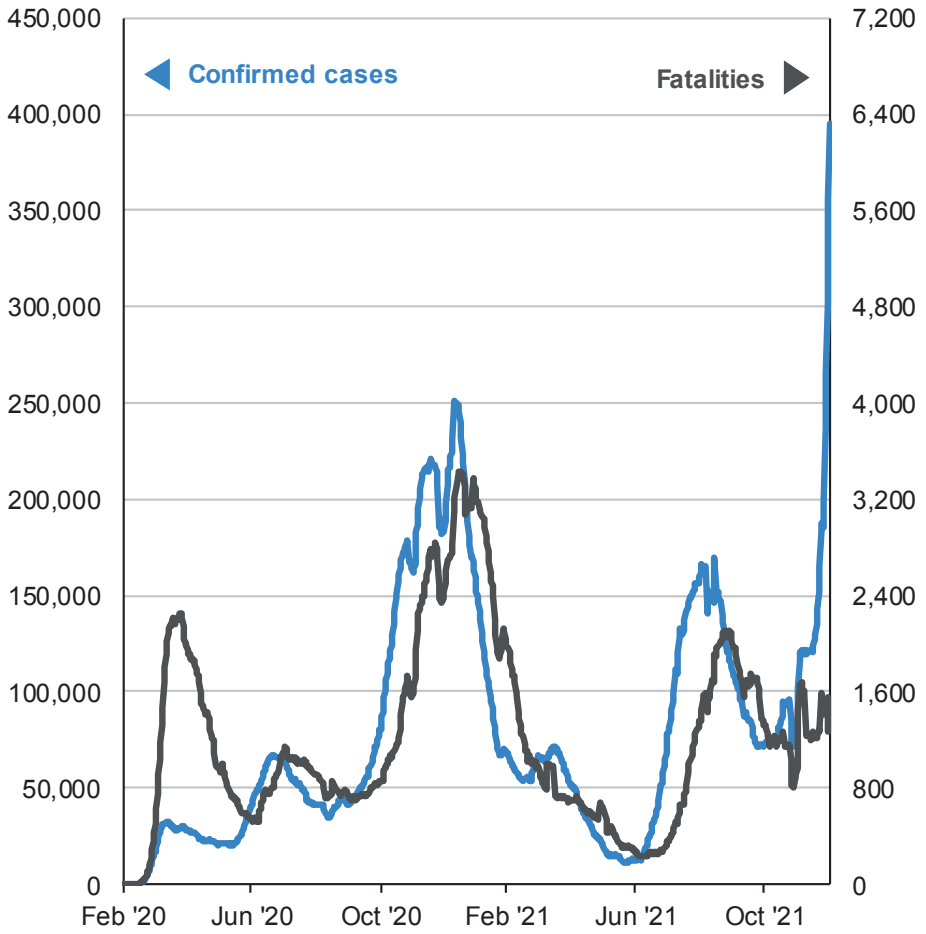
COVID-19: Cases, fatalities and immunity

Economy

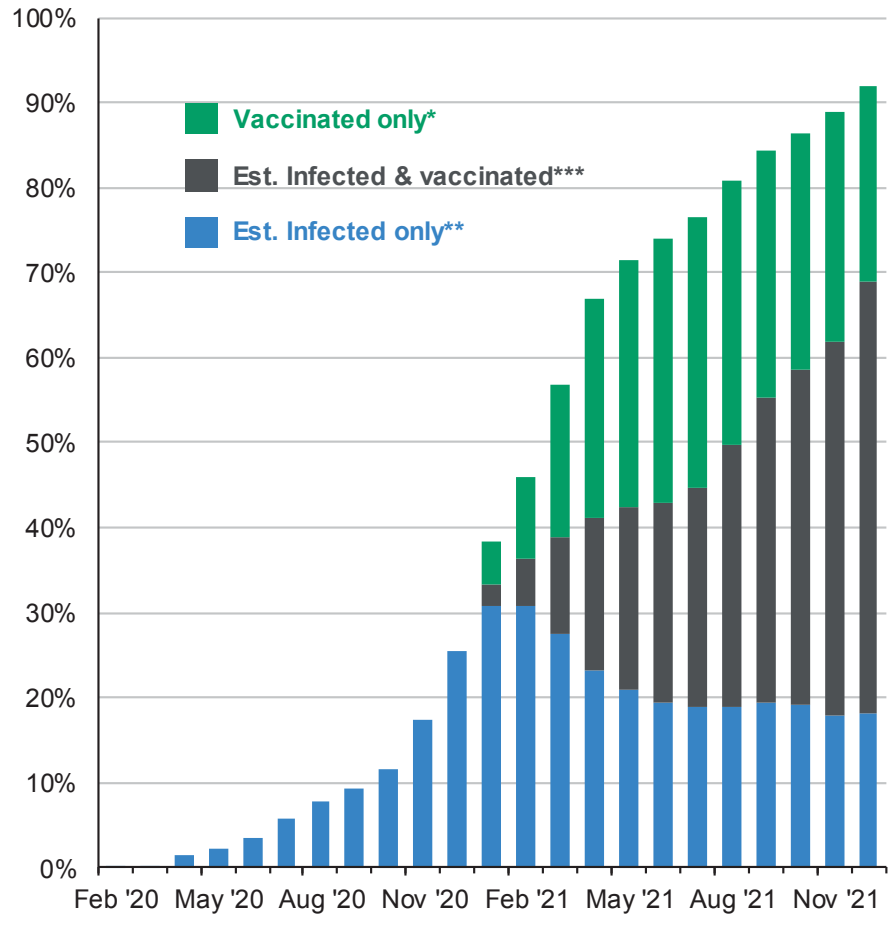
Change in confirmed cases and fatalities in the U.S.

7-day moving average



Progress toward immunity

Percentage of population, end of month



Source: Centers for Disease Control and Prevention, Johns Hopkins CSSE, Our World in Data, J.P. Morgan Asset Management.
*Share of the total population that has received at least one vaccine dose. **Est. Infected only represents the number of people who may have been infected by COVID-19 by using the CDC's estimate that 1 in 4.2 COVID-19 infections were reported. ***Est. Infected & vaccinated reflects those that have been both infected and vaccinated, assuming those infected equally likely to be vaccinated as those not infected. *Guide to the Markets* – U.S. Data are as of December 31, 2021.

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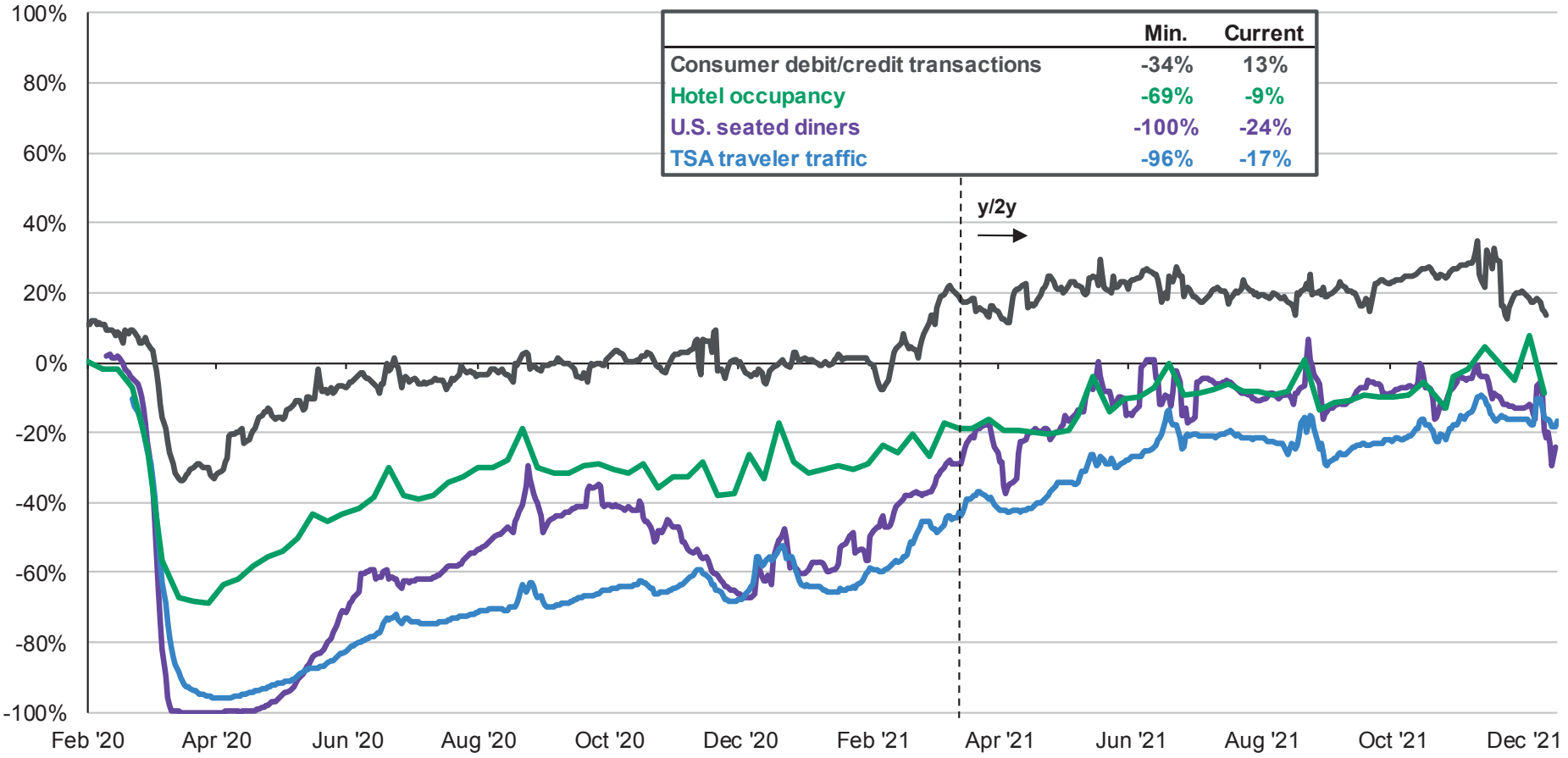
High-frequency economic activity

Economy

High-frequency data

Year-over-year % change; Year-over-2 year after 3/15/21*



Source: Chase, OpenTable, STR, Transportation Security Administration (TSA), J.P. Morgan Asset Management. *Beginning 3/15/2021, all indicators compare 2021 to 2019. Prior to 3/15/2021, figures are year-over-year. Consumer debit/credit transactions, U.S. seated diners and TSA traveler traffic are 7-day moving averages. Consumer spending: This report uses rigorous security protocols for selected data sourced from Chase credit and debit card transactions to ensure all information is kept confidential and secure. All selected data are highly aggregated and all unique identifiable information—including names, account numbers, addresses, dates of birth and Social Security Numbers—is removed from the data before the report's author receives it.
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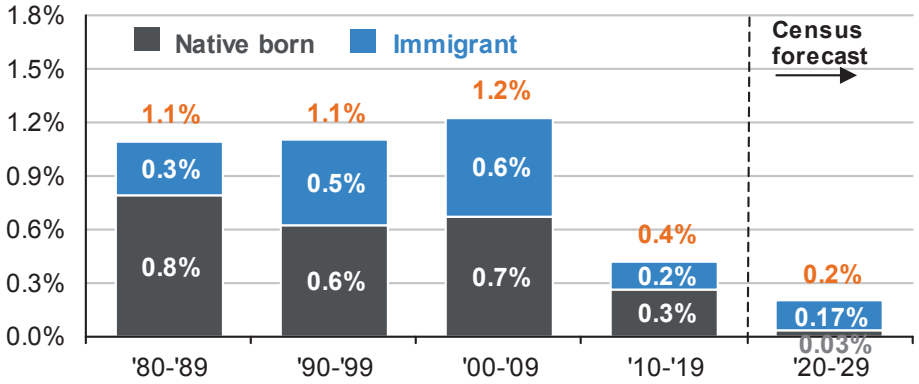
Long-term drivers of economic growth

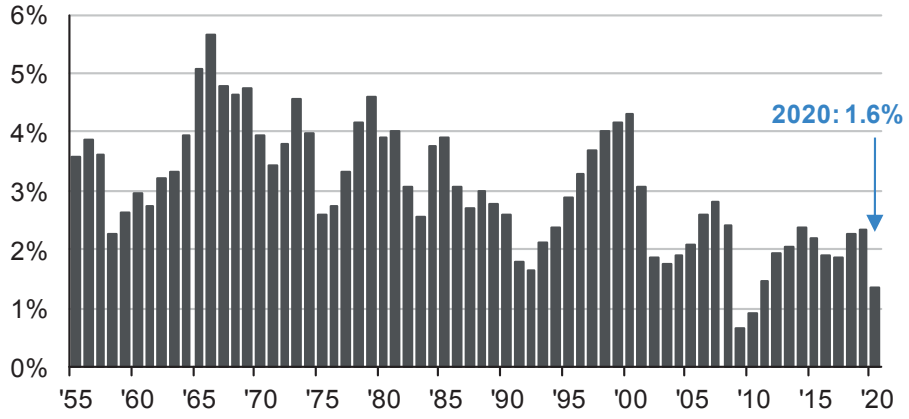
Growth in working-age population

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



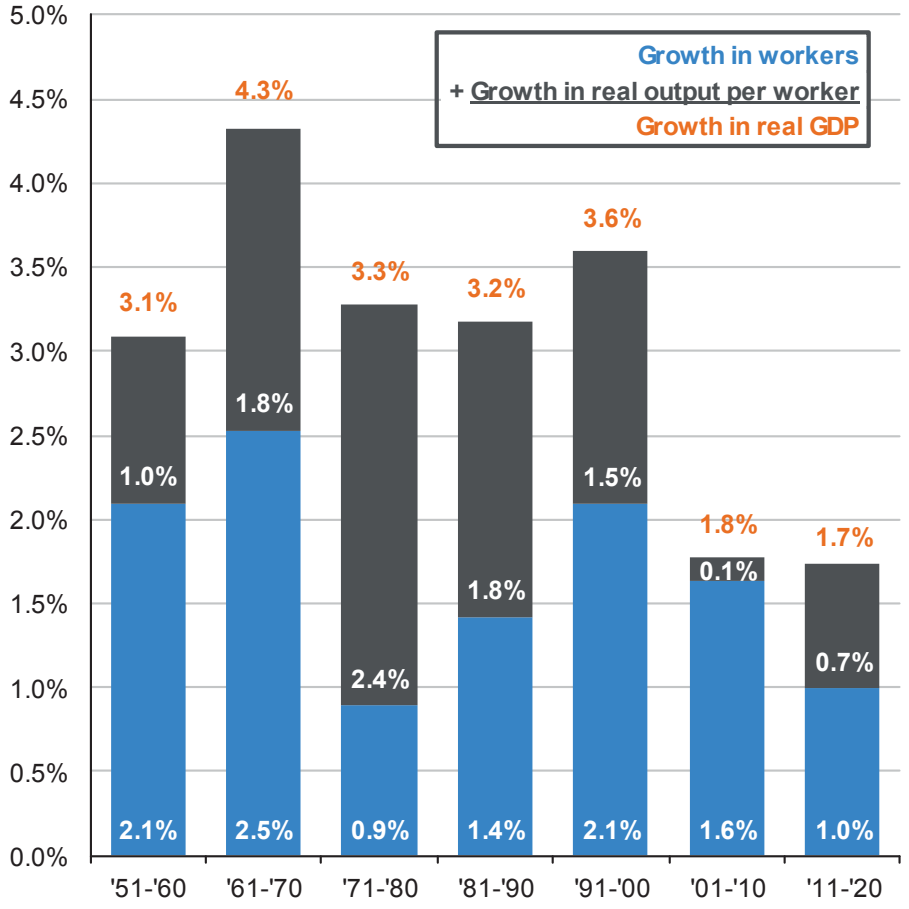
Growth in private non-residential capital stock

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 4Q20. Future working-age population is calculated as the total estimated number of Americans from the Census Bureau, per the February 2020 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. Forecasts, projections and other forward-looking statements are based upon current beliefs and expectations. They are for illustrative purposes only and serve as an indication of what may occur. Given the inherent uncertainties and risks associated with forecasts, projections or other forward-looking statements, actual events, results or performance may differ materially from those reflected or contemplated.
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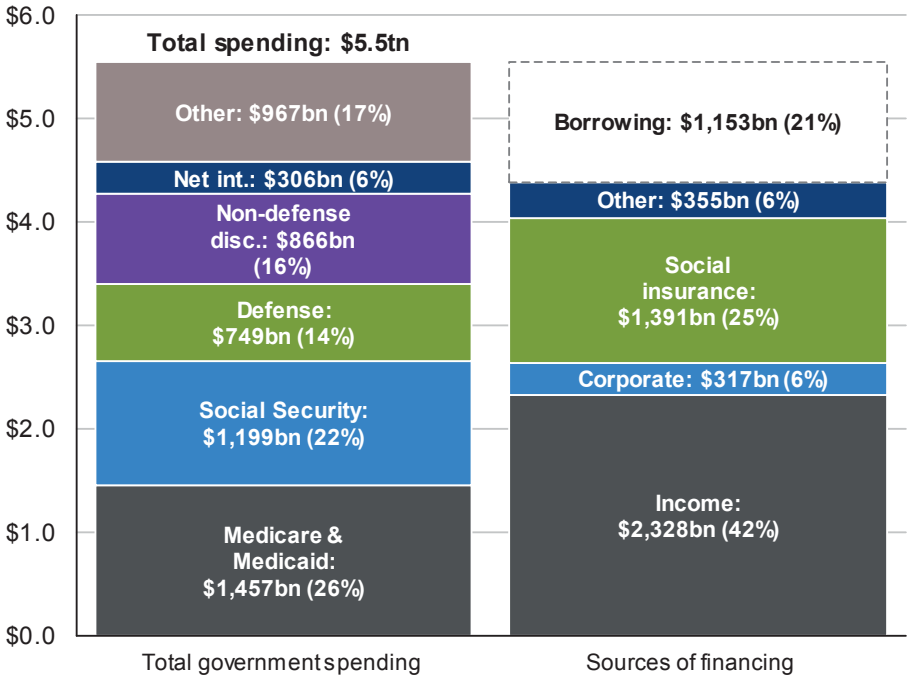
Federal finances

The 2022 federal budget

CBO Baseline forecast, USD trillions

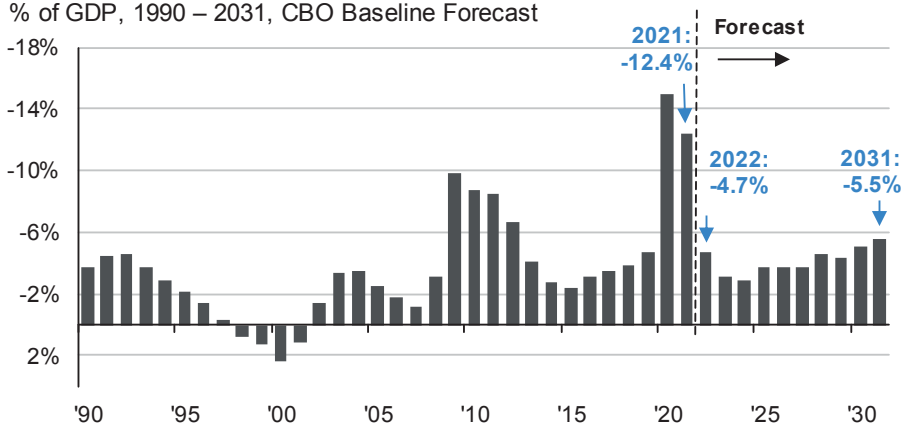


CBO's Baseline economic assumptions

	2022	'23-'24	'25-'26	'27-'31
Real GDP growth	6.1%	1.6%	1.3%	1.6%
10-year Treasury	1.9%	2.1%	2.6%	3.2%
Headline inflation (CPI)	2.7%	2.3%	2.4%	2.4%
Unemployment	4.1%	3.8%	4.2%	4.4%

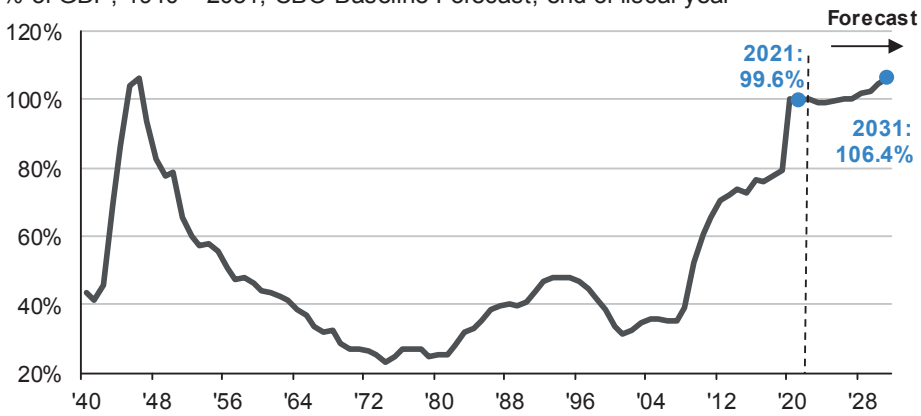
Federal budget surplus/deficit

% of GDP, 1990 – 2031, CBO Baseline Forecast



Federal net debt (accumulated deficits)

% of GDP, 1940 – 2031, CBO Baseline Forecast, end of fiscal year



Source: CBO, J.P. Morgan Asset Management; (Top and bottom right) BEA, Treasury Department.
Estimates are based on the Congressional Budget Office (CBO) July 2021 Update to the Budget and Economic Outlook, except for 2021 estimates of the federal deficit and net debt levels. These estimates and the details on the breakdown of spending, excluding net interest, are J.P. Morgan Asset Management estimates. 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. Forecasts are not a reliable indicator of future performance. Forecasts, projections and other forward-looking statements are based upon current beliefs and expectations. They are for illustrative purposes only and serve as an indication of what may occur. Given the inherent uncertainties and risks associated with forecasts, projections or other forward-looking statements, actual events, results or performance may differ materially from those reflected or contemplated.
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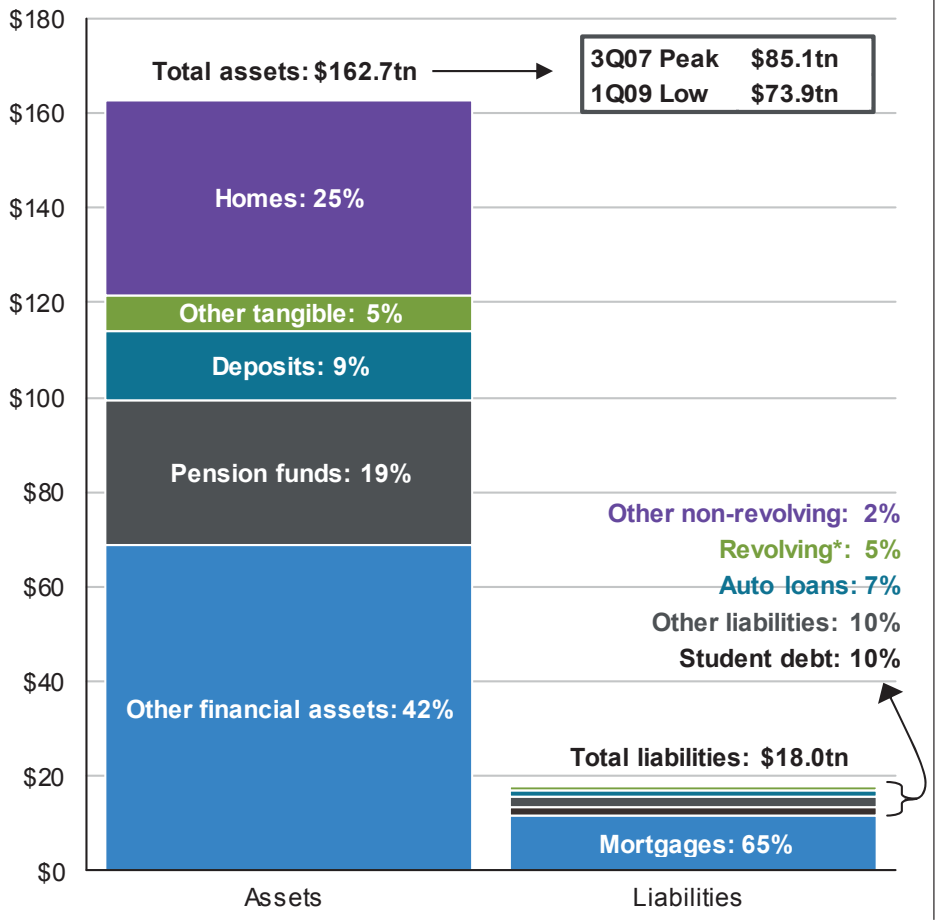
Consumer finances

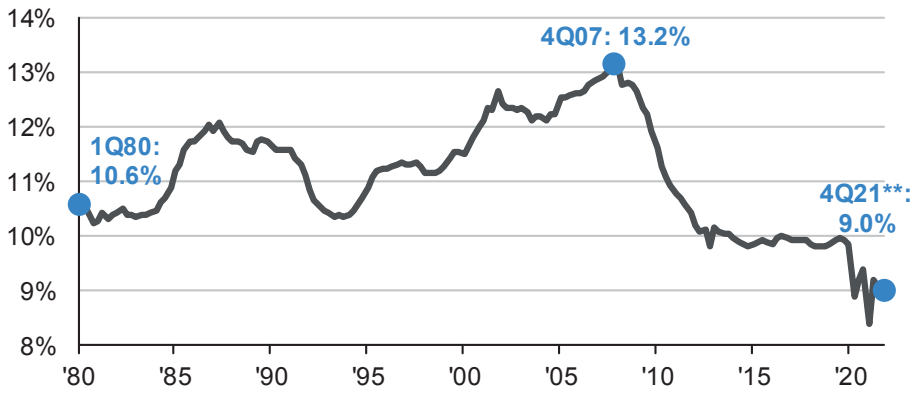
Consumer balance sheet

3Q21, trillions of dollars outstanding, not seasonally adjusted



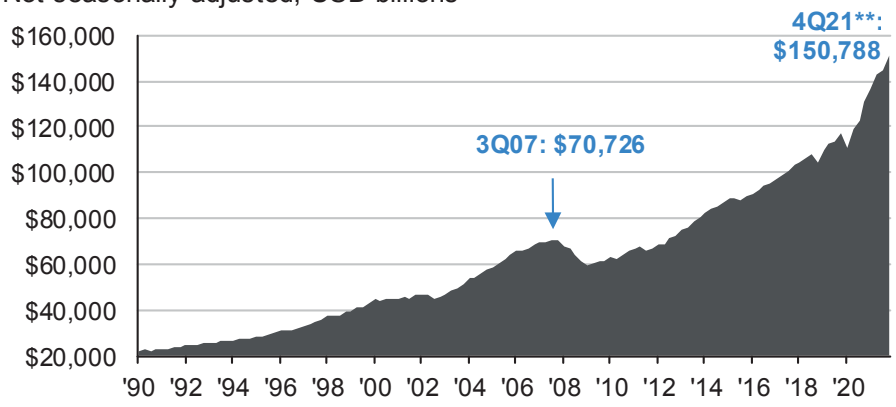
Household debt service ratio

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. **4Q21 figures for debt service ratio and household net worth are J.P. Morgan Asset Management estimates.
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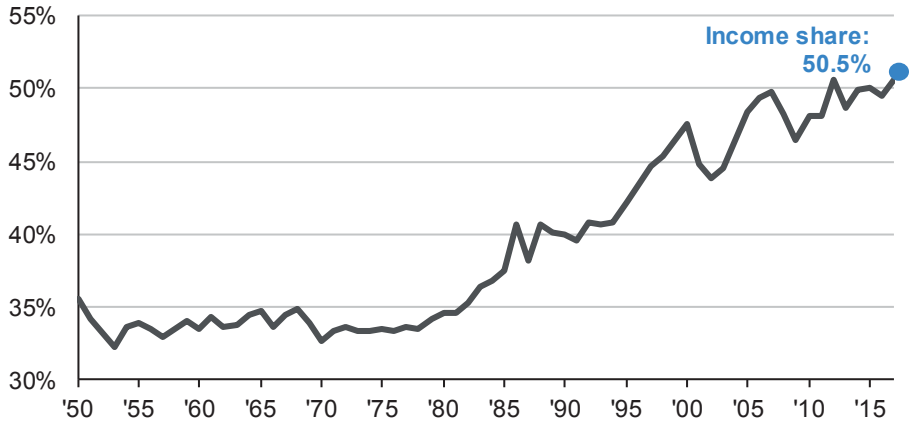
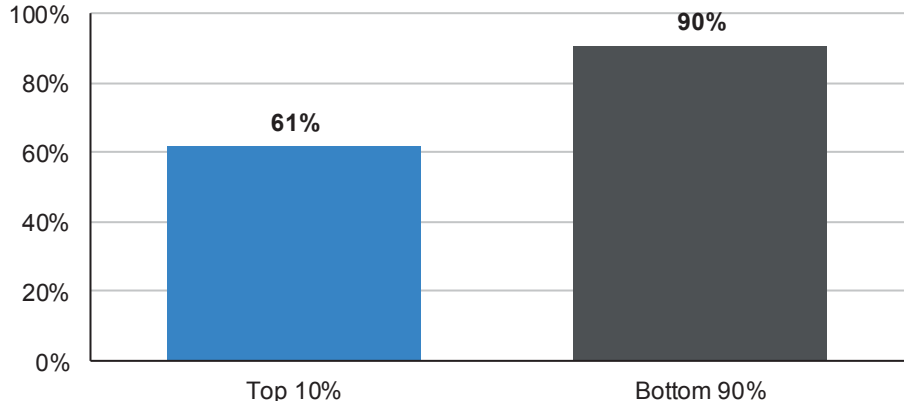
Income inequality and financial asset appreciation

Top 10% share of pre-tax national income



Spending as a share of income after tax

Consumer expenditure survey, 2020



Ratio of U.S. financial assets to GDP

Source: Bureau of Labor Statistics, Piketty, Saez, J.P. Morgan Asset Management; *4Q21 estimates are from J.P. Morgan Asset Management; (Top 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; (Bottom Left) Consumer Expenditure Survey 2020; (Right) Forecasts, projections and other forward-looking statements are based upon current beliefs and expectations. They are for illustrative purposes only and serve as an indication of what may occur. Given the inherent uncertainties and risks associated with forecasts, projections or other forward-looking statements, actual events, results or performance may differ materially from those reflected or contemplated.
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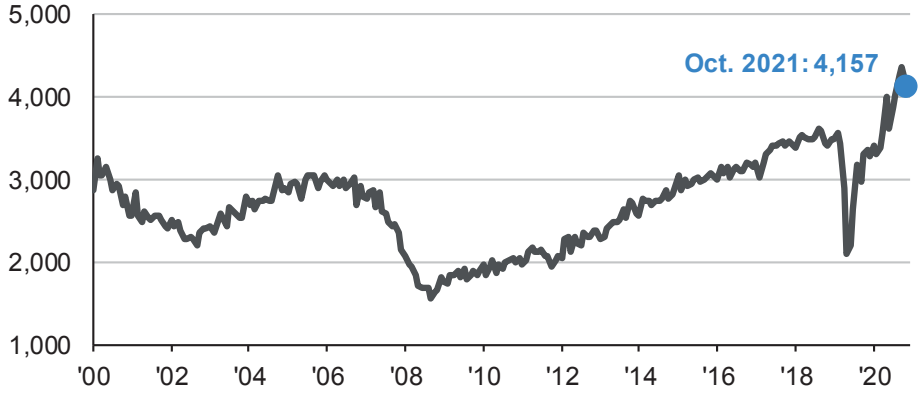
Labor demand

JOLTS job openings

Total nonfarm job openings, thousands, seasonally adjusted

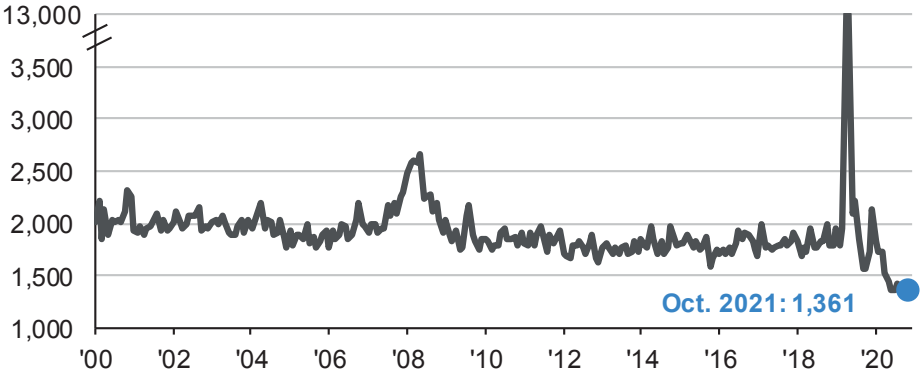
JOLTS quits

Total nonfarm quits, thousands, seasonally adjusted



JOLTS layoffs

Total nonfarm layoffs, thousands, seasonally adjusted



Source: U.S. Department of Labor, J.P. Morgan Asset Management.
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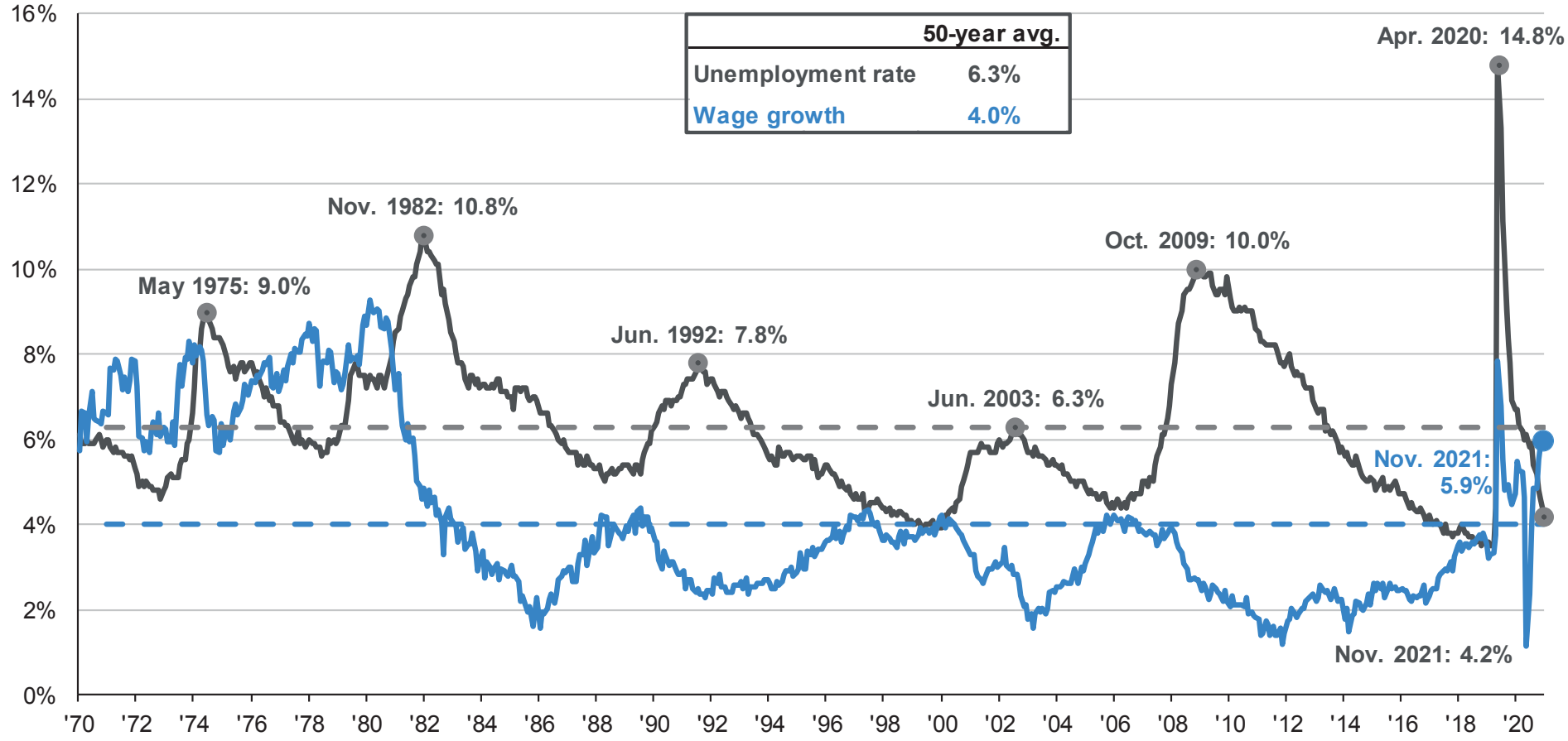
Unemployment and wages

Economy

Civilian unemployment rate and year-over-year wage growth

Private production and non-supervisory workers, seasonally adjusted, percent



Source: BLS, FactSet, J.P. Morgan Asset Management.
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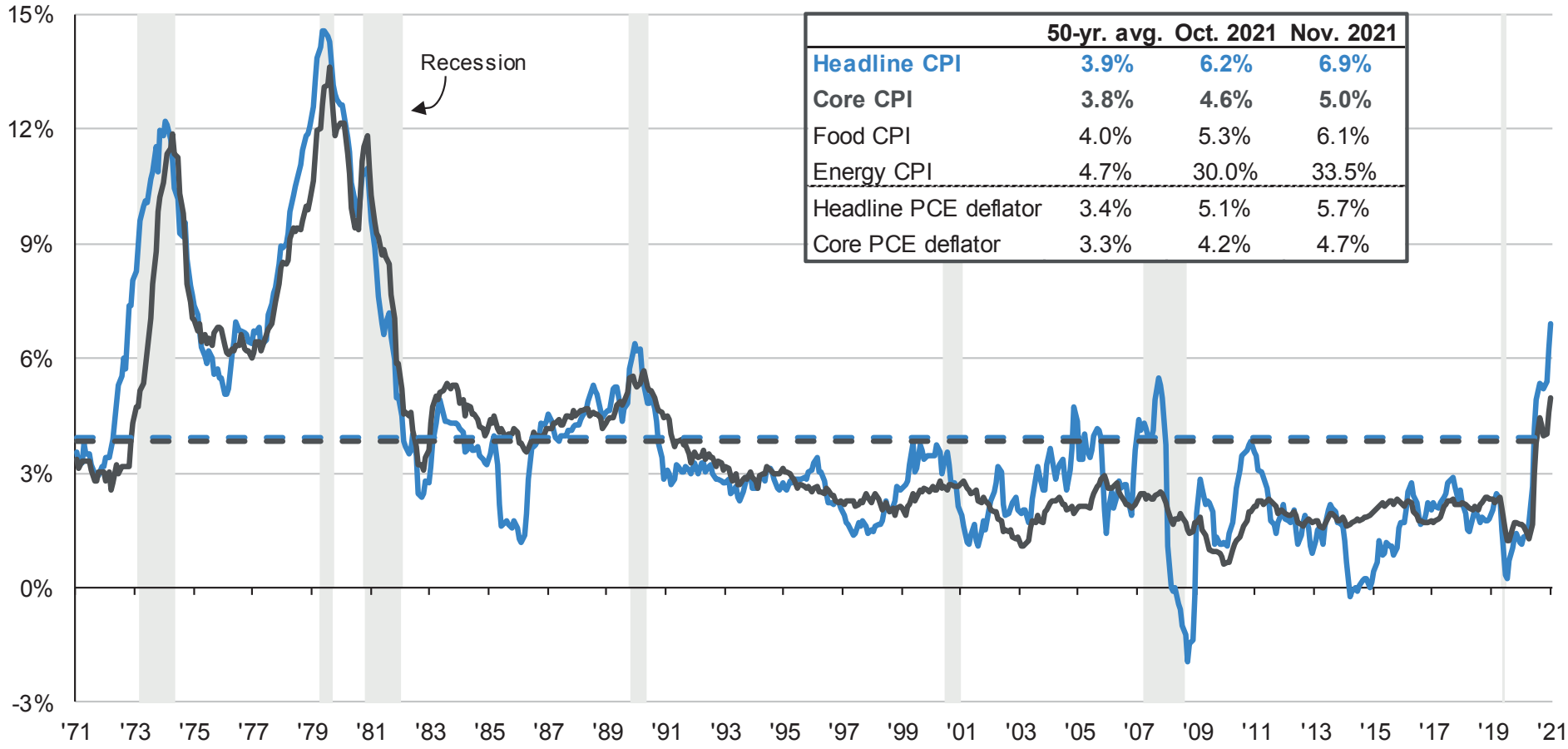
Inflation

CPI and core CPI

% change vs. prior year, seasonally adjusted



	50-yr. avg.	Oct. 2021	Nov. 2021
Headline CPI	**3.9%**	**6.2%**	**6.9%**
Core CPI	**3.8%**	**4.6%**	**5.0%**
Food CPI	4.0%	5.3%	6.1%
Energy CPI	4.7%	30.0%	33.5%
Headline PCE deflator	3.4%	5.1%	5.7%
Core PCE deflator	3.3%	4.2%	4.7%

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.
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Dollar drivers

The U.S. dollar

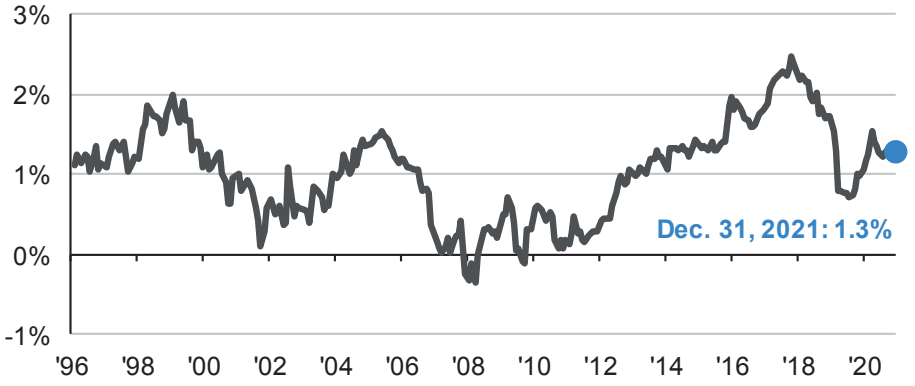
U.S. Dollar Index

The U.S. trade balance

Current account balance, % of GDP

Developed markets interest rate differentials

Difference between U.S. and international 10-year yields*



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.
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Oil markets

Economy

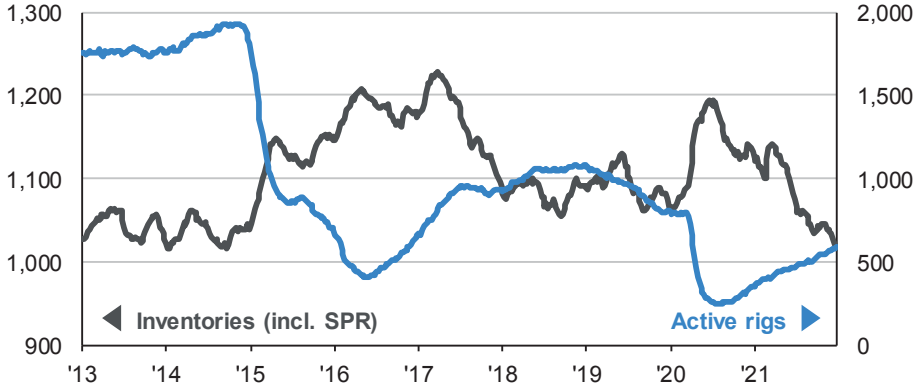
Change in production and consumption of liquid fuels

Production, consumption and inventories, millions of barrels per day

Production	2018	2019	2020	2021*	2022*	Growth since '18
U.S.	17.9	19.5	18.6	18.8	20.1	12.4%
OPEC	36.7	34.7	30.7	31.6	33.9	-7.7%
Russia	11.4	11.5	10.5	10.8	11.6	1.7%
Global	**100.4**	**100.4**	**93.8**	**95.6**	**100.9**	**0.5%**
Consumption						
U.S.	20.5	20.5	18.2	19.8	20.5	-0.2%
China	13.6	14.0	14.4	15.3	15.9	16.7%
Global	**99.7**	**100.3**	**91.8**	**96.9**	**100.5**	**0.8%**
Inventory Change	0.7	0.1	2.0	-1.3	0.5	

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 2021 EIA Short-Term Energy Outlook and start in 2021. **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.
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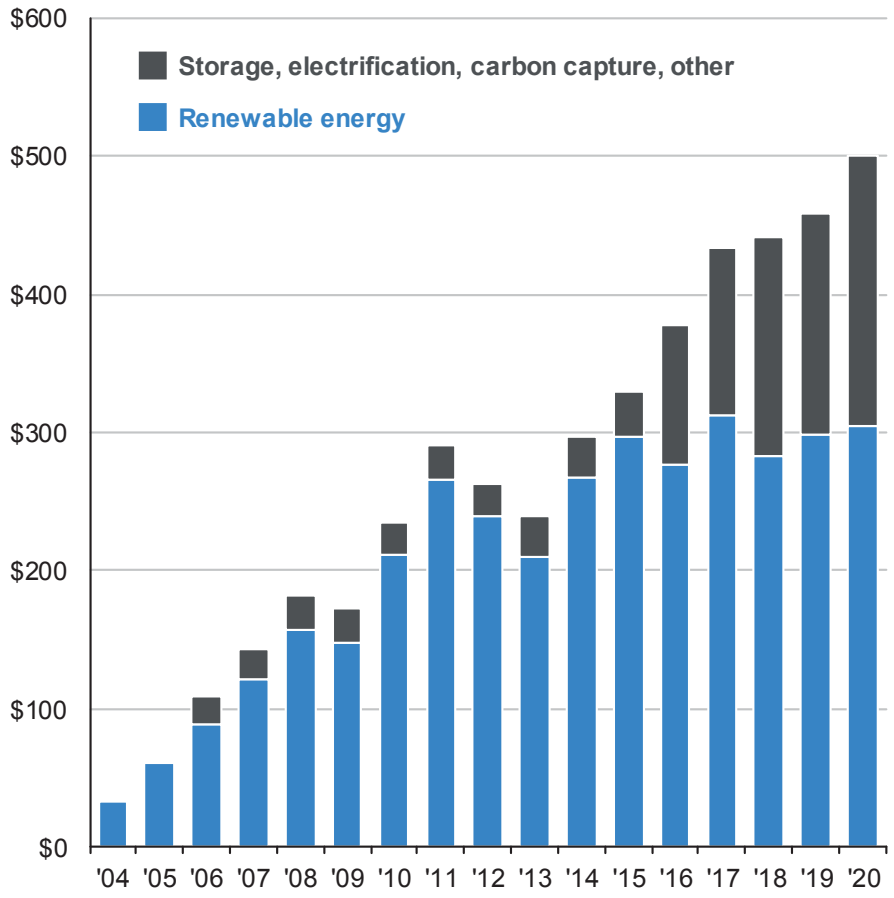
Global energy transition

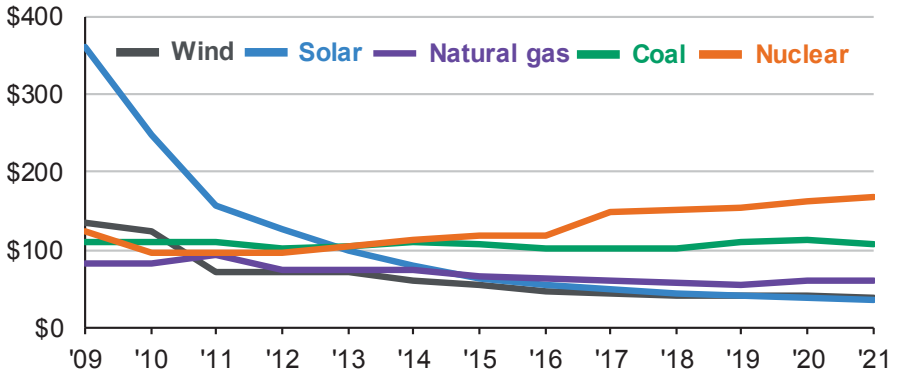
Global investment in energy transition

Billions USD, nominal

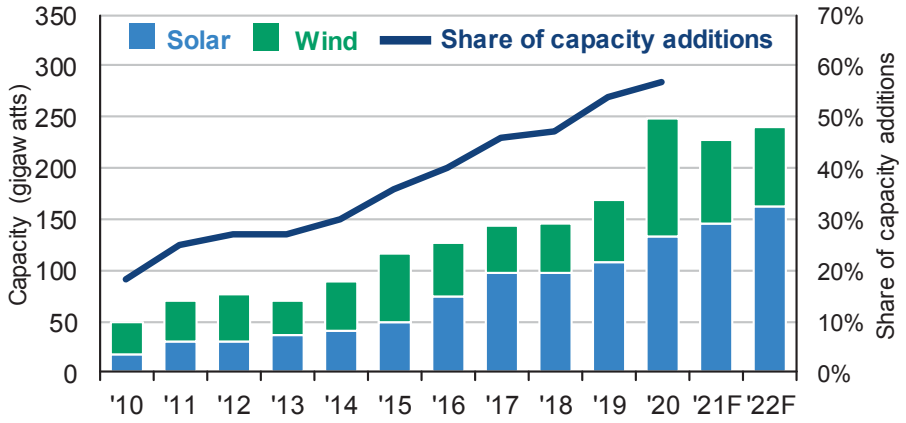


Cost of wind, solar, natural gas, nuclear and coal

Mean LCOE*, 2021, dollar per megawatt hour



Global solar and wind power capacity additions



Source: Bloomberg NEF, BP Statistical, Eurostat, Lazard, METI, J.P. Morgan Asset Management; (Left) Storage, electrification, other includes hydrogen, carbon capture and storage, energy storage, electrified transport and electrified heat; (Top right) *LCOE is levelized cost of energy, the net present value of the unit-cost of electricity over the lifetime of a generating asset. It is often taken as a proxy for the average price that the generating asset must receive in a market to break even over its lifetime; (Top right) IEA, Global solar PV (photovoltaic) and wind power capacity additions, 2010-2020e, IEA, Paris https://www.iea.org/data-and-statistics/charts/global-solar-pv-and-wind-power-capacity-additions-2010-2020e. Forecasts are not a reliable indicator of future performance. Forecasts, projections and other forward-looking statements are based upon current beliefs and expectations. They are for illustrative purposes only and serve as an indication of what may occur. Given the inherent uncertainties and risks associated with forecasts, projections or other forward-looking statements, actual events, results or performance may differ materially from those reflected or contemplated.

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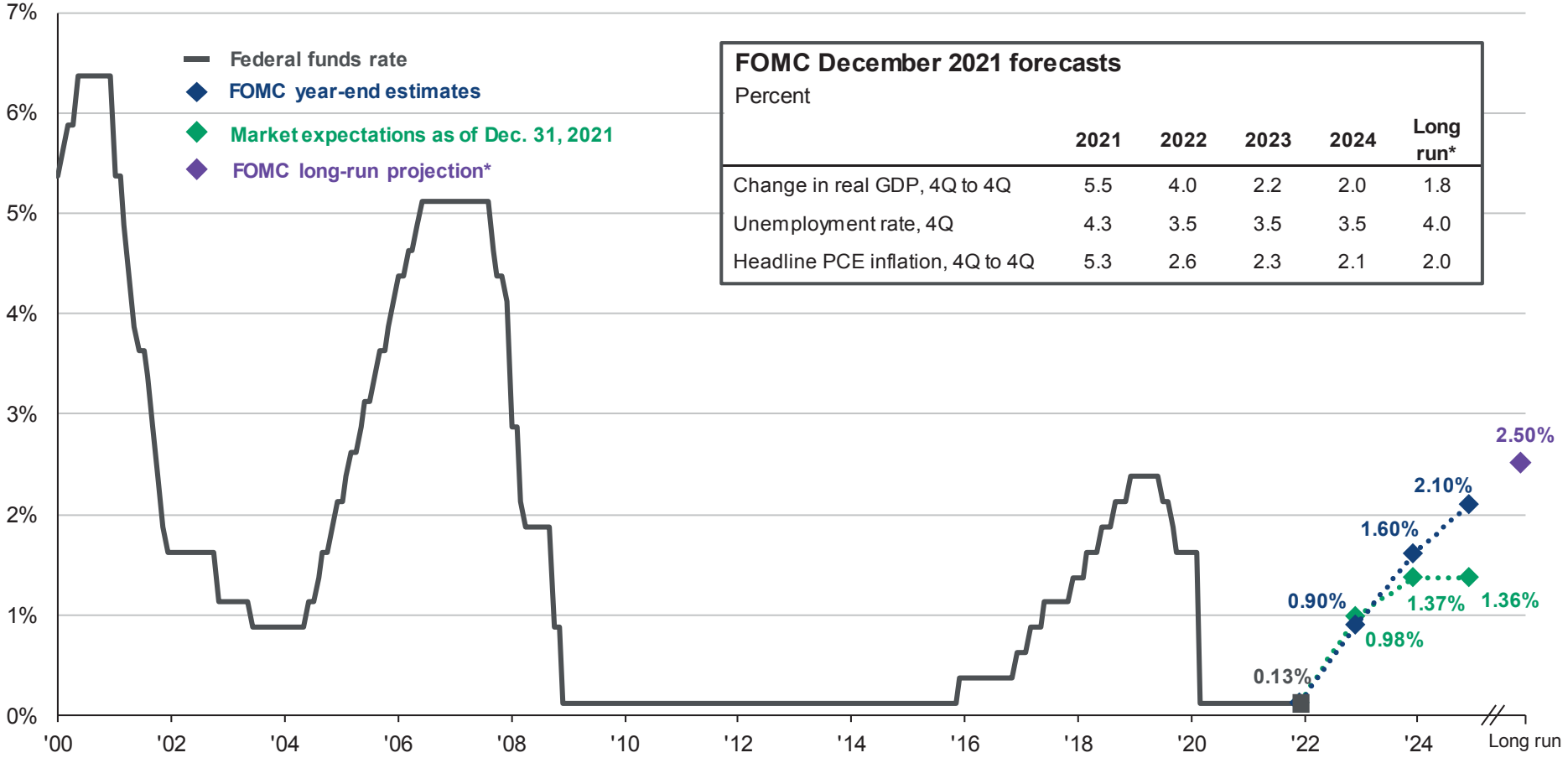
The Fed and interest rates

Federal funds rate expectations

FOMC and market expectations for the federal funds rate



FOMC December 2021 forecasts

Percent

	2021	2022	2023	2024	Long run*
Change in real GDP, 4Q to 4Q	5.5	4.0	2.2	2.0	1.8
Unemployment rate, 4Q	4.3	3.5	3.5	3.5	4.0
Headline PCE inflation, 4Q to 4Q	5.3	2.6	2.3	2.1	2.0

Source: Bloomberg, FactSet, Federal Reserve, J.P. Morgan Asset Management.
Market expectations are based off of the USD Overnight Index Forward Swap rates. *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. Forecasts are not a reliable indicator of future performance. Forecasts, projections and other forward-looking statements are based upon current beliefs and expectations. They are for illustrative purposes only and serve as an indication of what may occur. Given the inherent uncertainties and risks associated with forecasts, projections or other forward-looking statements, actual events, results or performance may differ materially from those reflected or contemplated.
Guide to the Markets – U.S. Data are as of December 31, 2021.

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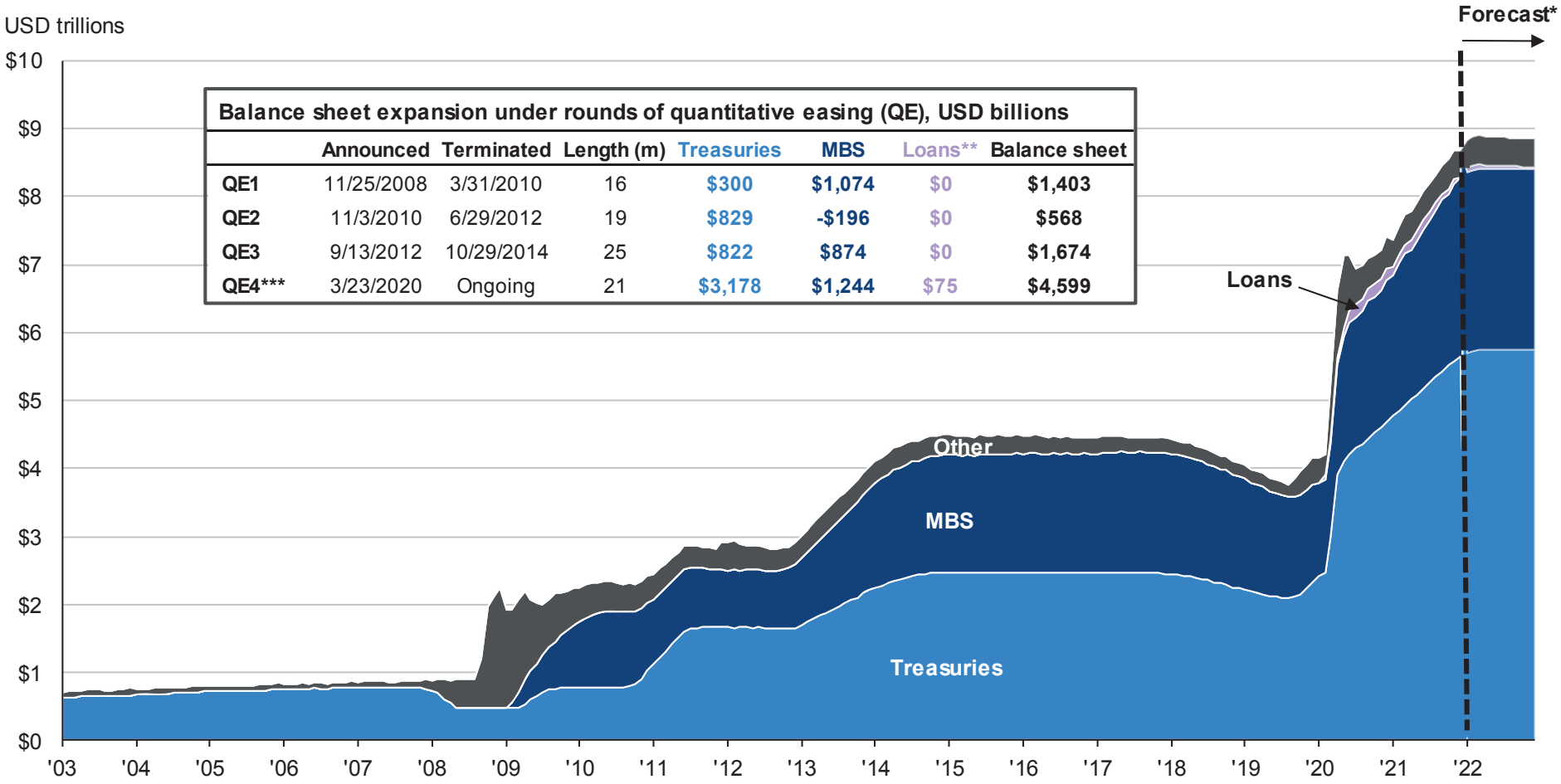
The Federal Reserve balance sheet

The Federal Reserve balance sheet

USD trillions



Balance sheet expansion under rounds of quantitative easing (QE), USD billions

	Announced	Terminated	Length (m)	Treasuries	MBS	Loans**	Balance sheet
QE1	11/25/2008	3/31/2010	16	$300	$1,074	$0	$1,403
QE2	11/3/2010	6/29/2012	19	$829	-$196	$0	$568
QE3	9/13/2012	10/29/2014	25	$822	$874	$0	$1,674
QE4***	3/23/2020	Ongoing	21	$3,178	$1,244	$75	$4,599

Source: FactSet, Federal Reserve, J.P. Morgan Investment Bank, J.P. Morgan Asset Management.
Currently, the balance sheet contains $5.7tn in Treasuries and $2.6tn in MBS. *The end balance sheet forecast assumes the Federal Reserve reduces the pace of purchases of Treasuries and MBS by $30bn per month, beginning January through mid-March, as suggested in the December 2021 FOMC meeting. **Loans include liquidity and credit extended through corporate credit facilities established in March 2020. Other includes primary, secondary and seasonal loans, repurchase agreements, foreign currency reserves and maiden lane securities. ***QE4 is ongoing and the expansion figures are as of the most recent Wednesday close as reported by the Federal Reserve. Forecasts are not a reliable indicator of future performance. Forecasts, projections and other forward-looking statements are based upon current beliefs and expectations. They are for illustrative purposes only and serve as an indication of what may occur. Given the inherent uncertainties and risks associated with forecasts, projections or other forward-looking statements, actual events, results or performance may differ materially from those reflected or contemplated.
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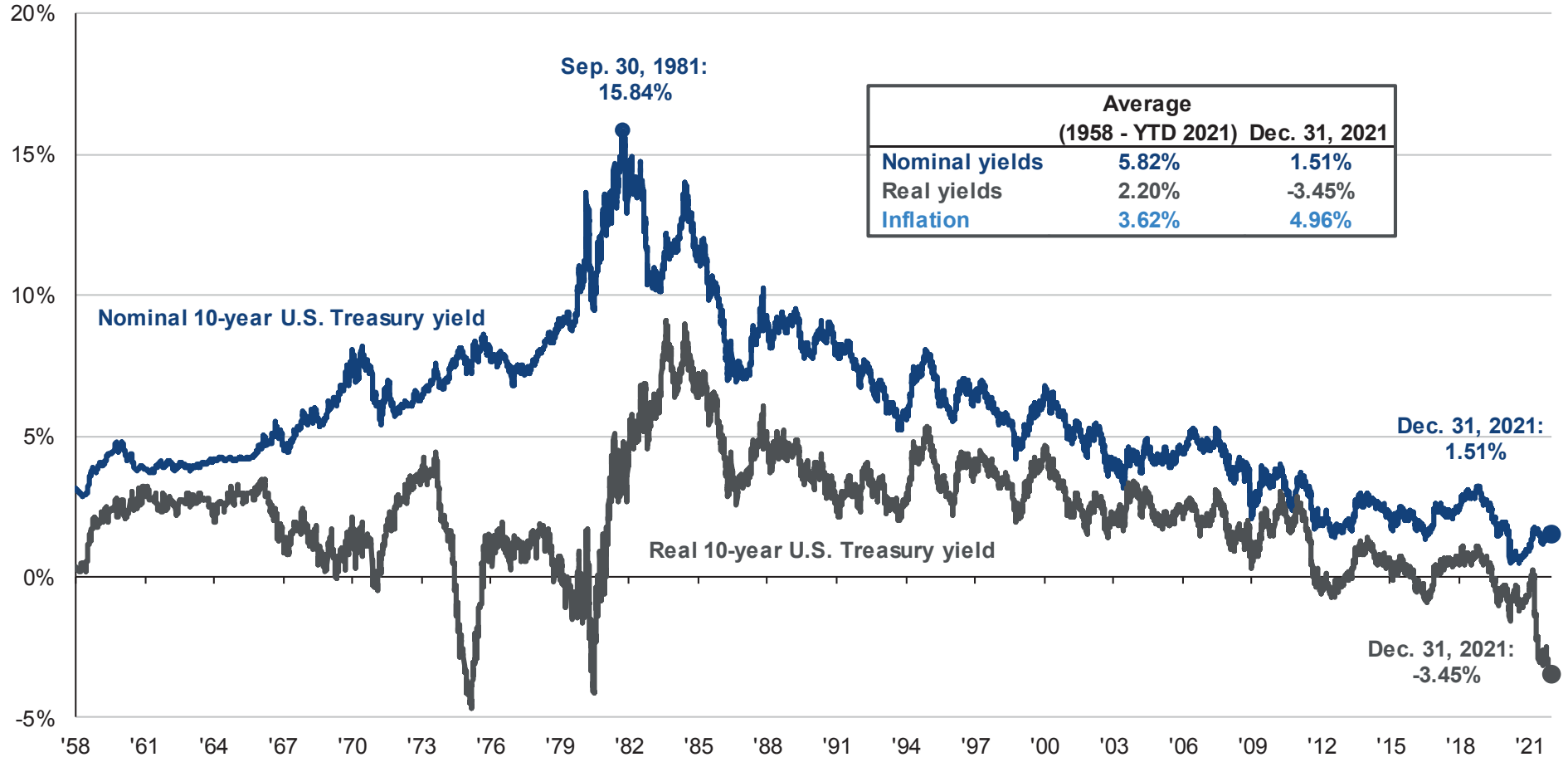
Interest rates and inflation

Nominal and real U.S. 10-year Treasury yields



	Average (1958 - YTD 2021)	Dec. 31, 2021
Nominal yields	5.82%	1.51%
Real yields	2.20%	-3.45%
Inflation	3.62%	4.96%

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. For the current month, we use the prior month's core CPI figures until the latest data is available.
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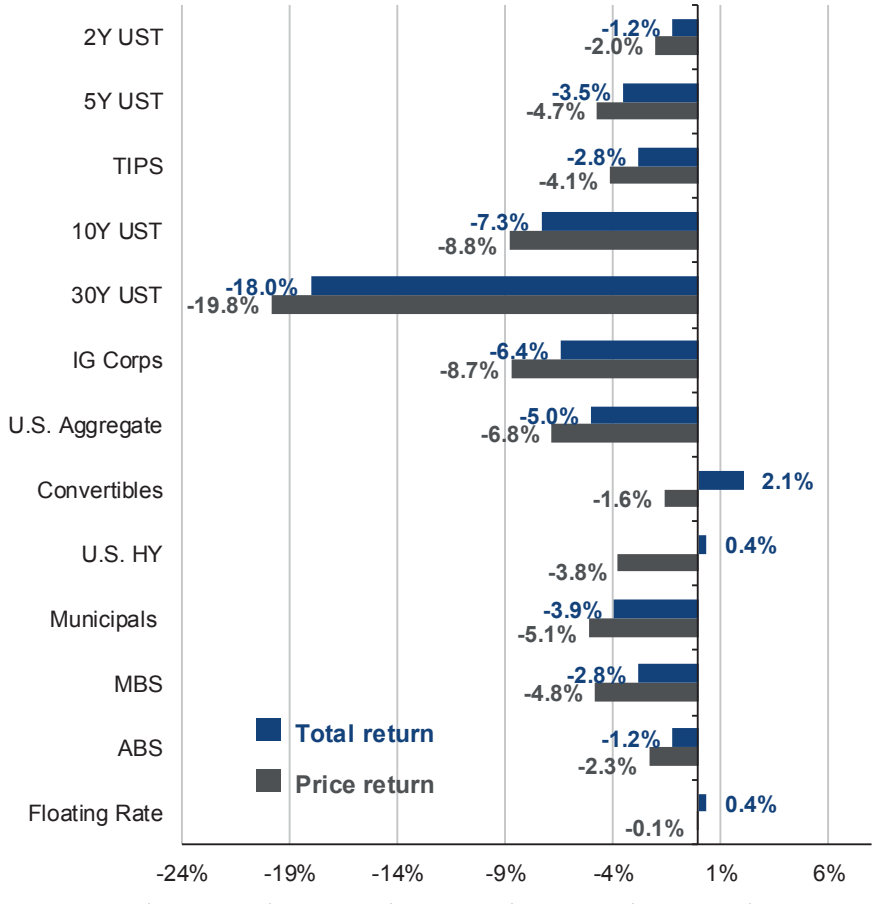
Fixed income market dynamics

U.S. Treasuries	Yield 12/31/2021	Yield 12/31/2020	Return 2021 YTD	Avg. Maturity	Correlation to 10-year	Correlation to S&P 500
2-Year	0.73%	0.13%	-0.57%	2 years	0.67	-0.41
5-Year	1.26%	0.36%	-2.80%	5	0.92	-0.36
TIPS	-1.04%	-1.06%	5.96%	10	0.57	0.20
10-Year	1.52%	0.93%	-3.60%	10	1.00	-0.33
30-Year	1.90%	1.65%	-4.62%	30	0.93	-0.31
Sector						
IG Corps	2.33%	1.74%	-1.04%	12.3	0.42	0.38
U.S. Aggregate	1.75%	1.12%	-1.54%	8.7	0.85	0.02
Convertibles	3.66%	4.91%	4.49%	-	-0.29	0.87
U.S. HY	4.21%	4.18%	5.28%	6.5	-0.25	0.72
Municipals	1.11%	1.07%	1.52%	13.1	0.37	0.09
MBS	1.98%	1.25%	-1.04%	6.1	0.81	-0.16
ABS	1.96%	2.87%	1.11%	2.4	-0.04	0.10
Floating Rate	0.48%	0.54%	0.52%	2.0	-0.22	0.44

Impact of a 1% rise in interest rates

Assumes a parallel shift in the yield curve



Source: 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; High Yield: Corporate High Yield; TIPS: Treasury Inflation-Protected Securities (TIPS); U.S. Floating rate index; Convertibles: U.S. Convertibles Composite. Convertibles yield is as of November 2021 due to data availability. 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 Global Convertibles. Correlations are based on 15-years of monthly returns for all sectors. Past performance is not indicative of future results.

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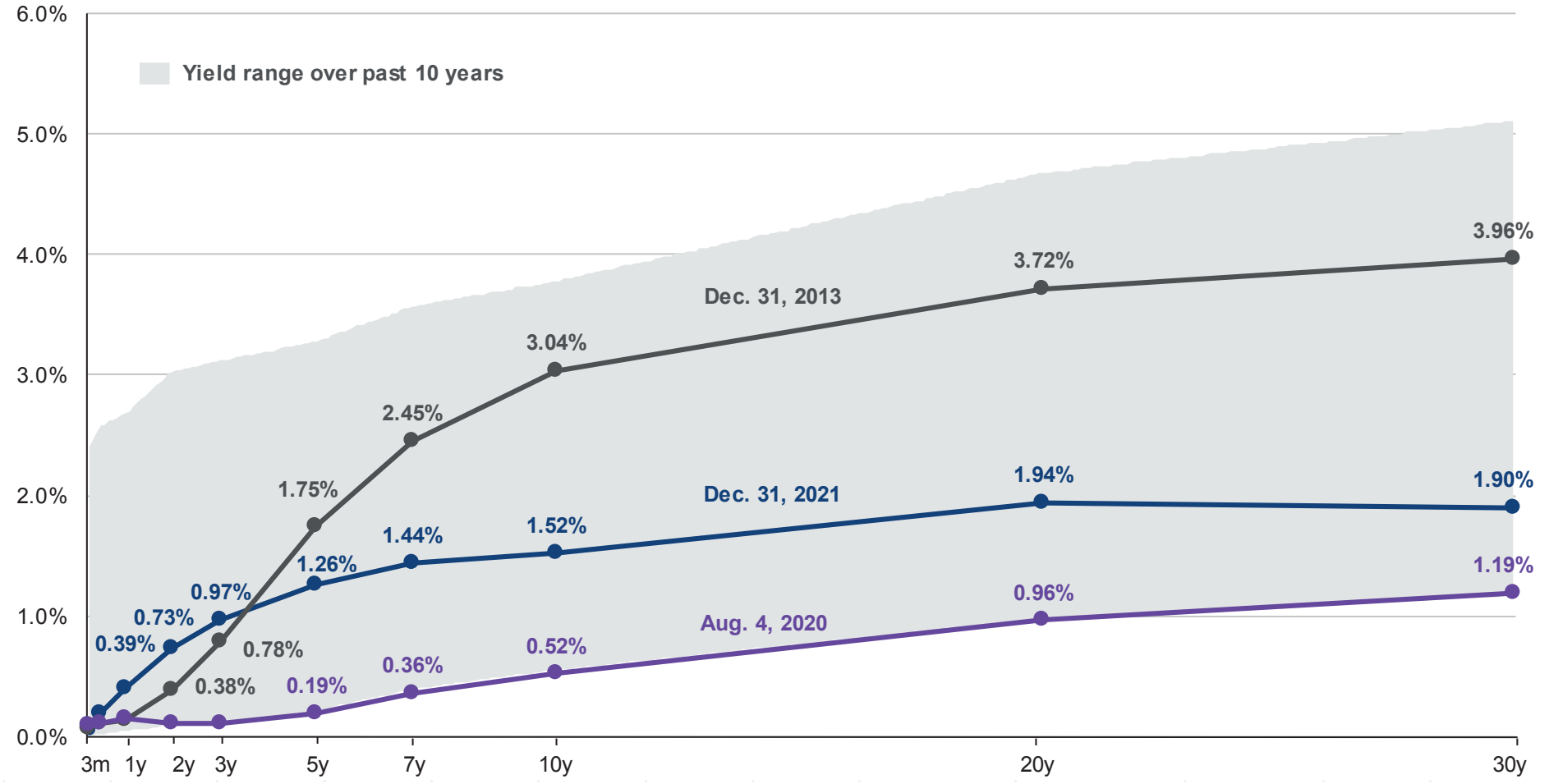
Yield curve

U.S. Treasury yield curve



Source: FactSet, Federal Reserve, J.P. Morgan Asset Management. 12/31/2013 is the date the yield curve reached one of its steepest levels in reaction to the Fed announcing it would begin paring down its bond-buying program. 08/04/2020 is the date of a record low on the 10-year, driven by safe haven demand and pessimism around the U.S. pandemic recovery.
Guide to the Markets – U.S. Data are as of December 31, 2021.

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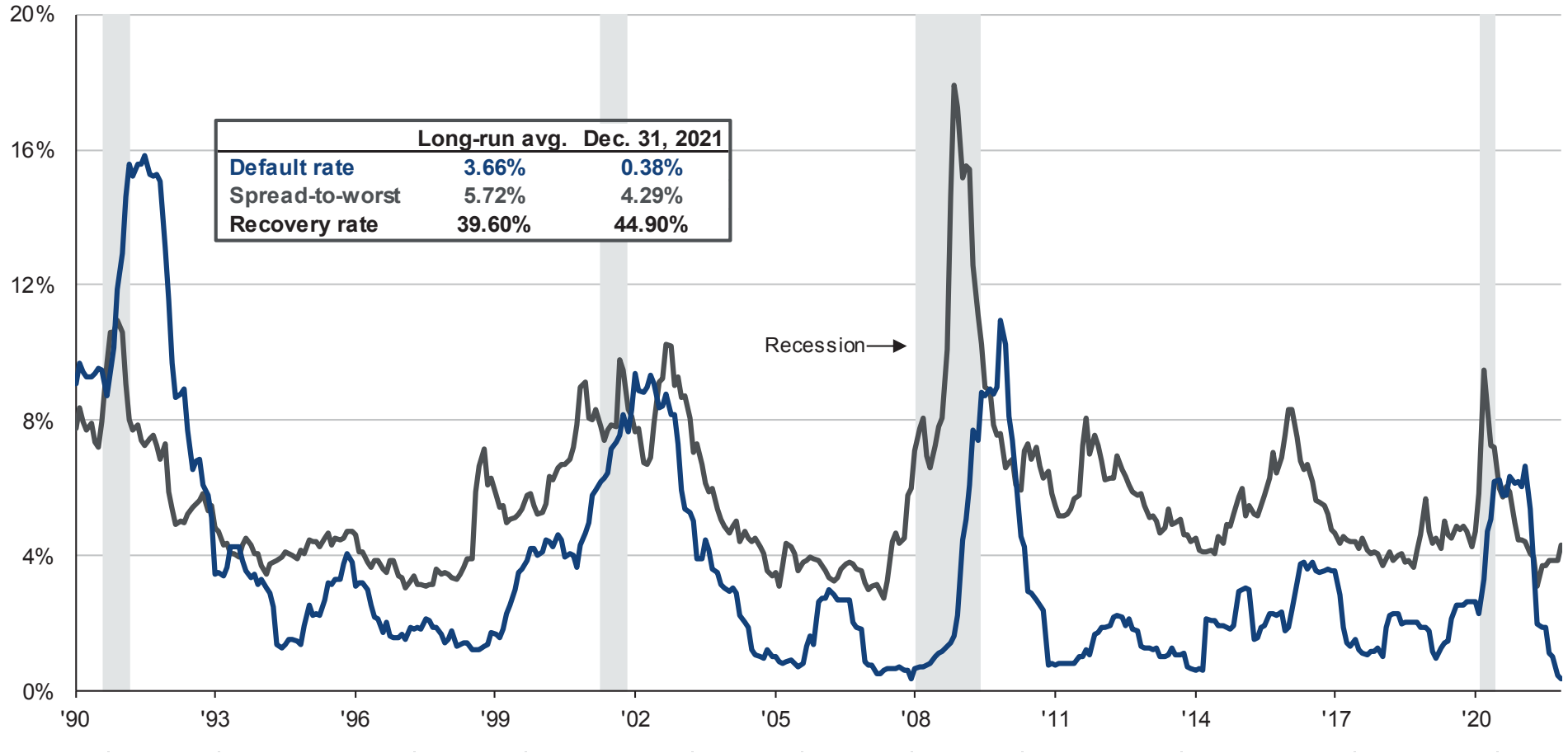
High yield bonds

Default rate and spread to worst

Percent



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. The default rate is an LTM figure (last 12 months) and tracks the % of defaults over the period. Recovery rates are based on the price of the defaulted bonds or loans 30 days post the default date. Default and recovery rates are as of December 2021. 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.
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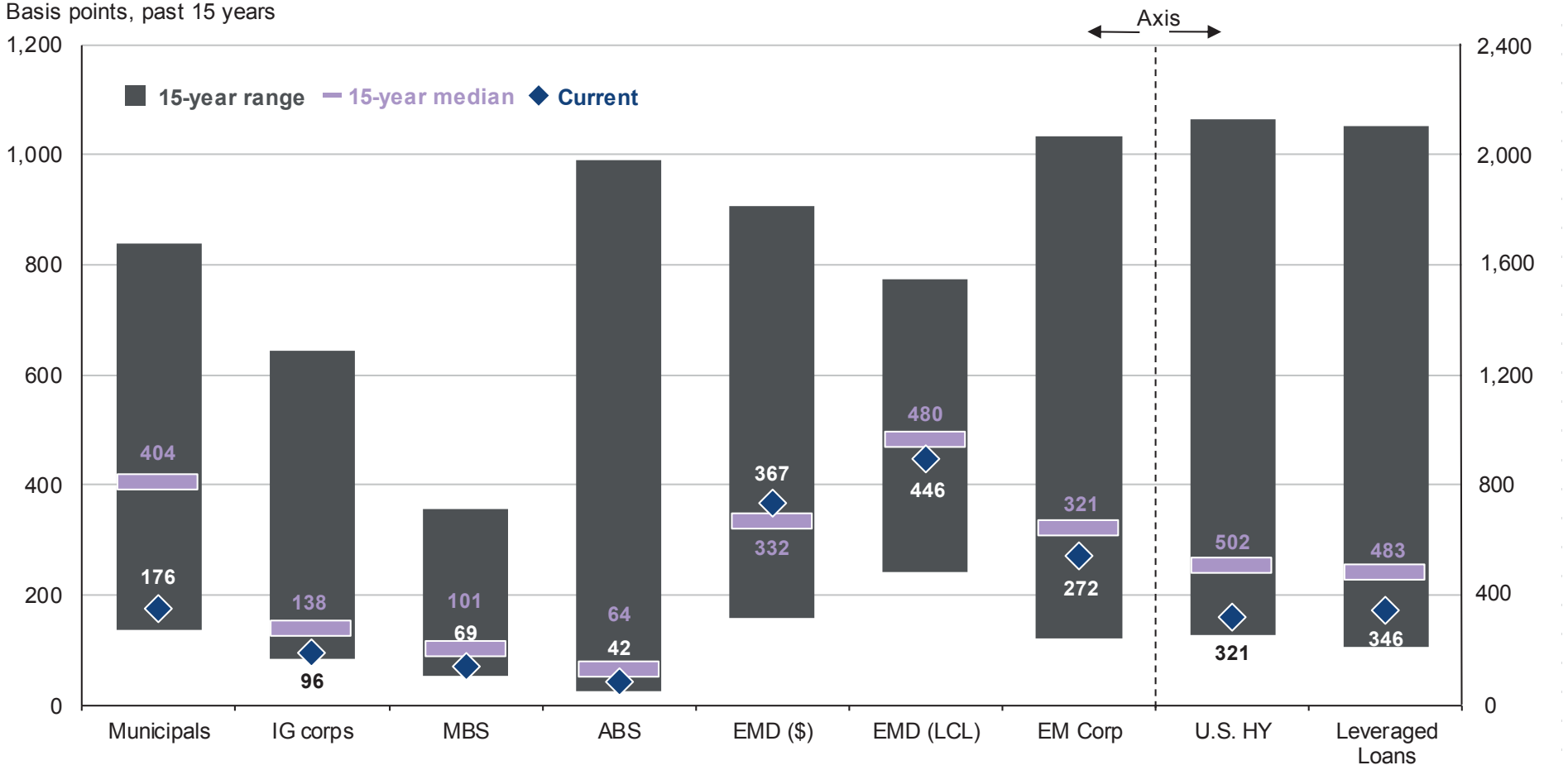
Fixed income valuations

Spread-to-worst across fixed income sectors

Basis points, past 15 years



Source: Bloomberg, FactSet, J.P. Morgan Credit Research, J.P. Morgan Asset Management. Indices used are Bloomberg except for emerging market debt and leveraged loans: EMD ($): J.P. Morgan EMIGLOBAL Diversified Index; EMD (LCL): J.P. Morgan GBI-EM Global Diversified Index; EM Corp.: J.P. Morgan CEMBI Broad Diversified; Leveraged loans: JPM Leveraged Loan Index. Spread-to-worst indicated is the difference between the yield-to-worst of a bond and yield-to-worst of a U.S. Treasury security with a similar duration. All sectors shown are spread-to-worst except for Municipals, which is based on the tax-equivalent yield-to-worst, and Leveraged loans, which are based on spread to 3Y takeout. EM (LCL) spread-to-worst is calculated using the index yield less the YTM on the 5-year U.S. Treasury bellwether index.
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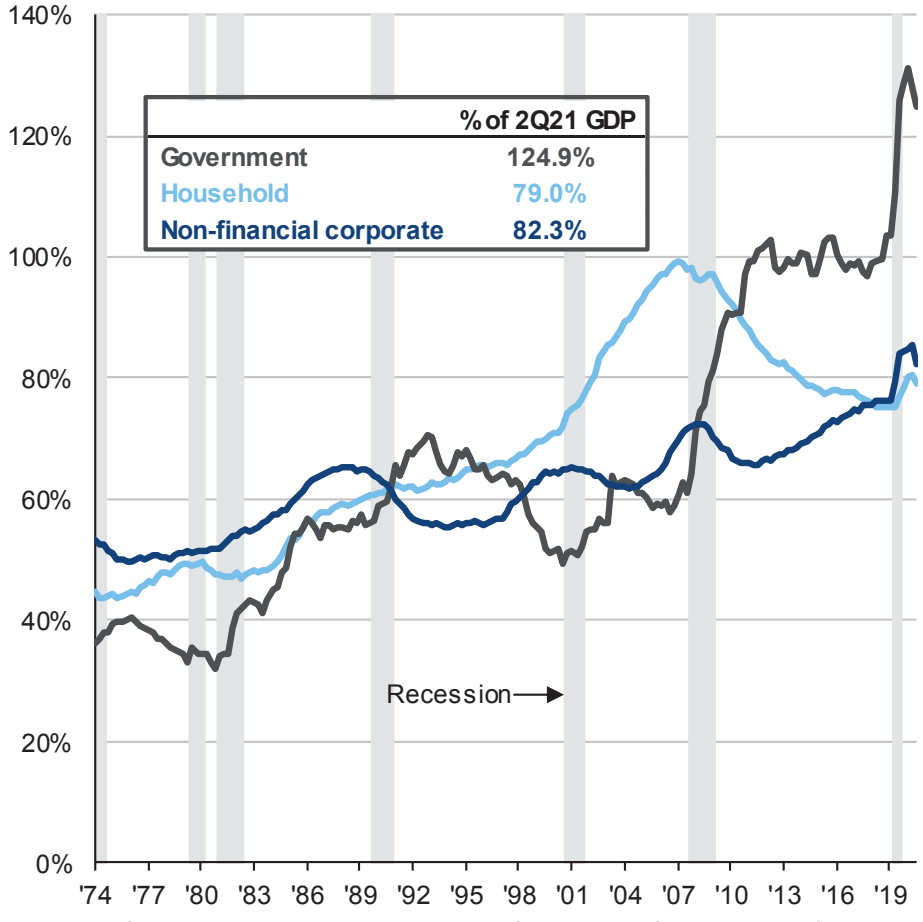
Corporate debt dynamics

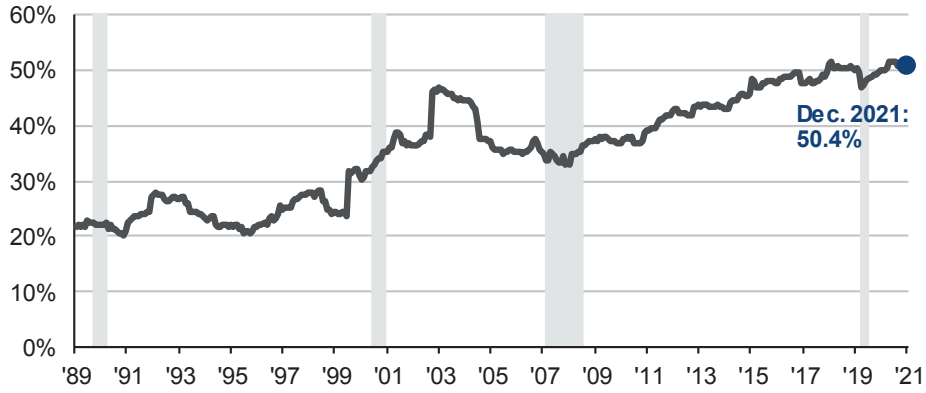
U.S. debt to GDP ratios

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) 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 U.S. Aggregate Investment Grade Corporate Credit Index. Baa debt is the lowest credit rating issued by Moody's for investment-grade debt.
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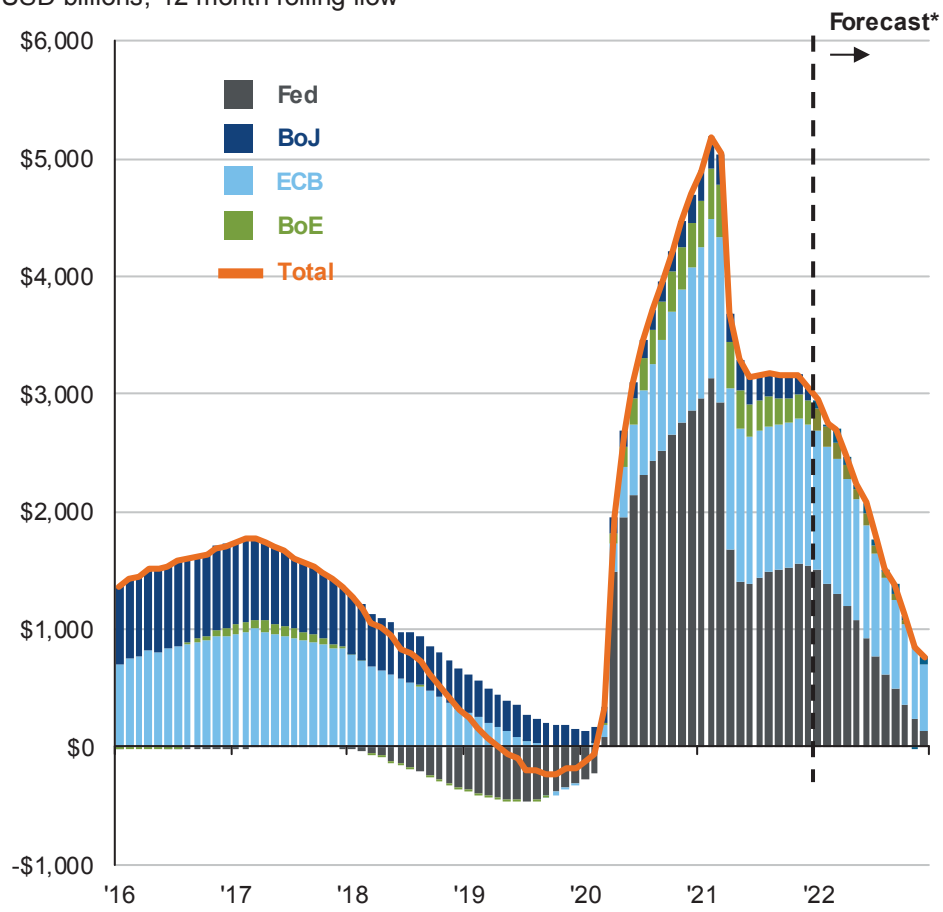
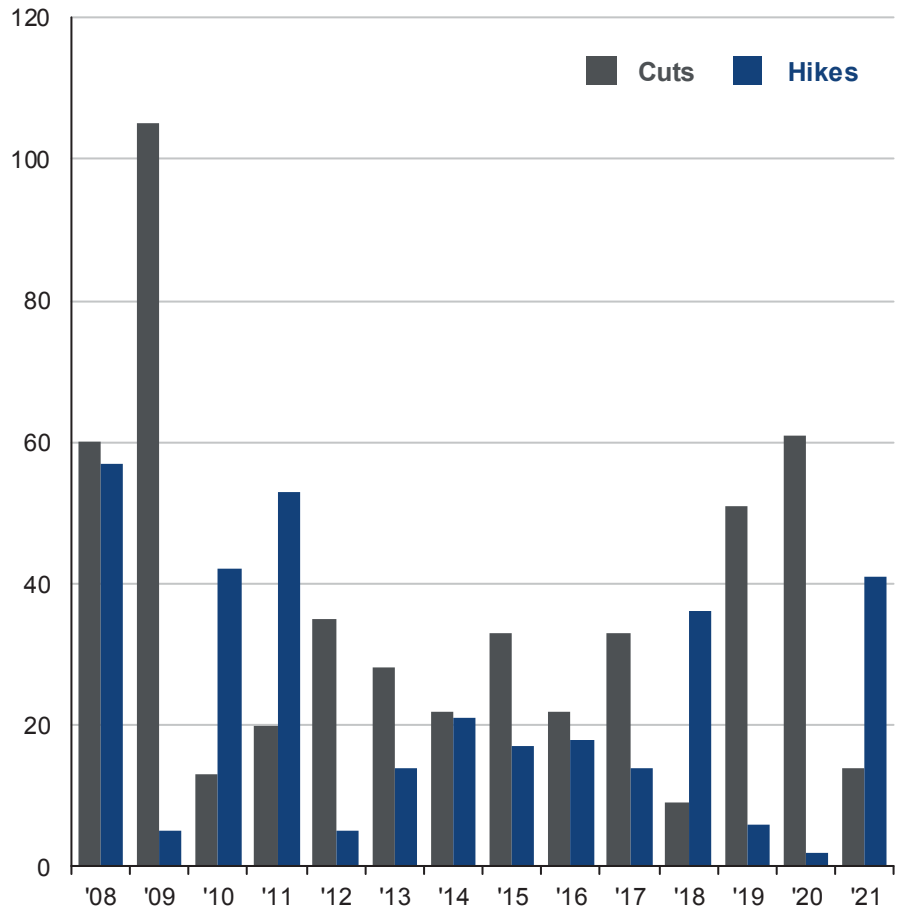
Global monetary policy

Developed market central bank bond purchases

USD billions, 12-month rolling flow



Number of rate changes by EM and DM central banks**



Source: BIS, FactSet, J.P. Morgan Asset Management; (Left) Bank of England (BoE), Bank of Japan (BoJ), European Central Bank (ECB), Federal Reserve System (Fed), J.P. Morgan Global Economic Research. *Bond purchase forecast assumes net government bond purchases as outlined in the most recent monetary policy announcements from the BoE, BoJ, ECB, and Federal Reserve through December 2022. **Central banks include Australia, Brazil, Canada, Chile, China, Colombia, Denmark, euro area, Hong Kong SAR, Indonesia, India, Japan, Korea, Malaysia, Mexico, Norway, Peru, Philippines, Poland, Russia, Saudi Arabia, S. Africa, Sweden, Switzerland, Thailand, Turkey, UK and the U.S. Forecasts, projections and other forward-looking statements are based upon current beliefs and expectations. They are for illustrative purposes only and are not a reliable indicator of future performance. Given the inherent uncertainties and risks associated with forecast, projections or other forward-looking statements, actual events, results or performance may differ materially from those reflected or contemplated.
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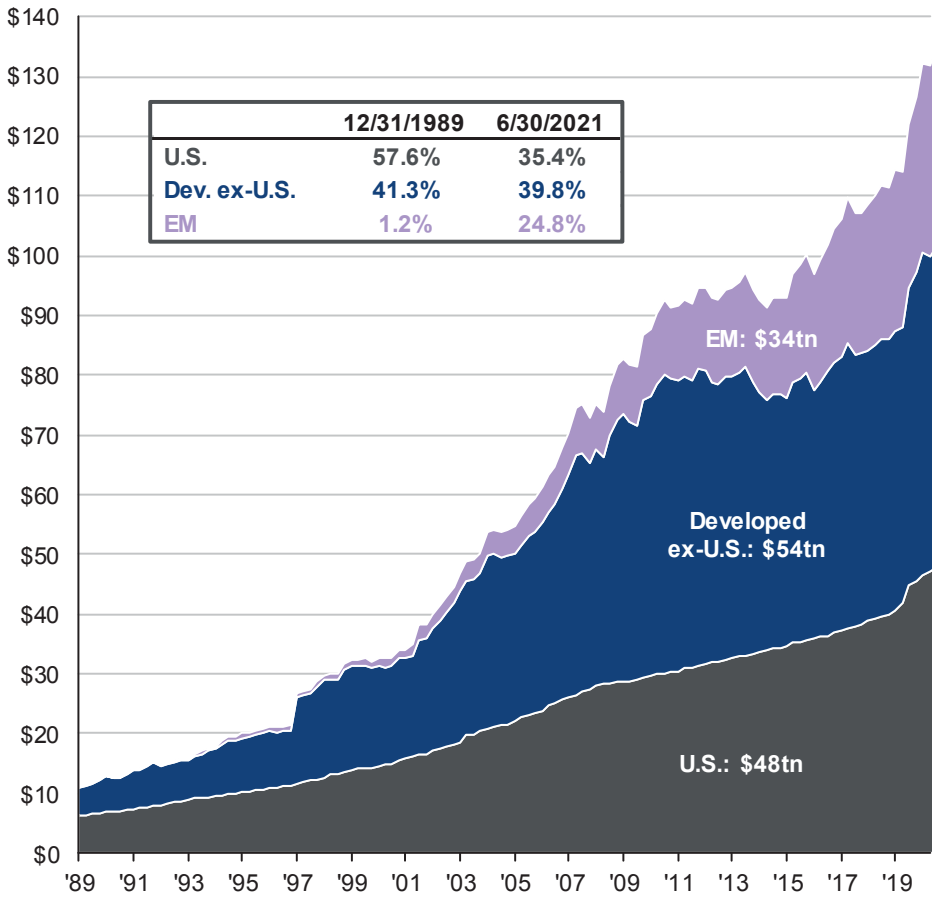
Global fixed income

Aggregates	Yield 12/31/2021	Yield 12/31/2020	2021 Return Local	2021 Return USD	Duration	Correlation to 10-year
U.S.	1.75%	1.12%	-1.54%	-1.54%	6.8 years	0.89
Gbl. ex-U.S.	1.07%	0.68%	-	-6.41%	8.00	0.37
Japan	0.18%	0.11%	0.14%	-10.22%	9.60	0.53
Germany	0.05%	-0.28%	-1.64%	-8.59%	7.30	0.17
UK	1.18%	0.60%	-4.54%	-5.41%	11.00	0.26
Italy	0.76%	0.32%	-2.55%	-9.42%	7.30	0.01
Spain	0.32%	0.00%	-2.39%	-9.27%	7.50	0.02
Sector						
Euro Corp.	0.52%	0.24%	-0.97%	-7.95%	5.2 years	0.17
Euro HY	3.55%	3.40%	4.21%	-3.15%	3.90	-0.22
EMD ($)	5.27%	4.91%	-	-1.80%	7.60	-0.07
EMD (LCL)	5.72%	5.22%	-2.92%	-8.75%	5.20	-0.08
EM Corp.	4.11%	4.51%	-	0.91%	5.90	-0.07

Global bond market

USD trillions



Source: J.P. Morgan Asset Management; (Left) 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 Euro Aggregate Corporate Index and the Bloomberg 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.
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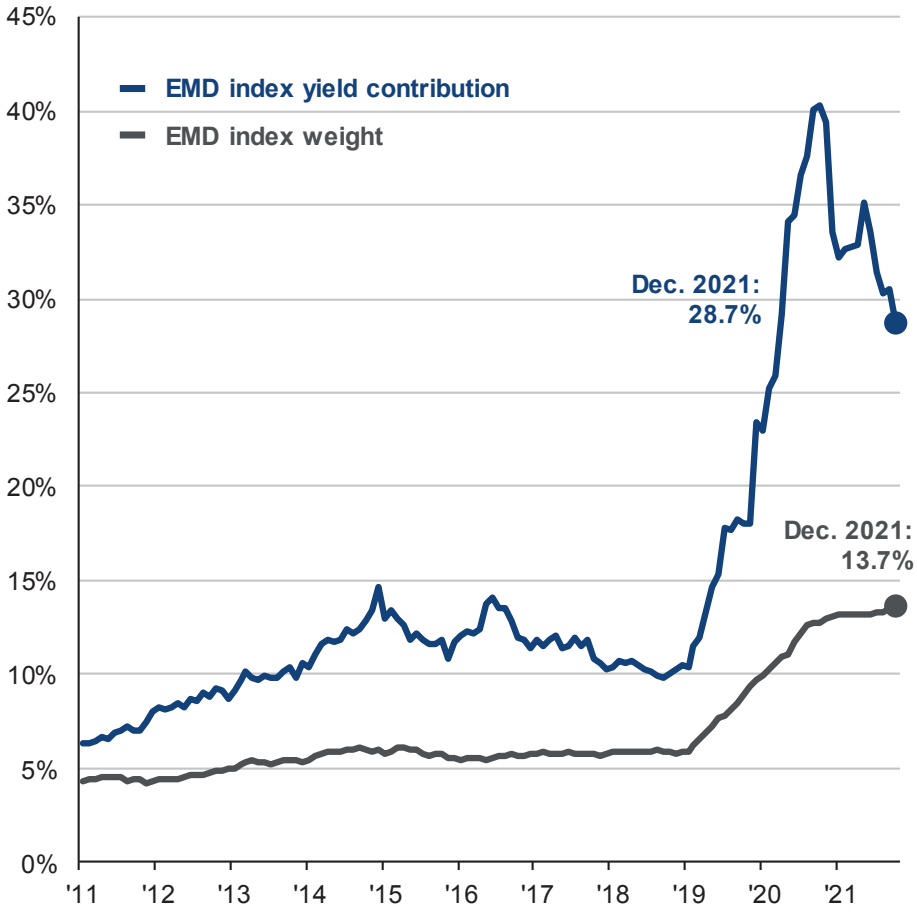
Emerging market debt

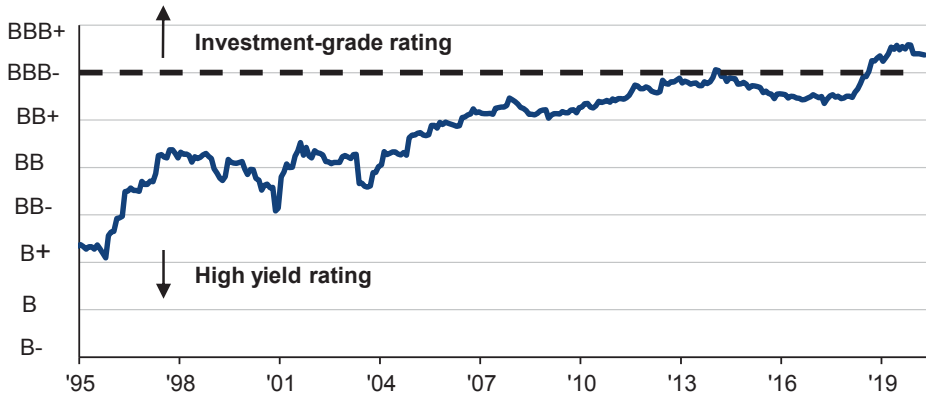
EMD yield and weight in Bloomberg Global Agg. Index

Weighted yield-to-worst



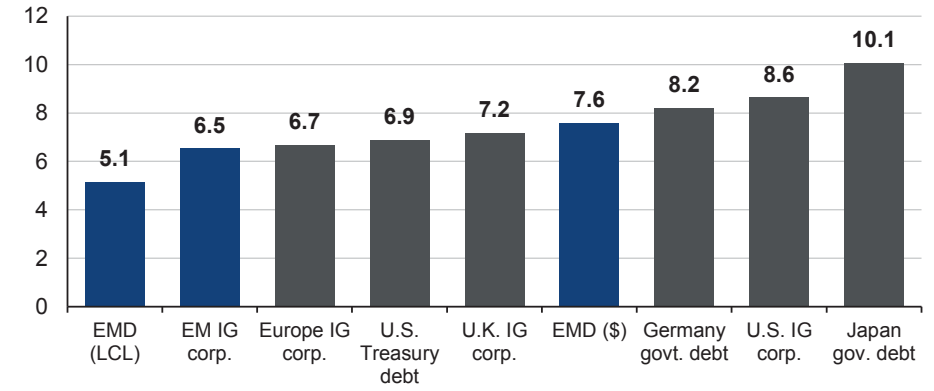
Average credit rating of EM debt universe

EMBIG index



Emerging and developed markets duration

Current modified duration



Source: Bloomberg, FactSet, J.P. Morgan Asset Management. Emerging market debt yield and weight contributions in the Bloomberg Global Aggregate Index include frontier markets.
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Fixed income sector returns

2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2007-2021 Ann.	2007-2021 Vol.
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 9.1%	Muni 3.3%	High Yield 17.1%	EMD LCL. 15.2%	ABS 2.7%	EMD USD 15.0%	TIPS 11.0%	TIPS 6.0%	High Yield 7.4%	EMD LCL. 11.8%
TIPS 11.6%	MBS 8.3%	EMD USD 29.8%	High Yield 15.1%	Muni 10.7%	EMD LCL. 16.8%	ABS -0.3%	Corp. 7.5%	MBS 1.5%	EMD USD 10.2%	EMD USD 10.3%	Muni 1.3%	Corp. 14.5%	Corp. 9.9%	High Yield 5.3%	EMD USD 6.1%	High Yield 11.2%
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%	Treas. 8.0%	Muni 1.5%	Asset Alloc. 5.5%	EMD USD 8.7%
Barclays Agg 7.0%	Asset Alloc. -1.9%	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%	Barclays Agg 7.5%	ABS 1.1%	Corp. 5.5%	Corp. 6.1%
MBS 6.9%	TIPS -2.4%	Corp. 18.7%	Asset Alloc. 7.6%	Barclays Agg 7.8%	Asset Alloc. 7.6%	Asset Alloc. -1.8%	Barclays Agg 6.0%	Barclays Agg 0.5%	Asset Alloc. 4.8%	Muni 5.4%	Barclays Agg 0.0%	Asset Alloc. 9.8%	High Yield 7.1%	Asset Alloc. -0.2%	Muni 4.3%	Treas. 5.0%
Asset Alloc. 6.2%	Muni -2.5%	Asset Alloc. 16.5%	Barclays Agg 6.5%	Asset Alloc. 7.7%	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%	Asset Alloc. 6.6%	Corp. -1.0%	TIPS 4.2%	TIPS 4.8%
EMD USD 6.2%	Corp. -4.9%	Muni 12.9%	TIPS 6.3%	EMD USD 7.3%	Muni 6.8%	Muni -2.6%	Treas. 5.1%	Asset Alloc. -0.4%	Barclays Agg 2.6%	Barclays Agg 3.5%	TIPS -1.3%	TIPS 8.4%	EMD USD 5.3%	MBS -1.0%	Barclays Agg 3.9%	ABS 4.2%
Corp. 4.6%	EMD LCL. -5.2%	TIPS 11.4%	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 7.5%	Muni 5.2%	Barclays Agg -1.5%	MBS 3.5%	Asset Alloc. 3.8%
Muni 3.4%	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%	MBS 3.9%	EMD USD -1.8%	Treas. 3.3%	Muni 3.7%
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%	ABS 3.4%	Treas. -2.3%	ABS 2.9%	Barclays Agg 3.3%
High Yield 1.9%	High Yield -26.2%	Treas. -3.6%	Muni 2.4%	EMD LCL. -1.8%	Treas. 2.0%	EMD LCL. -9.0%	EMD LCL. -5.7%	EMD LCL. -14.9%	Muni 0.2%	Treas. 2.3%	EMD LCL. -6.2%	ABS 3.8%	EMD LCL. 2.7%	EMD LCL. -8.7%	EMD LCL. 2.5%	MBS 2.5%

Source: 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 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, 2021.

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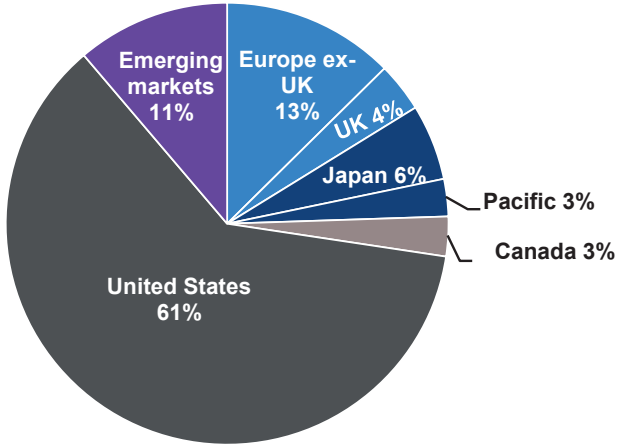
Global equity markets

Returns	2021		2020		15-years	
	Local	USD	Local	USD	Ann.	Beta
Regions						
U.S. (S&P 500)	-	28.7	-	18.4	10.7	0.90
AC World ex-U.S.	13.5	8.3	6.5	11.1	4.2	1.07
EAFE	19.2	11.8	1.3	8.3	4.1	1.04
Europe ex-UK	24.4	16.5	2.1	11.6	4.8	1.18
Emerging markets	0.1	-2.2	19.5	18.7	4.8	1.18
Selected Countries						
United Kingdom	19.6	18.5	-13.2	-10.4	2.3	1.02
France	29.7	20.6	-3.9	4.7	4.7	1.22
Germany	13.9	5.9	3.0	12.3	4.7	1.31
Japan	13.8	2.0	9.2	14.9	3.4	0.72
China	-21.6	-21.6	28.3	29.7	5.8	1.10
India	28.9	26.7	18.6	15.9	6.7	1.26
Brazil	-11.2	-17.2	4.8	-18.9	0.9	1.50
Russia	21.6	20.0	3.4	-11.6	0.9	1.49

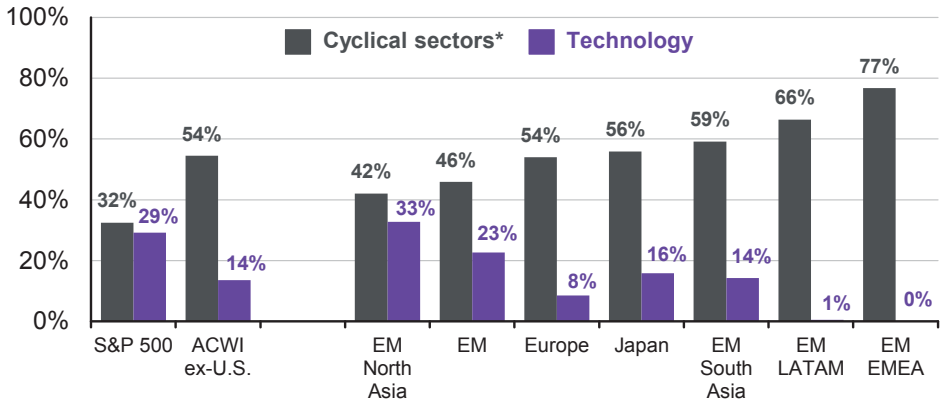
Weights in MSCI All Country World Index

% global market capitalization, float adjusted



Representation of cyclical and technology sectors

% of index market capitalization



Source: FactSet, Federal Reserve, MSCI, Standard & Poor's, J.P. Morgan Asset Management. All return values are MSCI Gross Index data. 15-year history based on USD returns. 15-year return and beta figures are calculated for the time period 12/31/2006 to 12/31/2021. 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 (Information Technology) and cyclicals (Consumer Discretionary, Financials, Industrials, Energy and Materials). The Internet and direct marketing subsector has been removed from the cyclicals calculation. In our judgement, companies in this space do not yet fit into the cyclical category, as they are still in a transitional growth phase and are not being directly impacted by the business cycle. EM North Asia includes China, Taiwan and South Korea. EM South Asia includes India, Indonesia, Malaysia, Pakistan, Philippines, Taiwan and Thailand.
Guide to the Markets – U.S. Data are as of December 31, 2021.

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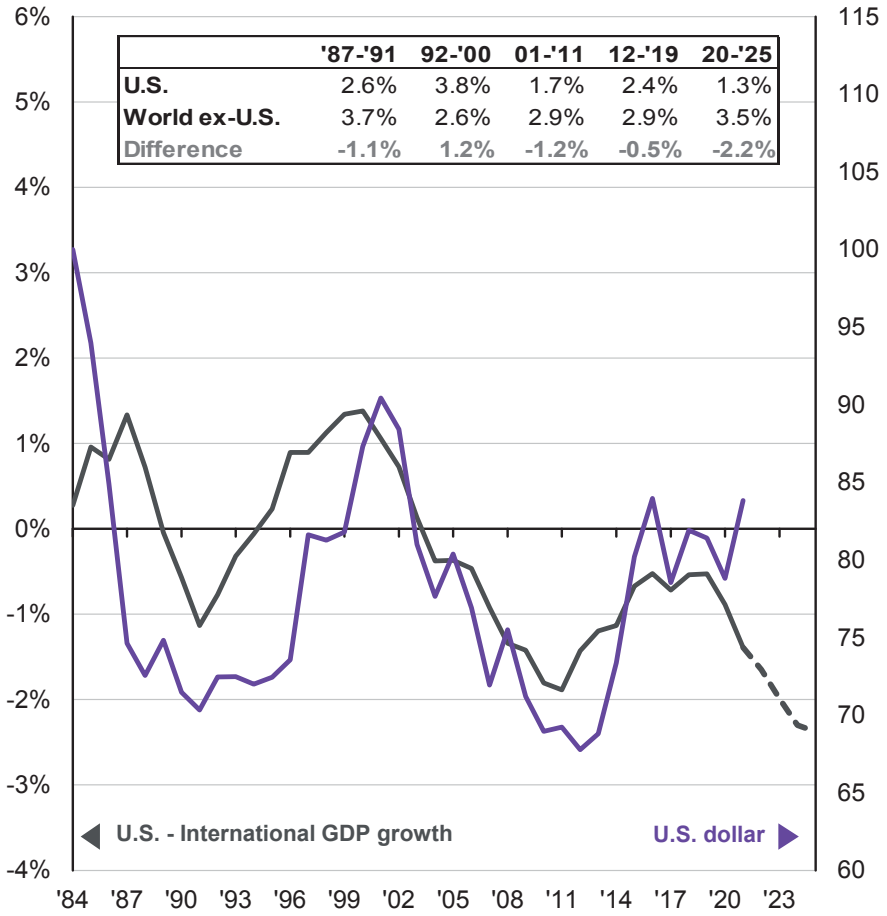
Currency and international equity returns

U.S. dollar and international GDP growth

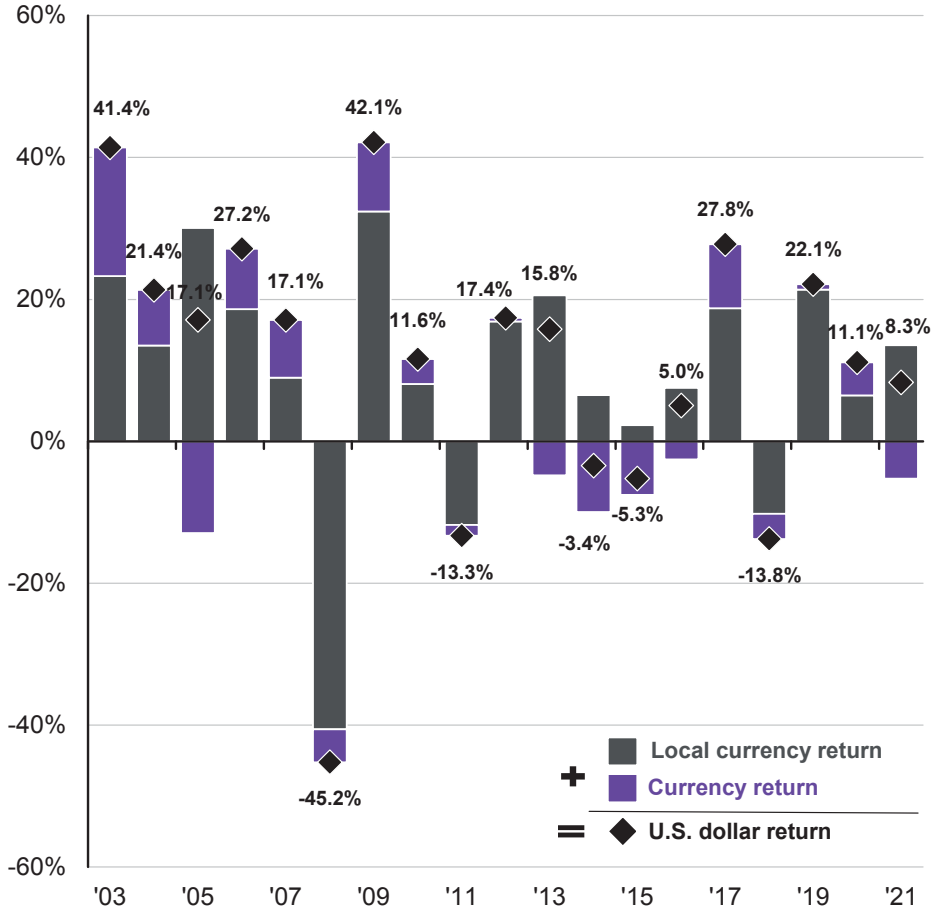
Real GDP growth: U.S.-intl. (5-year moving avg.); USD: 100=1984

	'87-'91	92-'00	01-'11	12-'19	20-'25
U.S.	2.6%	3.8%	1.7%	2.4%	1.3%
World ex-U.S.	3.7%	2.6%	2.9%	2.9%	3.5%
Difference	-1.1%	1.2%	-1.2%	-0.5%	-2.2%



Currency impact on international returns

MSCI All Country World ex-U.S. Index, total return



Source: J.P. Morgan Asset Management; (Left) IMF, J.P. Morgan Global Economic Research; (Right) MSCI.
Global GDP growth is based on GDP at market exchange rates as weights. U.S. dollar is the J.P. Morgan Global Economic Research real broad effective exchange rate (CPI), calculated as year-end moves versus the prior year-end. Past performance is not a reliable indicator of current and future results. Forecasts are not a reliable indicator of future performance. Forecasts, projections and other forward-looking statements are based upon current beliefs and expectations. They are for illustrative purposes only and serve as an indication of what may occur. Given the inherent uncertainties and risks associated with forecasts, projections or other forward-looking statements, actual events, results or performance may differ materially from those reflected or contemplated.
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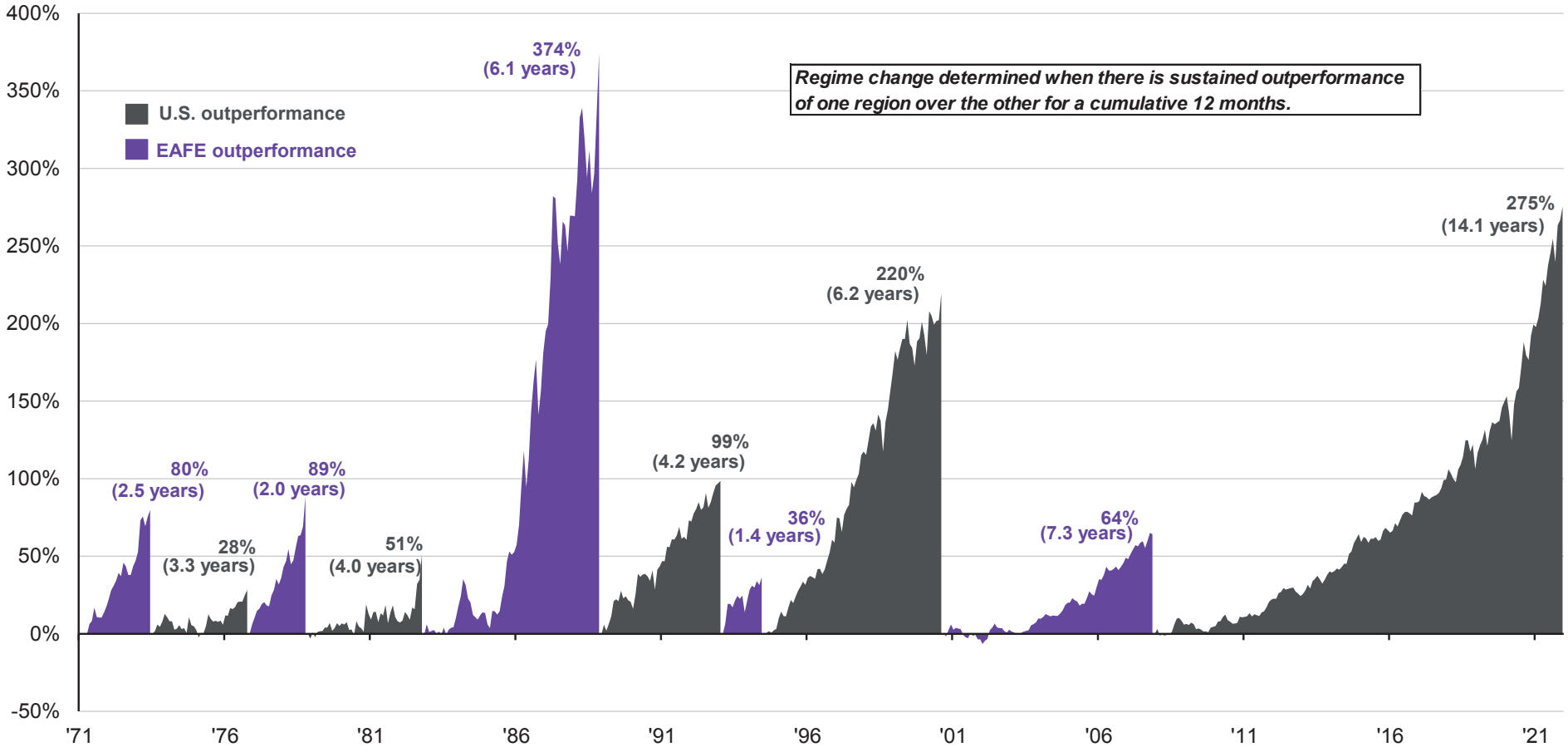
Cycles of U.S. equity outperformance

MSCI EAFE and MSCI USA relative performance

U.S. dollar, total return, cumulative outperformance*



Source: FactSet, MSCI, J.P. Morgan Asset Management. *Cycles of outperformance include a qualitative component to determine turning points in leadership. *Guide to the Markets – U.S.* Data are as of December 31, 2021.

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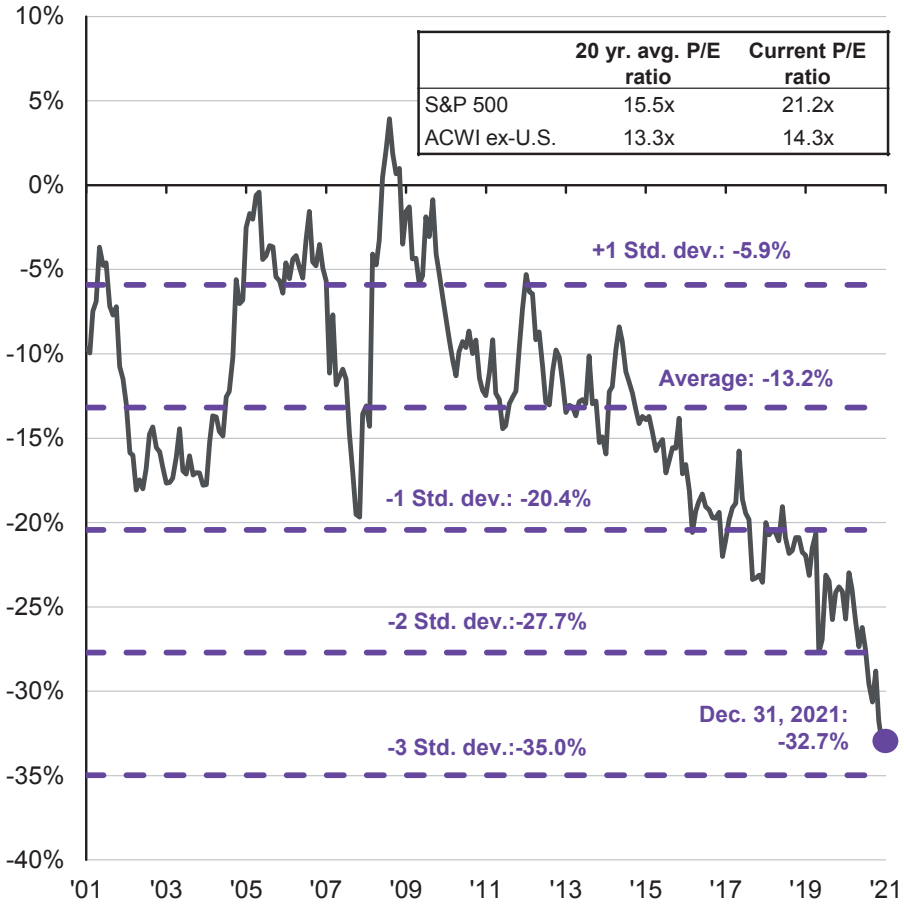
International valuations and dividend yields

International: Price-to-earnings discount vs. U.S.

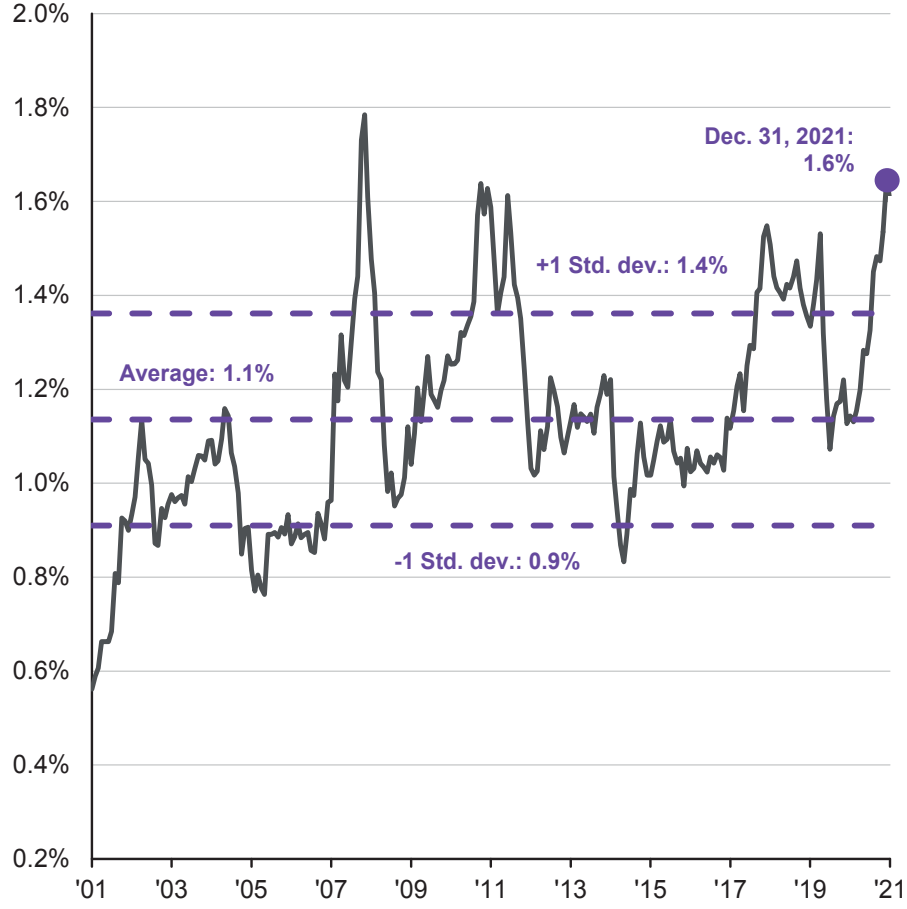
MSCI AC World ex-U.S. vs. S&P 500 Indices, next 12 months



	20 yr. avg. P/E ratio	Current P/E ratio
S&P 500	15.5x	21.2x
ACWI ex-U.S.	13.3x	14.3x

International: Difference in dividend yields vs. U.S.

MSCI AC World ex-U.S. minus S&P 500 Indices, next 12 months



Source: FactSet, MSCI, Standard & Poor's, J.P. Morgan Asset Management.
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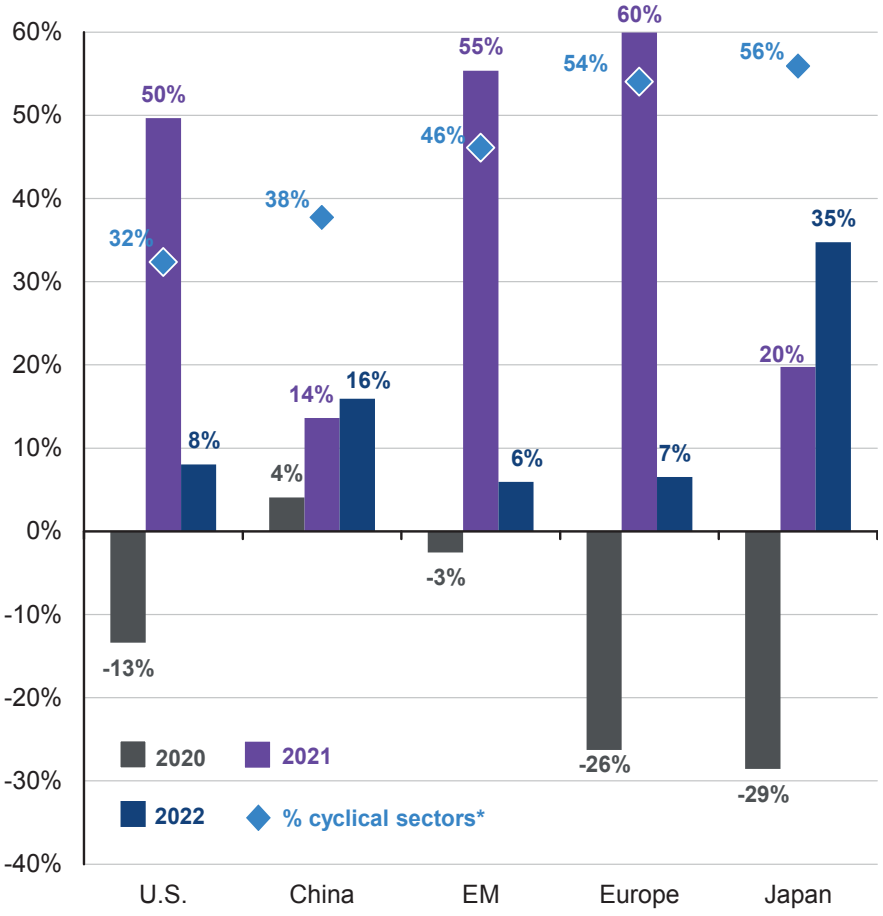
International equity earnings and valuations

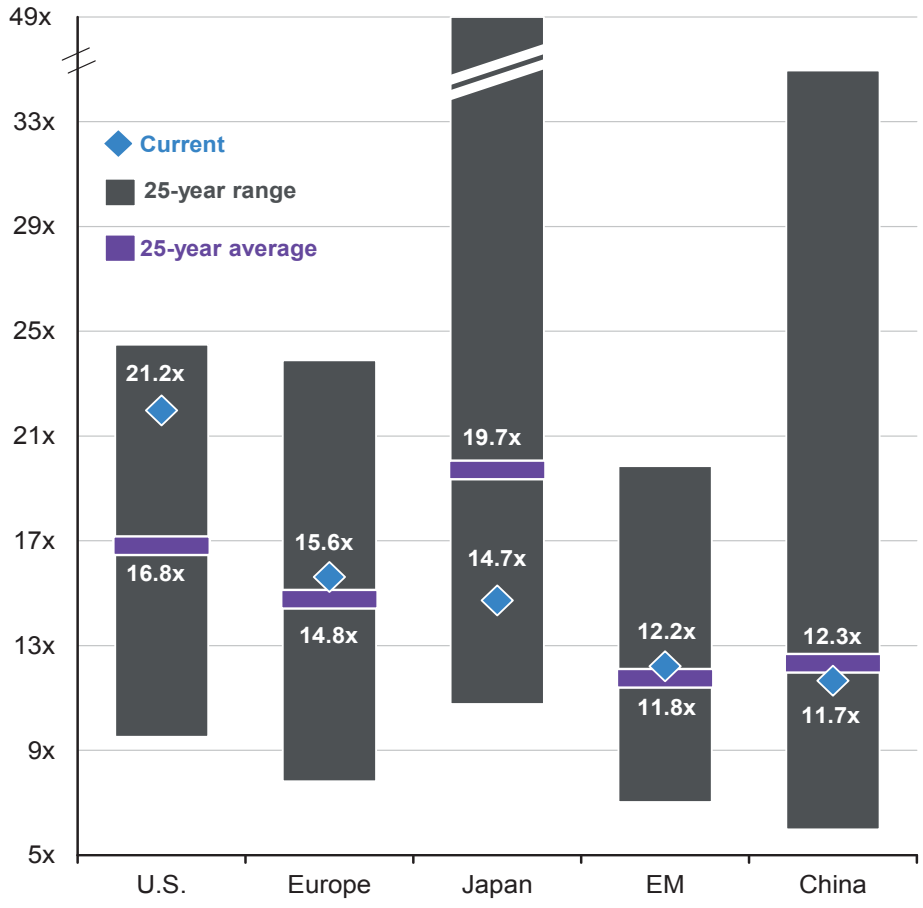
Global earnings growth

Calendar year consensus estimates



Global valuations

Current and 25-year next 12 months price-to-earnings ratio



Source: FactSet, MSCI, Standard & Poor's, Thomson Reuters, J.P. Morgan Asset Management.
*Cyclical sectors include consumer discretionary, financials, industrials, energy and materials. The Internet and direct marketing subsector has been removed from the cyclicals calculation. In our judgement, companies in this space do not yet fit into the cyclical category, as they are still in a transitional growth phase and are not being directly impacted by the business cycle. 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 44% 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, 2021.

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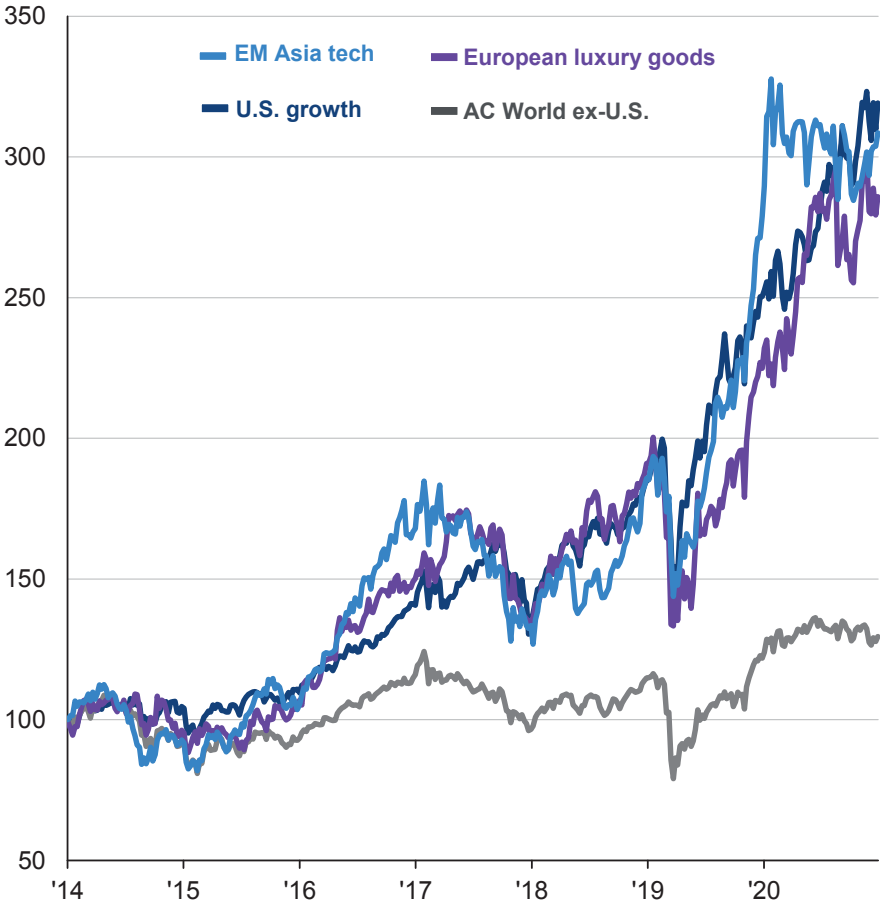
International markets

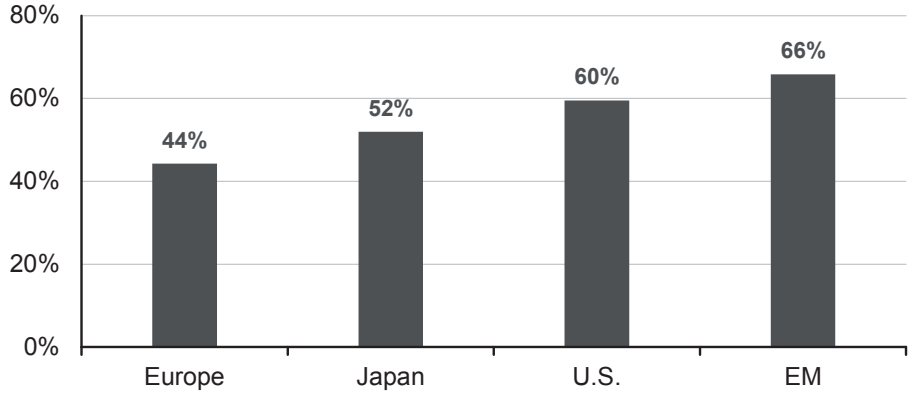
Returns of thematic indices

Total return, U.S. dollar, Dec. 31, 2014 = 100



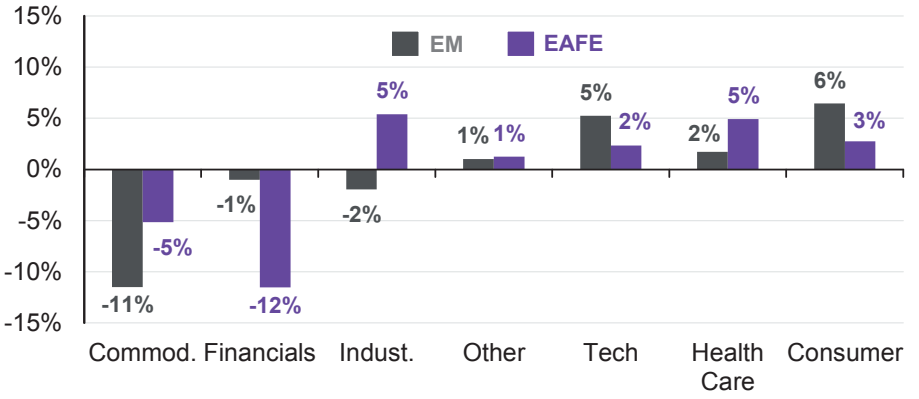
Revenue exposure vs. country of listing

% of total revenue from home countries



Change in international sector weightings

% point change from Dec. 31, 2005



Source: FactSet, MSCI, Russell, J.P. Morgan Asset Management. Indices used are as follows: EM Asia Tech: MSCI EM Asia Information Technology, European Luxury Goods: MSCI Europe Textiles, Apparel and Luxury Goods, U.S. Growth: Russell 1000 Growth, AC World ex-U.S.: MSCI AC World ex USA, Europe: MSCI Europe, Japan: MSCI Japan, U.S.: S&P 500, EM: MSCI EM, EAFE: MSCI EAFE. Revenue exposure vs. country of listing and change in international sector weightings is as of 12/30/2021.
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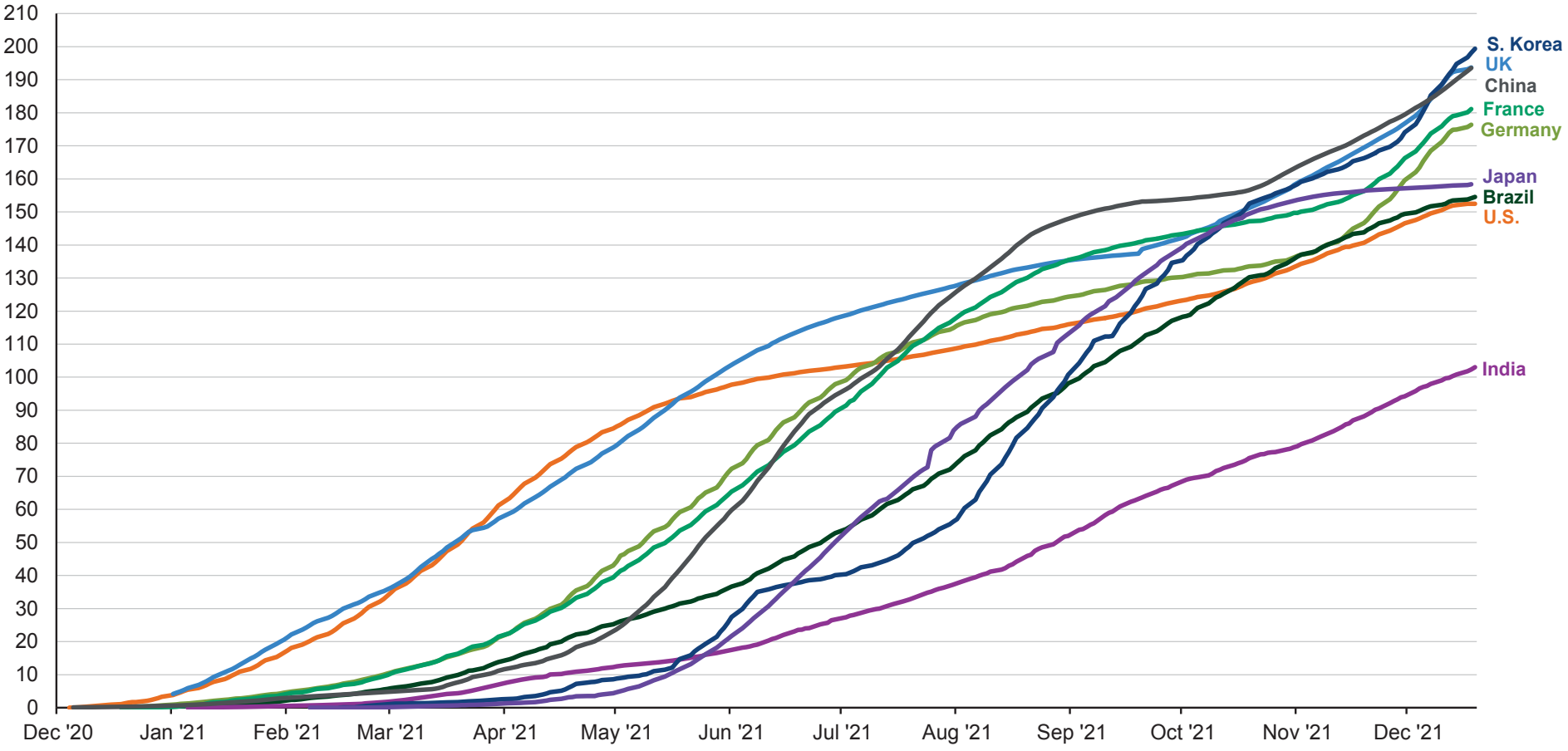
Global COVID-19 vaccinations

COVID-19 vaccine rollout
Total vaccine doses administered per hundred people



Source: Our World in Data, J.P. Morgan Asset Management. Total vaccine doses administered per hundred people. Includes both first and second doses in the case of a two-dose vaccine regimen. *Guide to the Markets – U.S.* Data are as of December 31, 2021.

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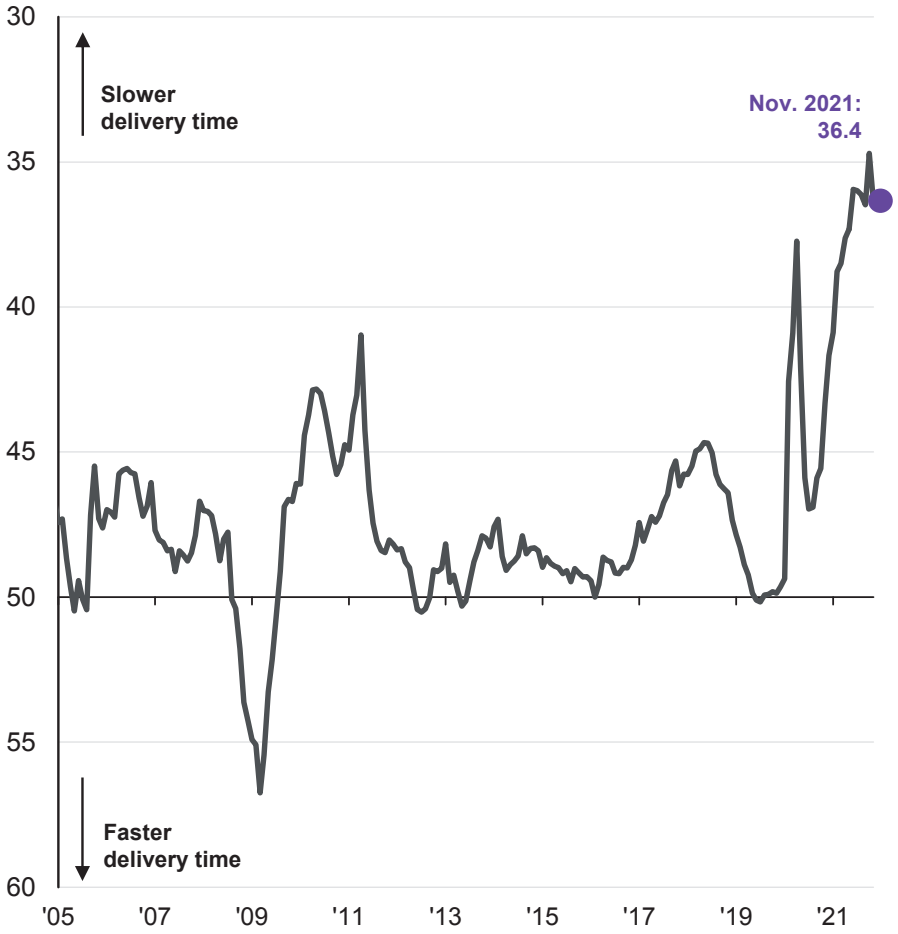
Global supply chains and inflation

Global PMI suppliers' delivery times index*



Global PMI input and output prices**

Source: IHS Markit, J.P. Morgan Asset Management.
*Participants in IHS Markit's PMI business surveys, conducted in 44 countries, are asked: "Are your suppliers' delivery times slower, faster or unchanged on average than one month ago?". Index includes the manufacturing and construction sectors. A reading of 50 = no change, >50 = faster delivery time, <50 = slower delivery time.**Participants are asked: "Are input/output prices the same, higher or lower?". Values shown reflect the composite index, which includes both manufacturing and services. A reading of 50 = no change, >50 = price increase, <50= price decrease.
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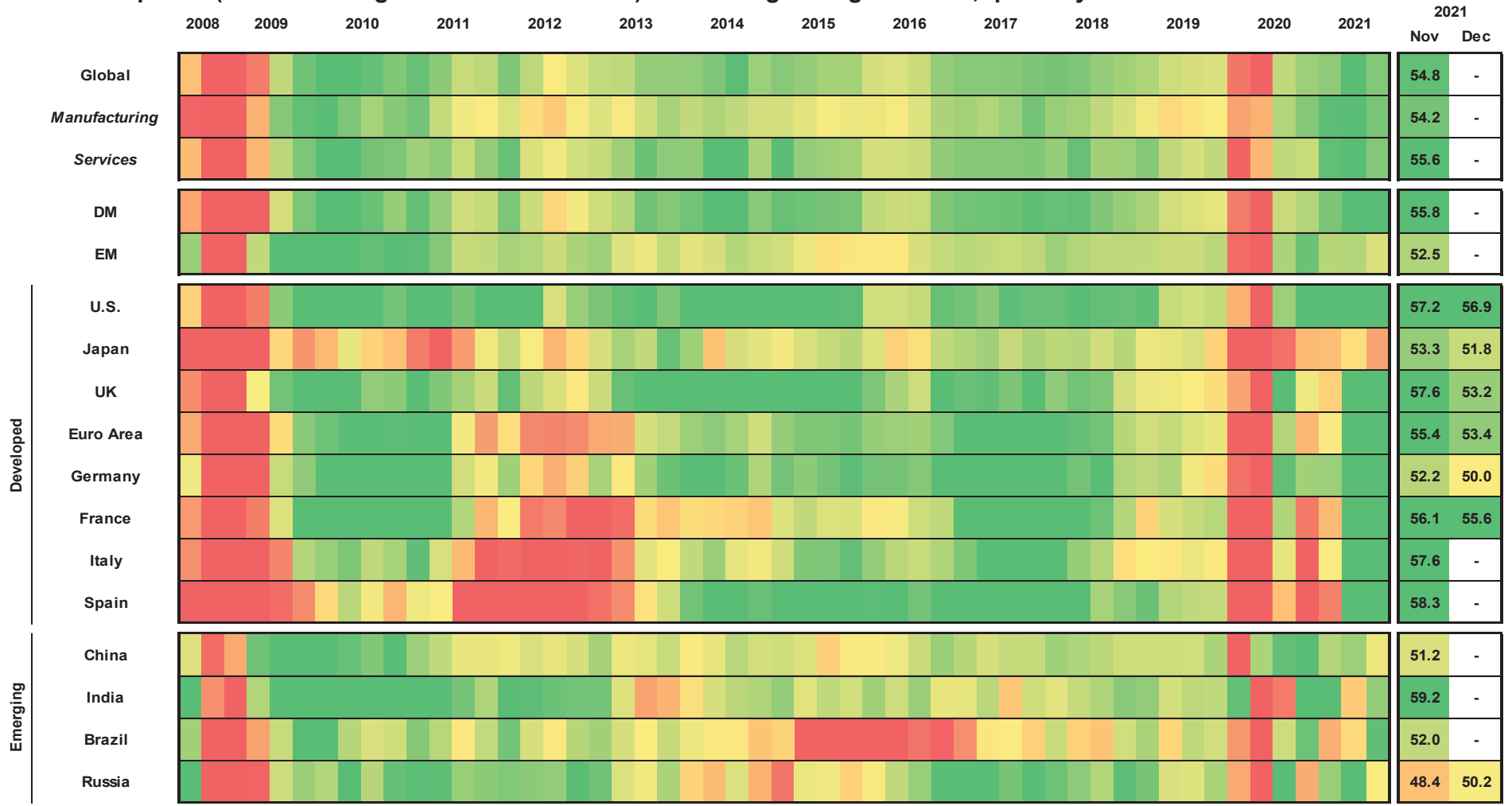
Global economic activity momentum

Global Composite (manufacturing & services combined) Purchasing Managers' Index, quarterly



Source: Markit, J.P. Morgan Asset Management.
The Composite PMI includes both manufacturing and services sub-indices. Heatmap colors are based on PMI relative to the 50 level, which indicates acceleration or deceleration of the sector, for the time period shown. Heatmap is based on quarterly averages, with the exception of the two most recent figures, which are single month readings. Data for the U.S. are back-tested and filled in from December 2007 to September 2009 due to lack of existing PMI figures. DM and EM represent developed markets and emerging markets, respectively.
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Global inflation

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

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 time period shown. Deep blue = lowest value, light blue = median, deep red = highest value. DM and EM represent developed markets and emerging markets, respectively.
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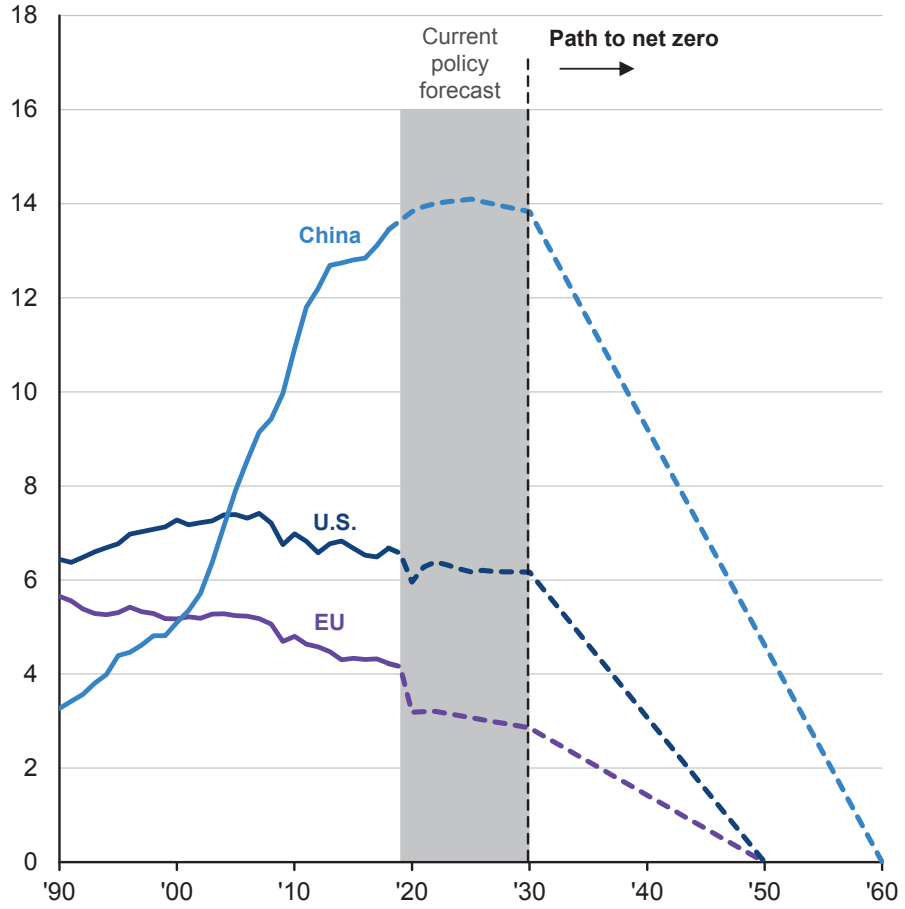
Emissions targets and global energy mix

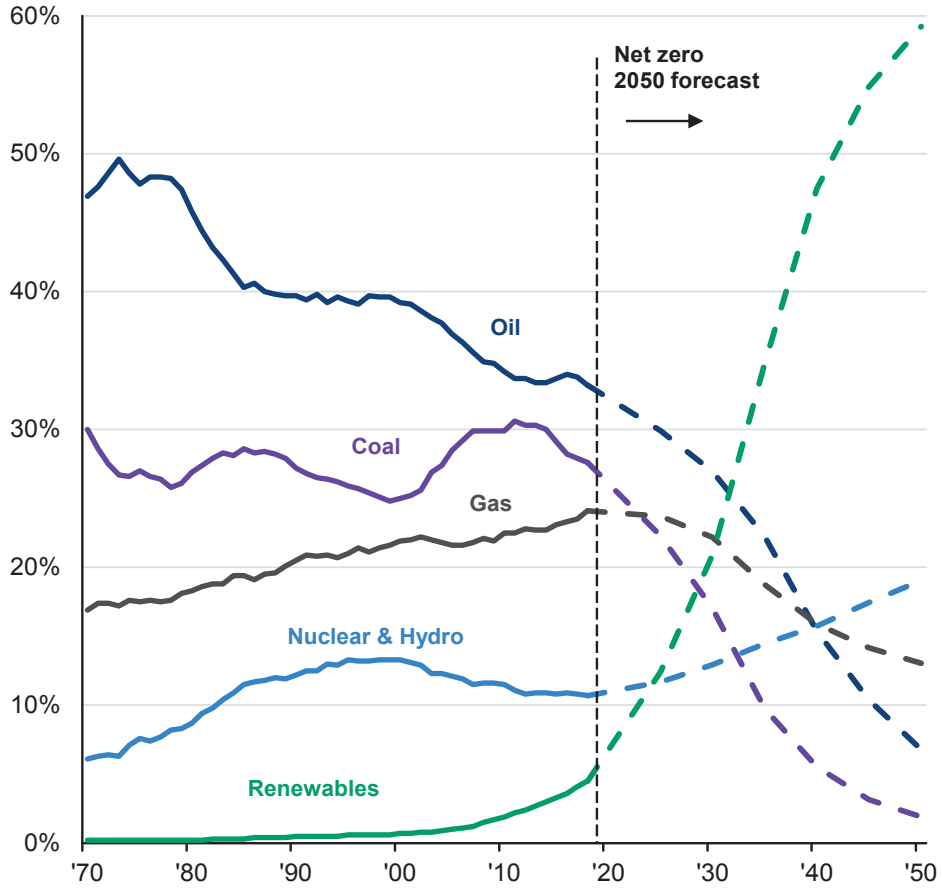
Greenhouse gas emissions targets

Billions of tons per year, CO2 equivalent



Global energy mix

% of primary energy consumption



Source: J.P. Morgan Asset Management; (Left) ClimateActionTracker; (Right) BP Energy Outlook 2020. Past performance is not a reliable indicator of current and future results. Forecasts are not a reliable indicator of future performance. Forecasts, projections and other forward-looking statements are based upon current beliefs and expectations. They are for illustrative purposes only and serve as an indication of what may occur. Given the inherent uncertainties and risks associated with forecasts, projections or other statements, actual events, results or performance may differ materially from those reflected or contemplated.
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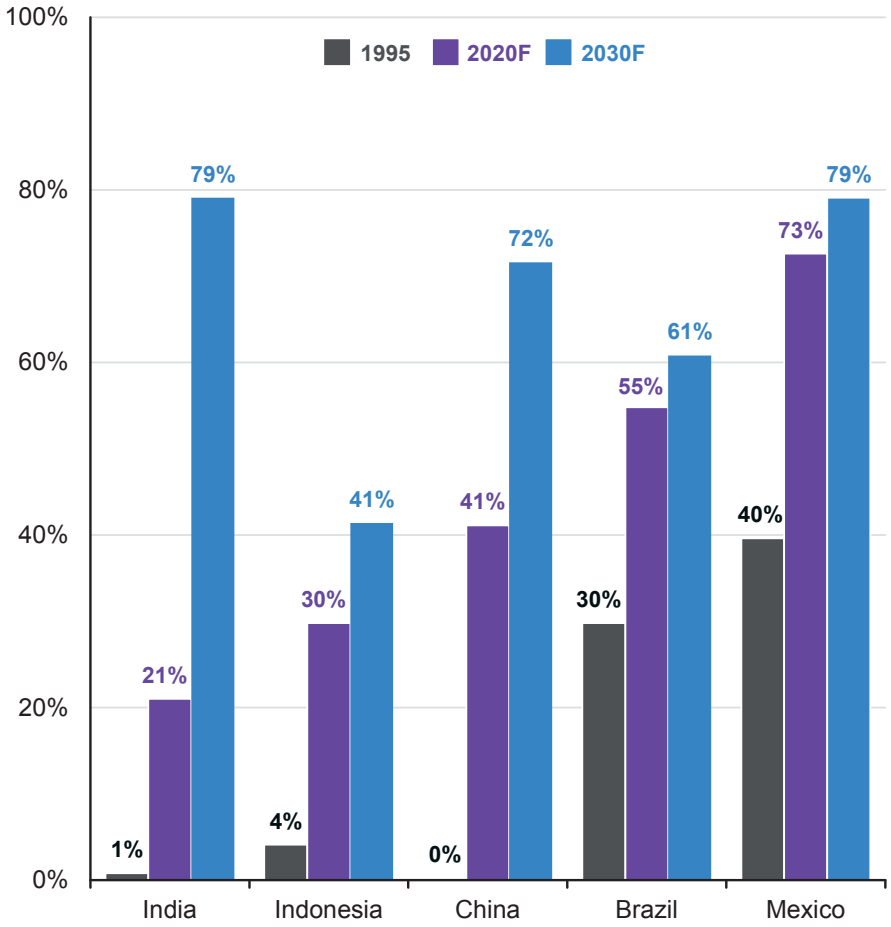
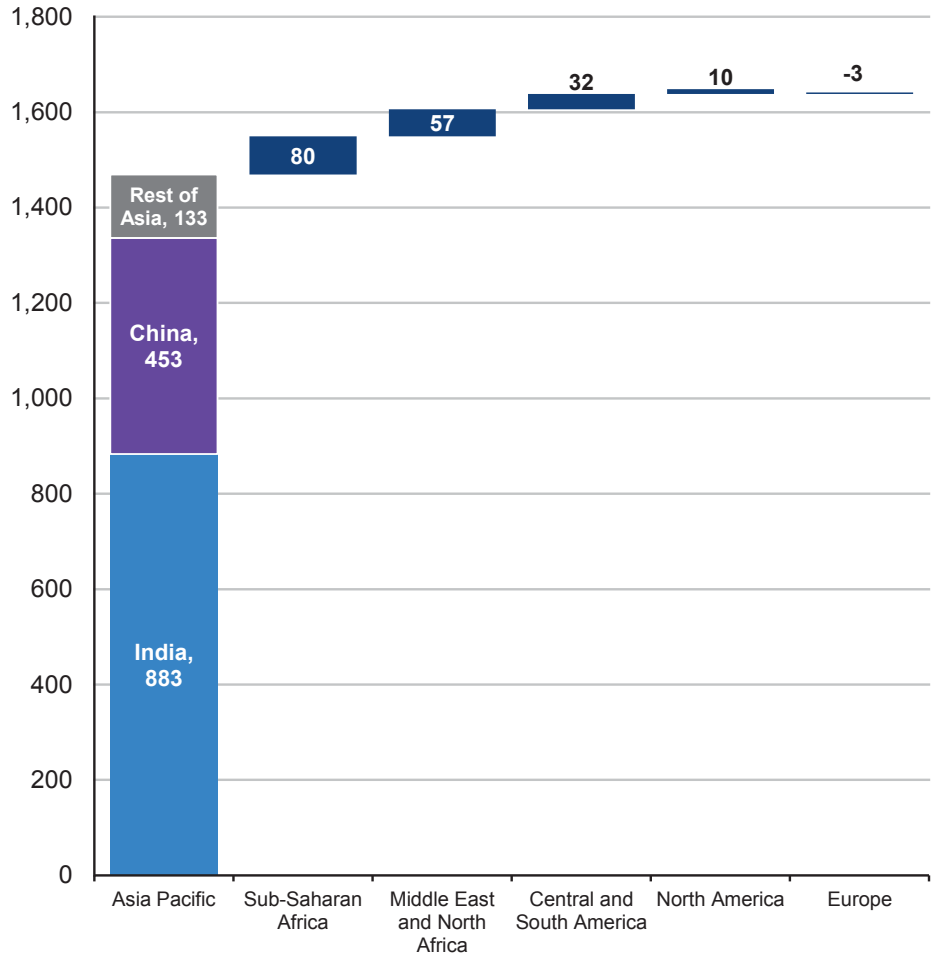
The emergence of the EM middle class

Growth of the middle class
Percent of total population



Regional contribution to middle class growth: 2020 to 2030
Millions of people



Source: Brookings Institution, J.P. Morgan Asset Management. Estimates for regional contribution are from Kharas, Homi. *The Unprecedented Expansion of the Global Middle Class, An Update*. Brookings Institution, 2017. Middle class is defined as households with per capita incomes between $11 and $110 per person per day in 2011 PPP terms. Forecasts, projections and other forward-looking statements are based upon current beliefs and expectations. They are for illustrative purposes only and serve as an indication of what may occur. Given the inherent uncertainties and risks associated with forecasts, projections or other forward-looking statements, actual events, results or performance may differ materially from those reflected or contemplated.
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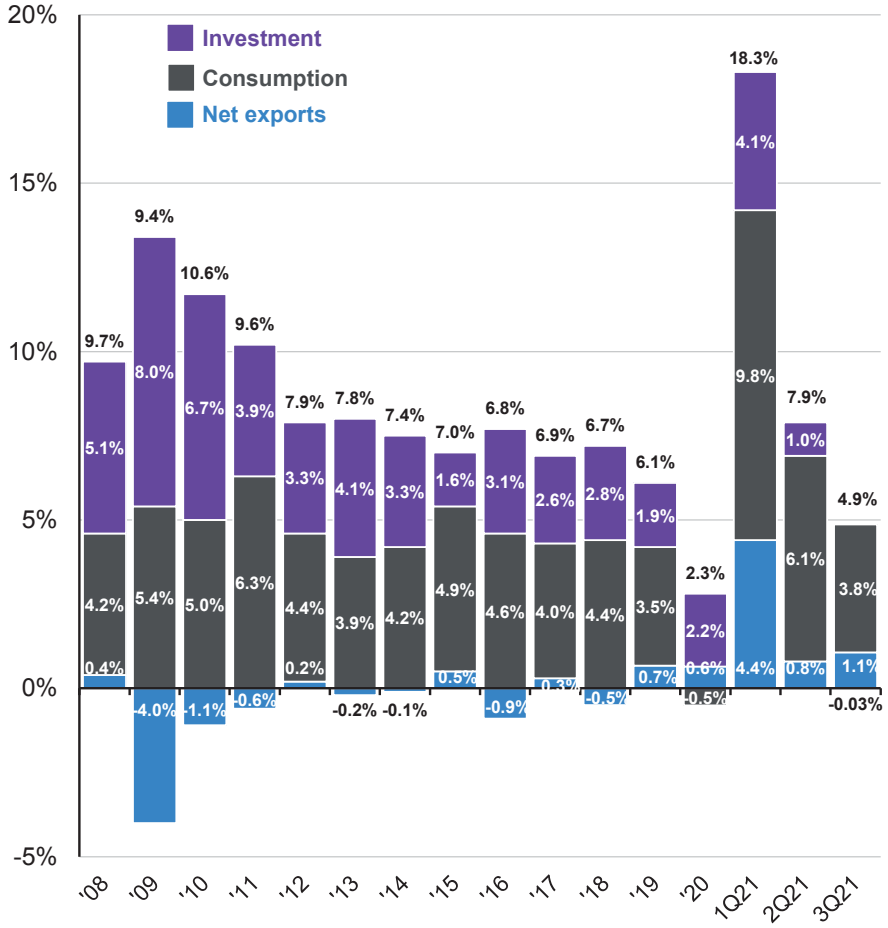
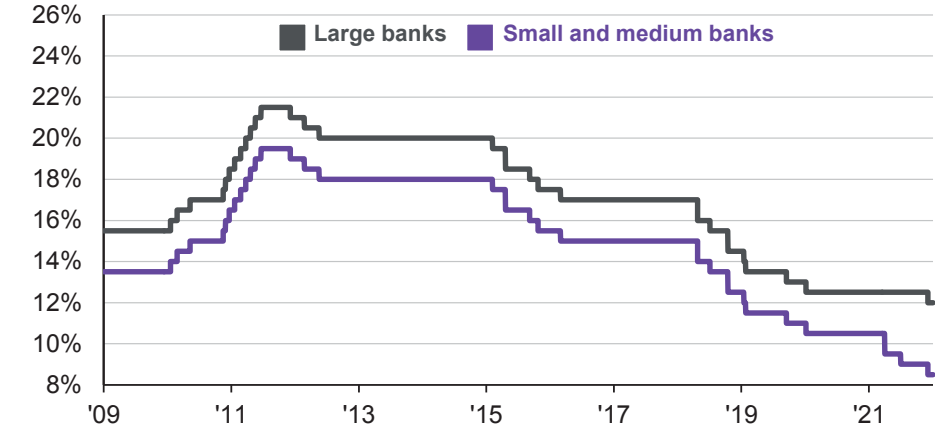
China: Economic growth

China real GDP contribution

Year-over-year % change

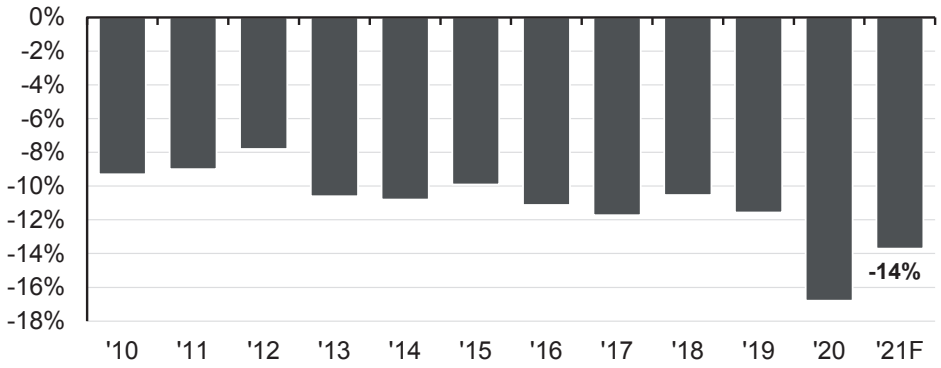


Monetary stimulus: Reserve requirement ratio



Fiscal stimulus: Fiscal deficit*

% GDP



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. *The fiscal deficit is a J.P. Morgan Global Economic Research 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 and various government-guided funds, whose activities are considered quasi-fiscal. Large banks are six major banks in China, including Industrial and Commercial Bank of China, Agricultural Bank of China, Bank of China, China Construction Bank, Bank of Communications, Postal Savings Bank of China. The other banks are categorized as small and medium-sized banks. PBoC sets favorable required reserve ratio (RRR) for banks that have met specific criteria, such as loans to small and medium-sized enterprises and agricultural sectors. These measures have significantly brought down the actual RRR for banks. Forecasts are not a reliable indicator of future performance. Forecasts, projections and other forward-looking statements are based upon current beliefs and expectations. They are for illustrative purposes only and serve as an indication of what may occur. Given the inherent uncertainties and risks associated with forecasts, projections or other forward statements, actual events, results or performance may differ materially from those reflected or contemplated.
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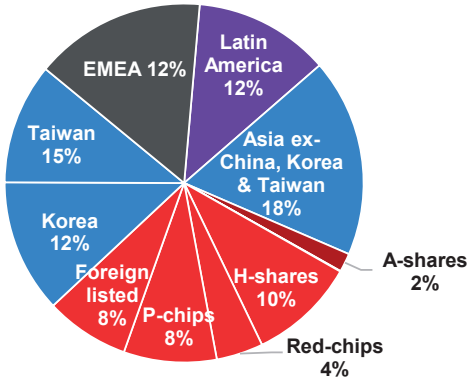
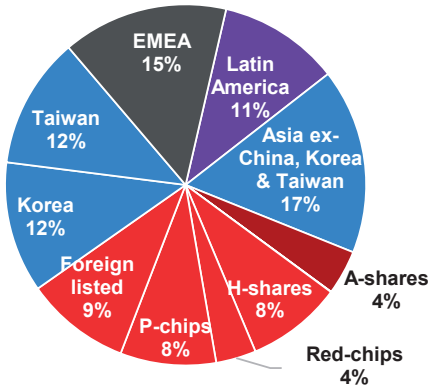
Chinese equity and fixed income markets

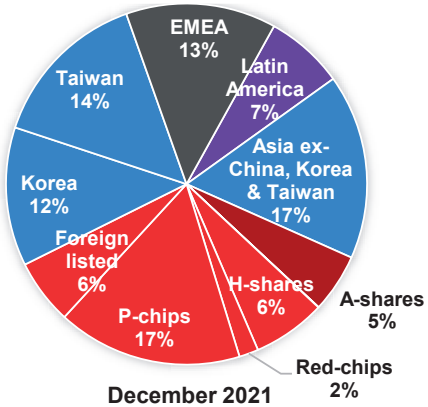
MSCI Emerging Markets Index: Inclusion of China A-shares



May 2019
China: 32%

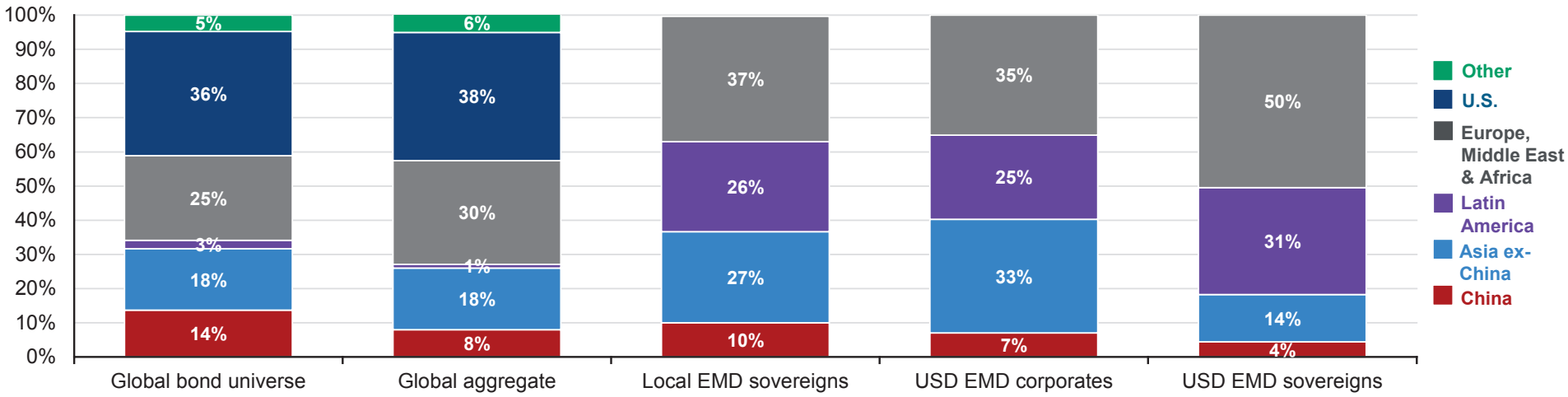


November 2019
China: 34%



December 2021
China: 35%

Weight of China in bond universe and bond indices



Source: Bloomberg, FactSet, J.P. Morgan Economic Research, MSCI, J.P. Morgan Asset Management; (Top) Foreign listed includes American Depositary Receipts (ADRs); (Bottom) Based on J.P. Morgan CEMBI Broad Index (USD EMD corporates), J.P. Morgan EMBIG Broad Diversified Index (USD EMD sovereigns), J.P. Morgan GBI-EM Global Diversified Index (Local EMD sovereigns), Bloomberg Global Aggregate (Global Aggregate). This slide comes from our Guide to China.
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Correlations and volatility

	U.S. Large Cap	EAFE	EME	Bonds	Corp. HY	Munis	Currcy.	EMD	Cmdty.	REITs	Hedge funds	Private equity	Gold	Ann. Volatility
U.S. Large Cap	1.00	0.86	0.75	-0.10	0.82	0.16	-0.34	0.61	0.59	0.72	0.86	0.82	0.04	14%
EAFE		1.00	0.89	-0.09	0.83	0.17	-0.51	0.69	0.62	0.53	0.91	0.86	0.15	14%
EME			1.00	0.05	0.81	0.28	-0.65	0.79	0.63	0.44	0.80	0.83	0.38	17%
Bonds				1.00	0.12	0.77	-0.18	0.44	-0.06	0.18	-0.13	-0.31	0.68	3%
Corp. HY					1.00	0.33	-0.43	0.85	0.72	0.65	0.82	0.75	0.24	8%
Munis						1.00	-0.24	0.62	0.13	0.49	0.12	-0.05	0.57	3%
Currencies							1.00	-0.54	-0.50	-0.05	-0.32	-0.59	-0.53	6%
EMD								1.00	0.57	0.54	0.63	0.56	0.56	7%
Commodities									1.00	0.42	0.66	0.76	0.30	15%
REITs										1.00	0.54	0.58	0.10	15%
Hedge funds											1.00	0.87	0.02	5%
Private equity												1.00	0.00	8%
Gold													1.00	15%

Source: Bloomberg, Burgiss, 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 Aggregate; Corp HY: Bloomberg Corporate High Yield; EMD: Bloomberg Emerging Market; Cmdty.: Bloomberg Commodity Index; REITs: NAREIT All Equity Index; Hedge funds: CS/Tremont Hedge Fund Index; Private equity: time weighted returns from Burgiss; Gold: Gold continuous contract ($/oz). 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 from 12/31/2011 to 12/31/2021, except for Private equity, which is based on the period from 6/30/2011 to 6/30/2021. This chart is for illustrative purposes only.
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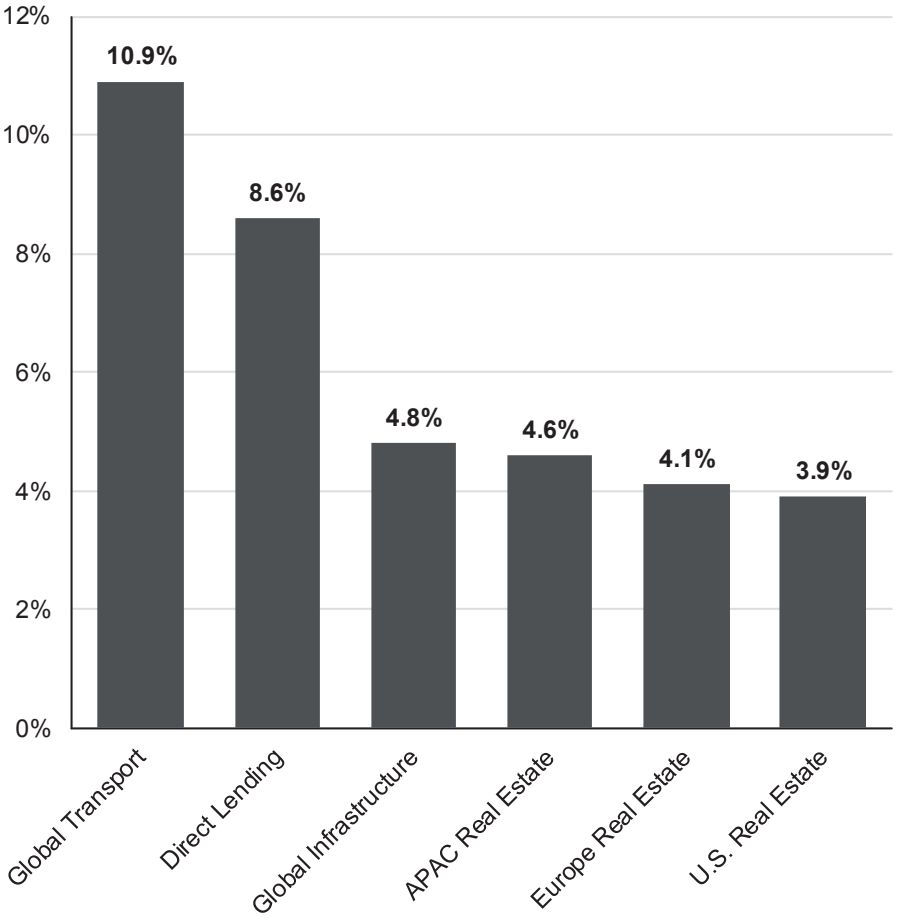
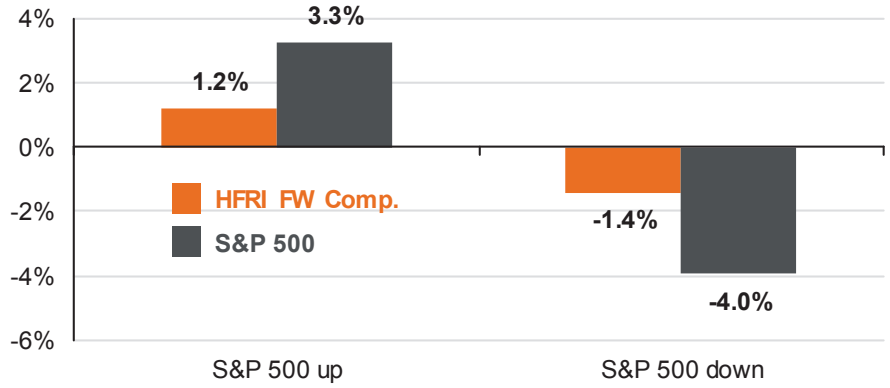
Alternative sources of income and diversification

Alternative asset class yields



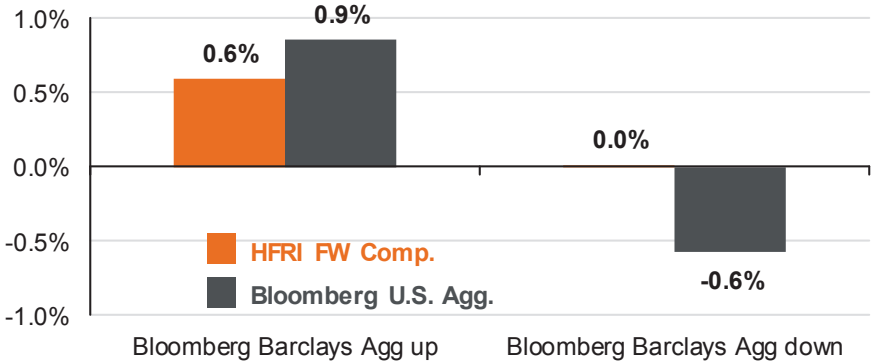
Hedge fund returns in different market environments

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 Agg.



Source: BEA, Bloomberg, Clarkson, Cliffwater, Drewry Maritime Consultants, FactSet, HFRI, J.P. Morgan Asset Management. Global Transport and Direct Lending yields are as of 9/30/2021. Global Infrastructure and U.S. Europe and APAC Real Estate yields are as of 6/30/2021. Global Transport: Levered yields for transport assets 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 are calculated and respective weightings are applied to arrive at the current levered yields for Global Transportation; Direct Lending: Cliffwater Direct Lending Index; Global Infrastructure: MSCI Global Infrastructure Asset Index-Low Risk; U.S. Real Estate: NCREIF-ODCE Index; Europe core real estate: IPD Global Property Fund Index – Continental Europe. Asia Pacific (APAC) core real estate: IPD Global Property Fund Index – Asia-Pacific. Positive yield does not imply positive return. This slide comes from our Guide to Alternatives.
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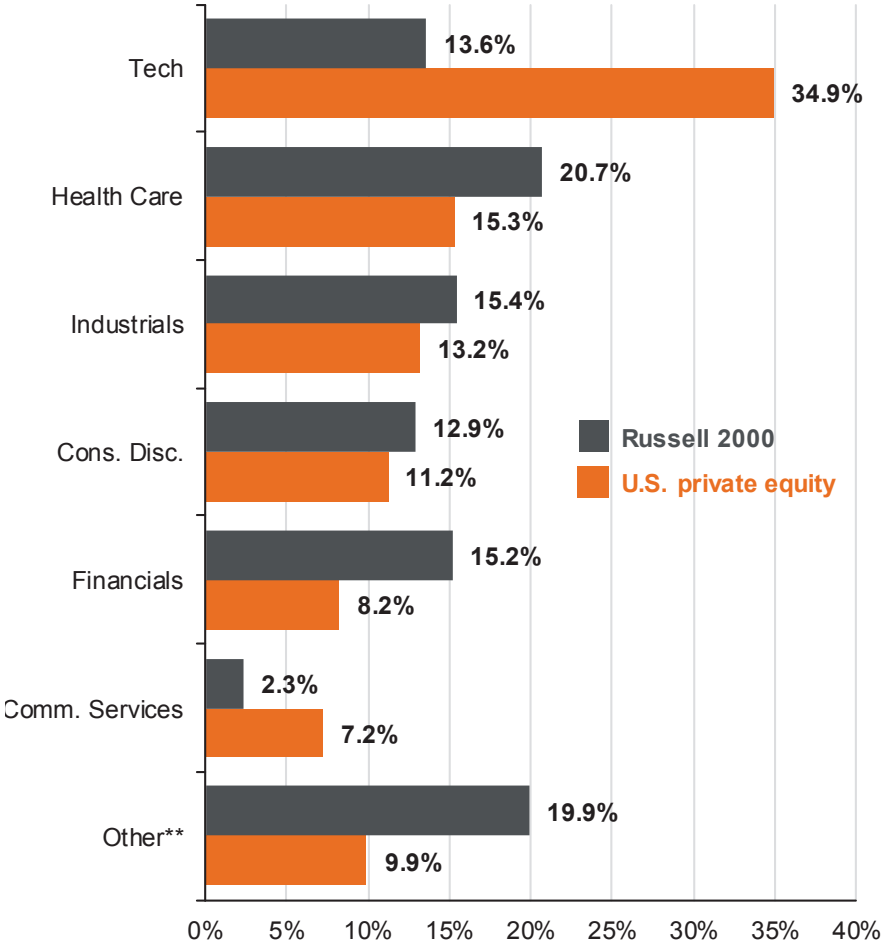
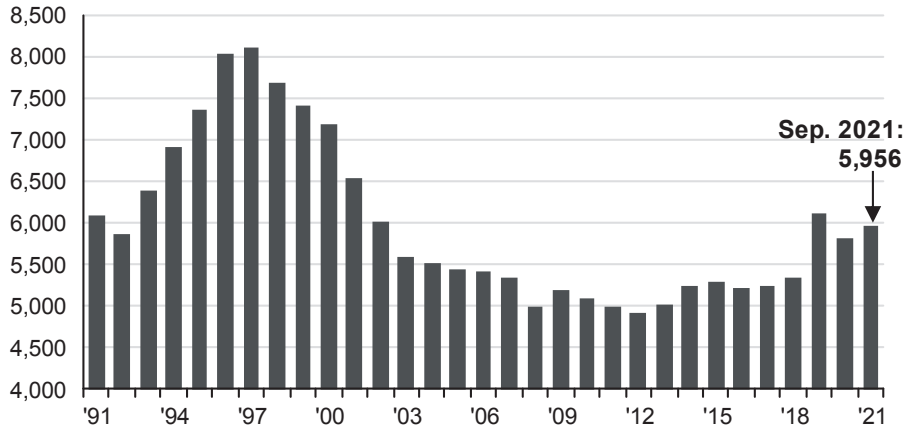
Private equity

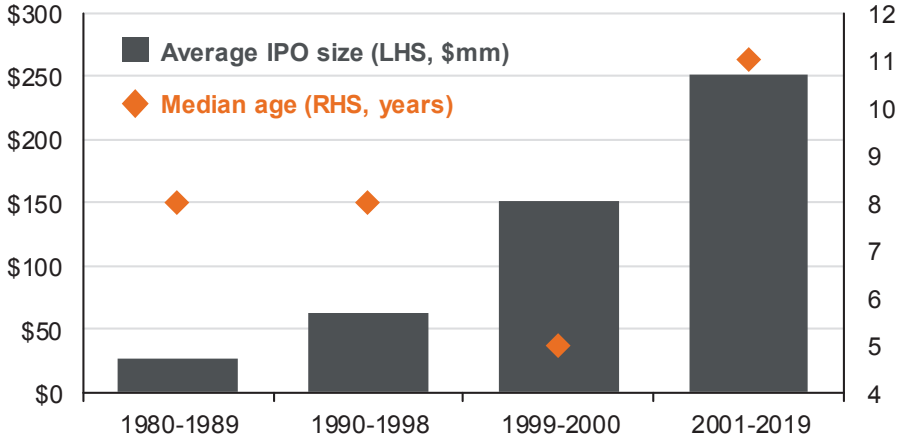
Private vs. public equity sector weights



Number of listed U.S. companies*



Average size and median age at IPO



Source: Cambridge Associates, Jay Ritter, Russell, University of Florida, World Federation of Exchanges, J.P. Morgan Asset Management. The sample is IPOs with an offer price of at least $5.00, excluding ADRs, unit offers, closed-end funds, REITs, natural resource limited partnerships, small best efforts offers, banks and S&Ls, and stocks not listed on CRSP (CRSP includes Amex, NYSE and NASDAQ stocks). Average IPO size is defined as the aggregate IPO proceeds during the period shown, divided by the number of IPOs. *Number of listed U.S. companies is represented by the sum of number of companies listed on the NYSE and the NASDAQ. **Other includes real estate, utilities and energy. Percentages may not sum due to rounding. Sector weights are as of 12/30/2020. This slide comes from our Guide to Alternatives.
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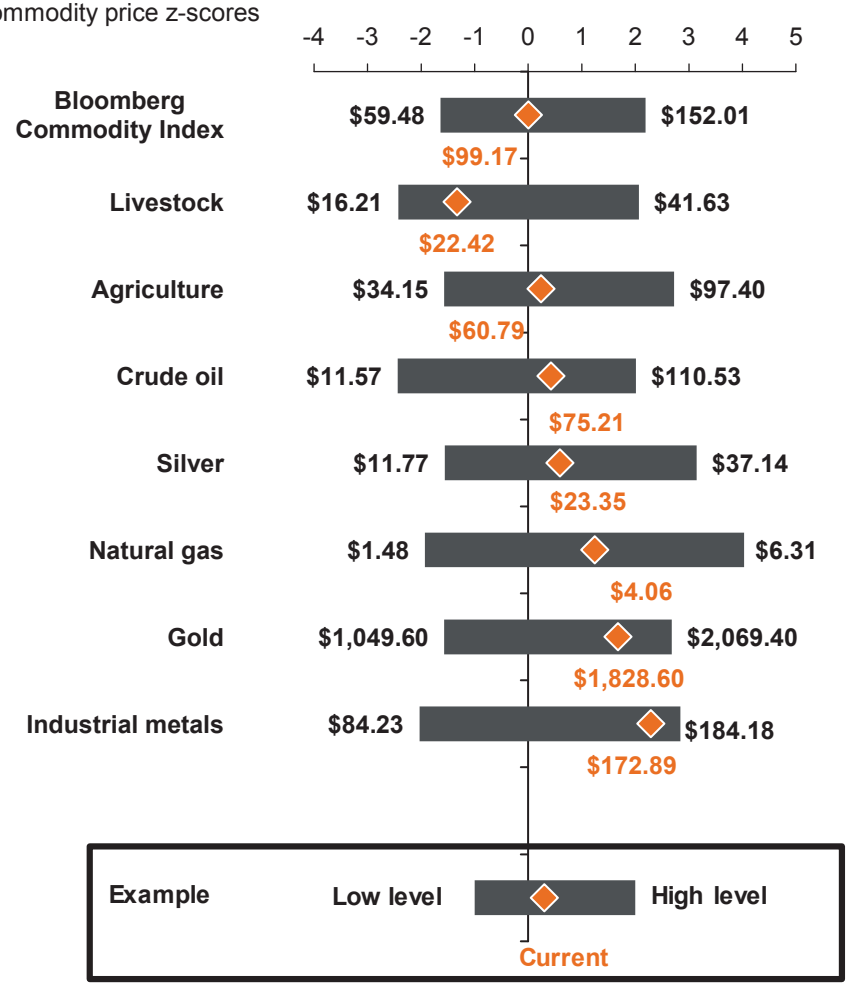
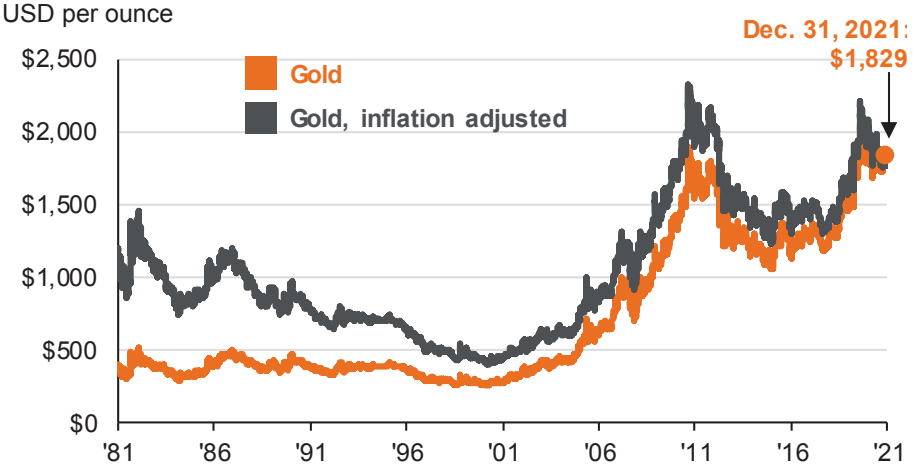
Global commodities

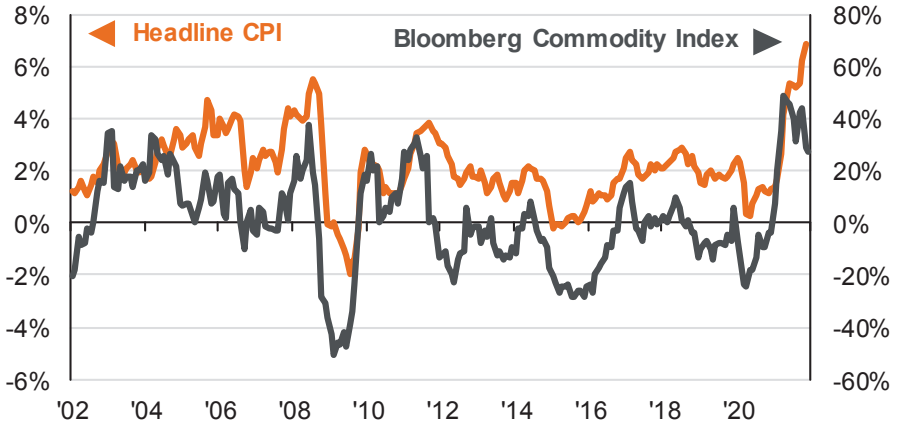
Commodity prices
Commodity price z-scores



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.
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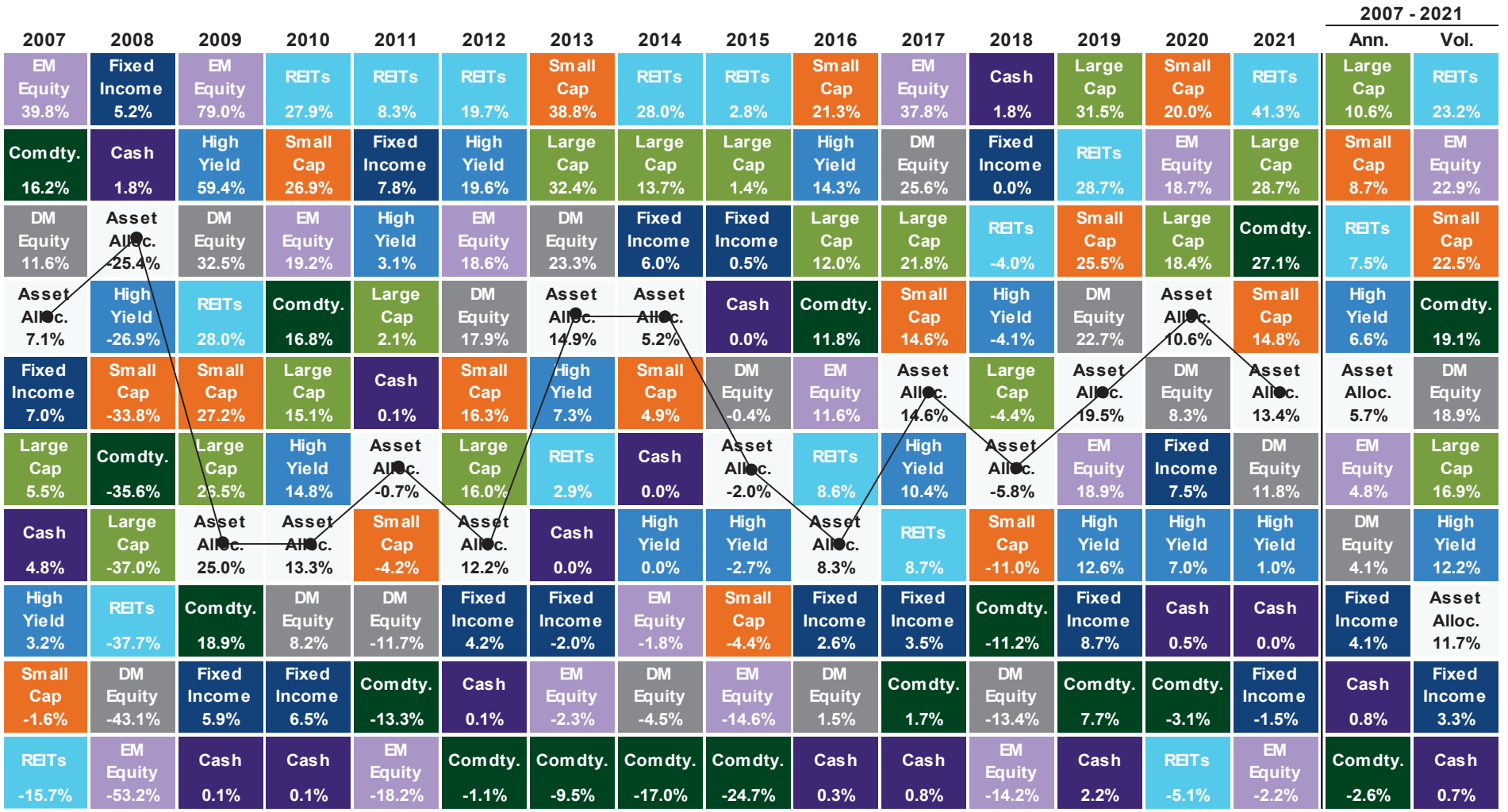
Asset class returns



2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2007 - 2021 Ann.	2007 - 2021 Vol.
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%	Small Cap 20.0%	REITs 41.3%	Large Cap 10.6%	REITs 23.2%
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%	EM Equity 18.7%	Large Cap 28.7%	Small Cap 8.7%	EM Equity 22.9%
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%	Large Cap 18.4%	Comdty. 27.1%	REITs 7.5%	Small Cap 22.5%
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%	Asset Alloc. 10.6%	Small Cap 14.8%	High Yield 6.6%	Comdty. 19.1%
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%	DM Equity 8.3%	Asset Alloc. 13.4%	Asset Alloc. 5.7%	DM Equity 18.9%
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%	Fixed Income 7.5%	DM Equity 11.8%	EM Equity 4.8%	Large Cap 16.9%
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%	High Yield 7.0%	High Yield 1.0%	DM Equity 4.1%	High Yield 12.2%
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%	Cash 0.5%	Cash 0.0%	Fixed Income 4.1%	Asset Alloc. 11.7%
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%	Comdty. -3.1%	Fixed Income -1.5%	Cash 0.8%	Fixed Income 3.3%
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%	REITs -5.1%	EM Equity -2.2%	Comdty. -2.6%	Cash 0.7%

Source: 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 Global HY Index, Fixed Income: Bloomberg US Aggregate, REITs: NAREIT Equity REIT Index, Cash: Bloomberg 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 US Aggregate, 5% in the Bloomberg 1-3m Treasury, 5% in the Bloomberg 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 from 12/31/2006 to 12/31/2021. 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.
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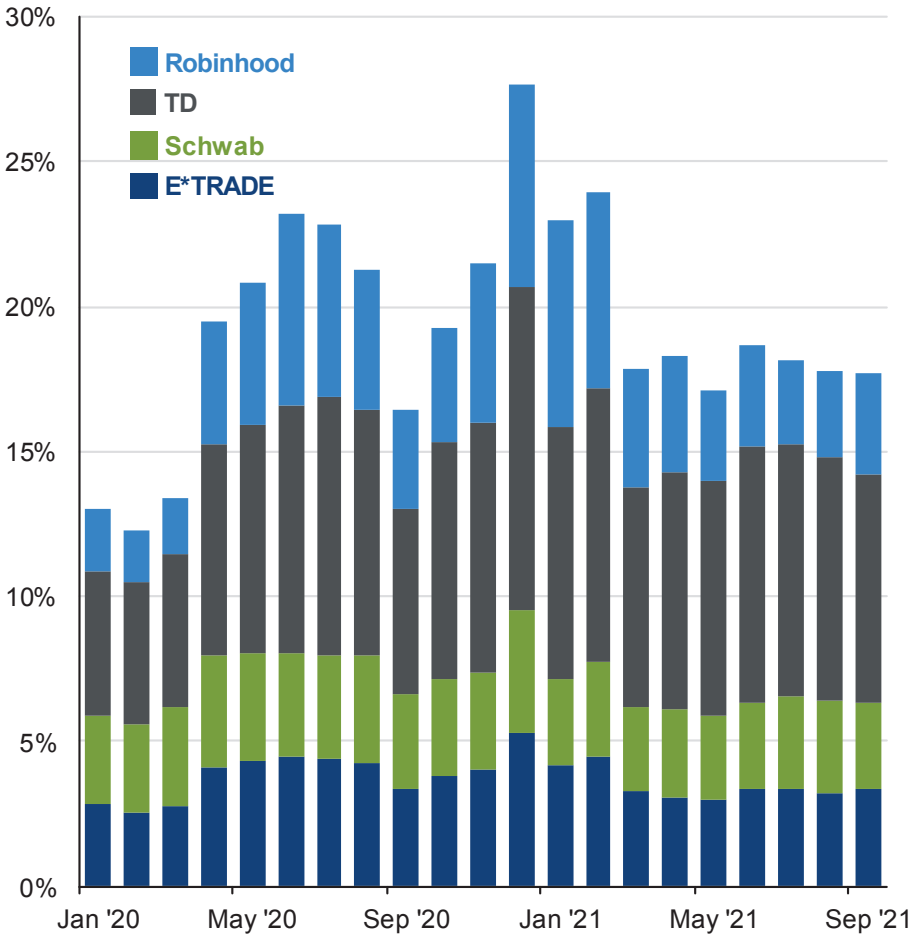
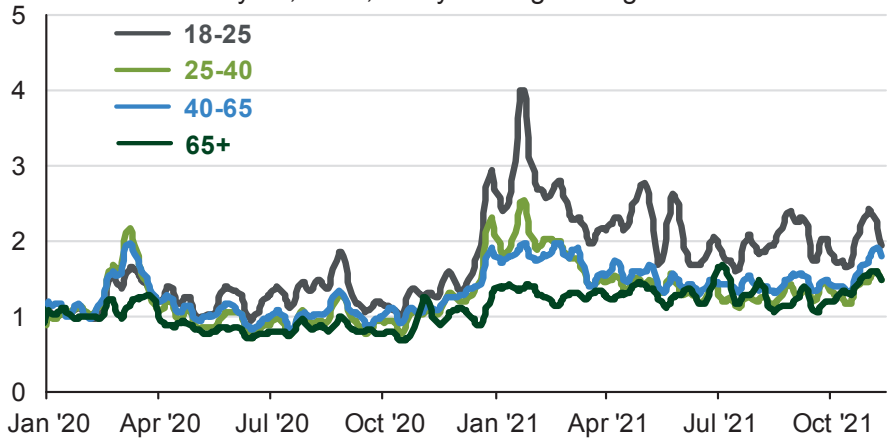
Market volume and investment flows

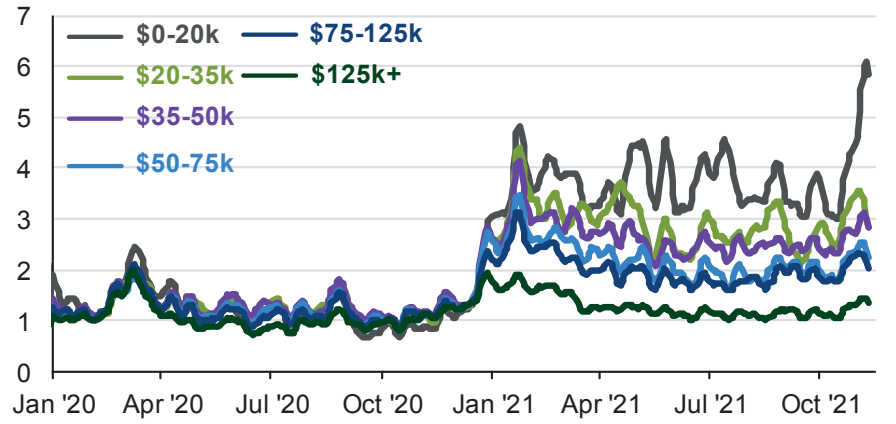
Flow by firm as % of total U.S. equity market volume
2020 – 3Q21



Investment flows by age
Indexed to February 18, 2020, 7-day moving average



Investment flows by income*
Indexed to February 18, 2020, 7-day moving average



Source: J.P. Morgan Asset Management; (Left) J.P. Morgan Index Research, based on company filings and SEC 606 disclosures; (Right) J.P. Morgan Asset Management Data Science, based on internal Chase data. *Net income calculated using bank account net inflows.
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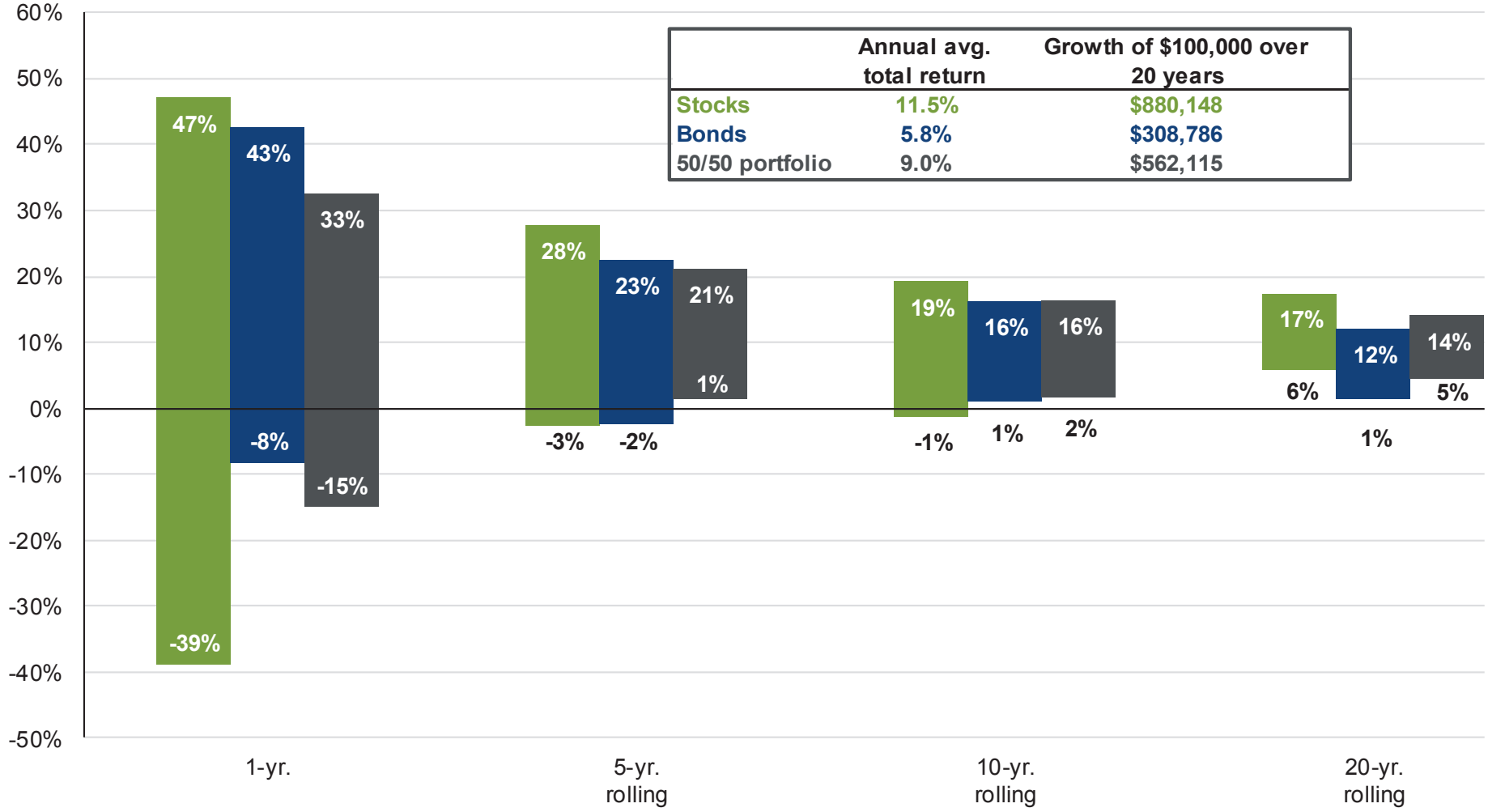
Time, diversification and the volatility of returns

Range of stock, bond and blended total returns
Annual total returns, 1950 - 2021



	Annual avg. total return	Growth of $100,000 over 20 years
Stocks	11.5%	$880,148
Bonds	5.8%	$308,786
50/50 portfolio	9.0%	$562,115

Source: Bloomberg, FactSet, Federal Reserve, Robert Shiller, Strategas/Ibbotson, J.P. Morgan Asset Management.
Returns shown are based on calendar year returns from 1950 to 2021. Stocks represent the S&P 500 Shiller Composite and Bonds represent Strategas/Ibbotson for periods from 1950 to 2010 and Bloomberg Aggregate thereafter. Growth of $100,000 is based on annual average total returns from 1950 to 2021.
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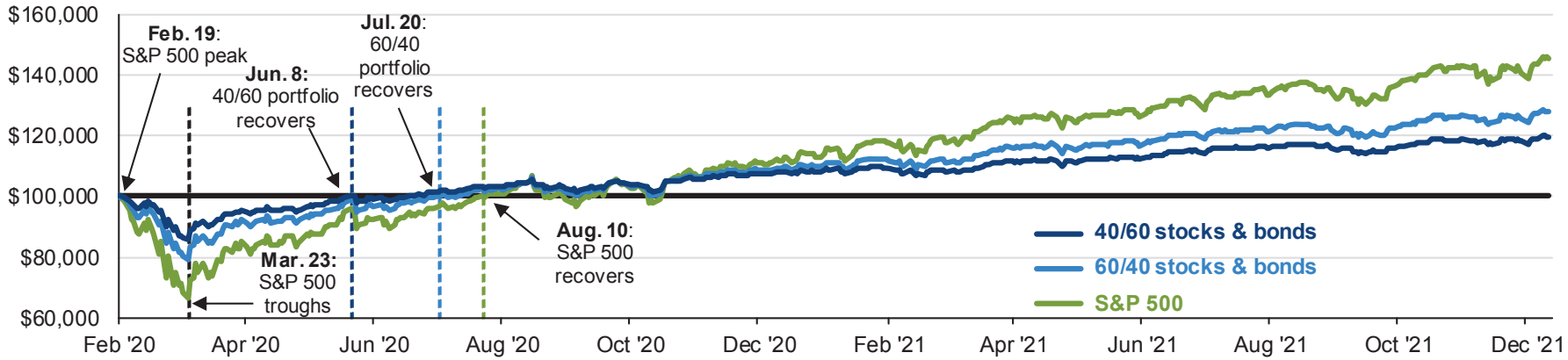
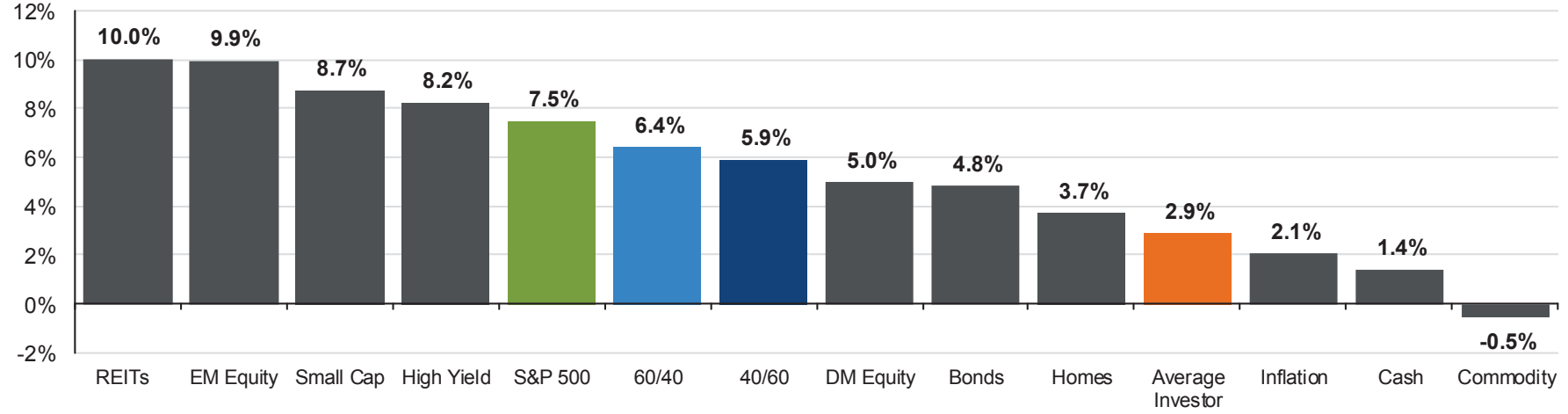
Diversification and the average investor

Portfolio returns: Equities vs. equity and fixed income blend



20-year annualized returns by asset class (2001 – 2020)



Source: Bloomberg, FactSet, Standard & Poor's, J.P. Morgan Asset Management; (Bottom) Dalbar Inc, MSCI, NAREIT, Russell.
Indices used are as follows: REITs: NAREIT Equity REIT Index, Small Cap: Russell 2000, EM Equity: MSCI EM, DM Equity: MSCI EAFE, Commodity: Bloomberg Commodity Index, High Yield: Bloomberg Global HY Index, Bonds: Bloomberg U.S. Aggregate Index, Homes: median sale price of existing single-family homes, Cash: Bloomberg 1-3m Treasury, 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 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.
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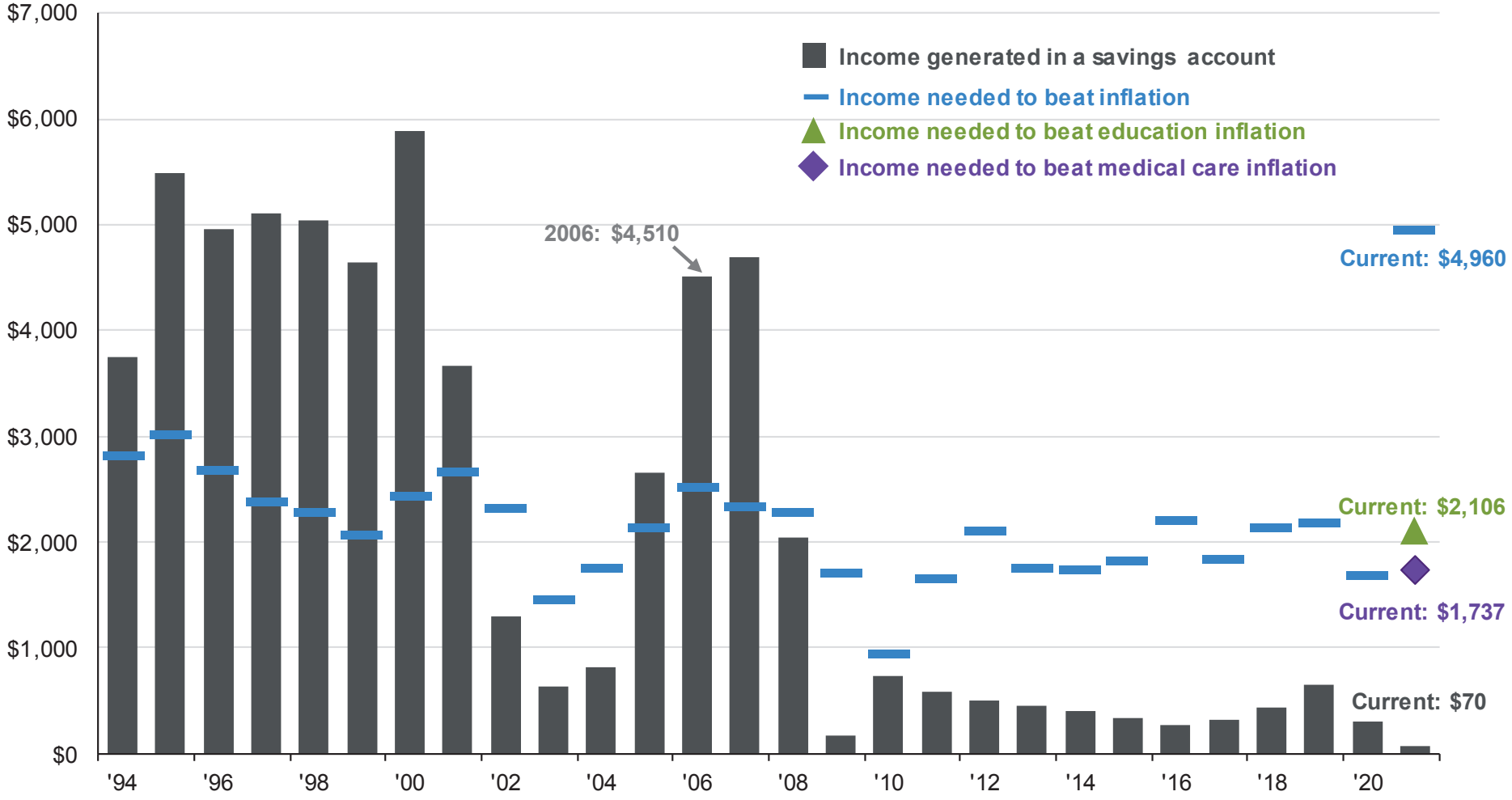
Cash account returns

Income earned on $100,000 in savings accounts*



Source: Bankrate.com, BLS, 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. Annual income is for illustrative purposes and is calculated based on the average money market yield during each year and $100,000 invested. Current inflation is based on November 2021 Core CPI, education inflation and medical care inflation. Current savings account is based on the December 2021 national average annual percentage rate (APR) on money market accounts. Past performance is not indicative of comparable future results.
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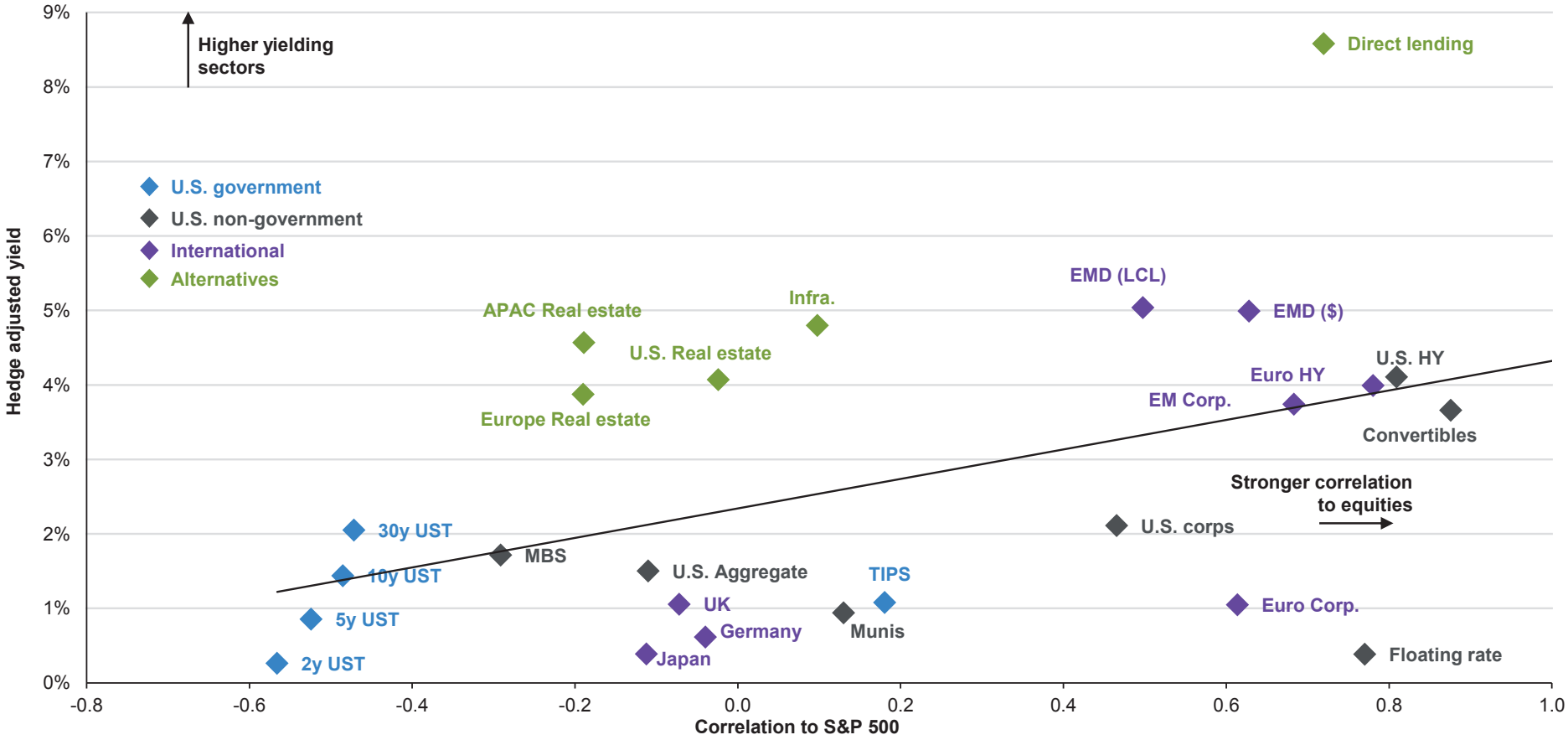
Equity market correlations and yields

Equity market correlations and yields

Hedge adjusted yield, last 12 months, 10-year correlations, quarterly



Source: Bloomberg, FactSet, ICE, MSCI, NCREIF, J.P. Morgan Asset Management. Fixed income 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; U.S. Real Estate: NCREIF Property Index – ODCE; Europe Real Estate: Market weighted-avg. of MSCI Global Property Fund Indices - U.K. & Cont. Europe; APAC Real Estate: MSCI Global Property Index - Asia-Pacific; Global infra.: MSCI Global Quarterly Infrastructure Asset Index (equal weighted blend; U.S. Direct Lending: Cliffwater Direct Lending Index; Convertibles yield is based on the U.S. portion of the Bloomberg 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 quarterly return over the past 10 years through 12/31/2021, except Infra. Direct Lending, Europe and APAC Real Estate, which are through 6/30/2021 and U.S. Real Estate, which is through 9/30/2021. 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. Alts yields are through 6/30/2021 except Direct Lending, which is through 9/30/2021. U.S. Real Estate yield is calculated using the MSCI Global Property Fund Index – North America.
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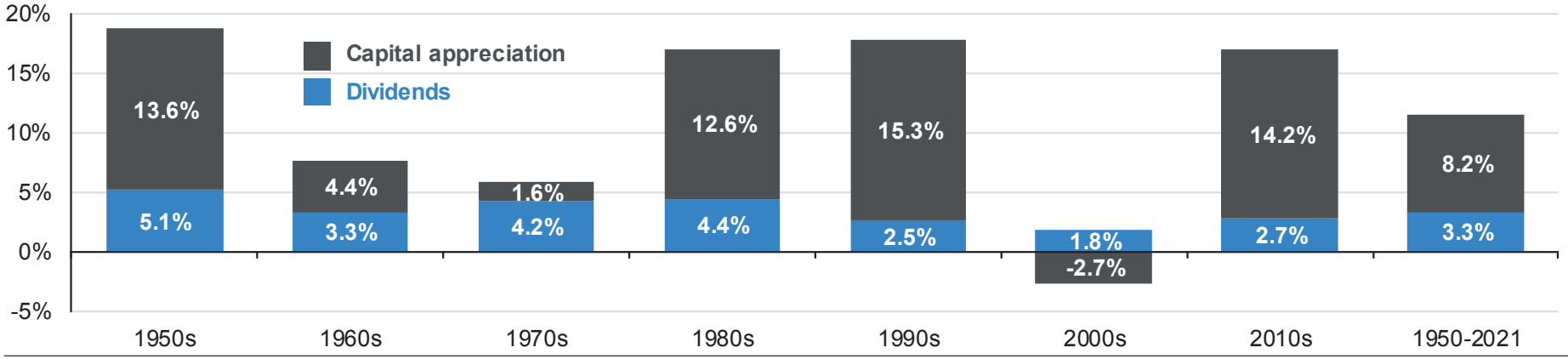
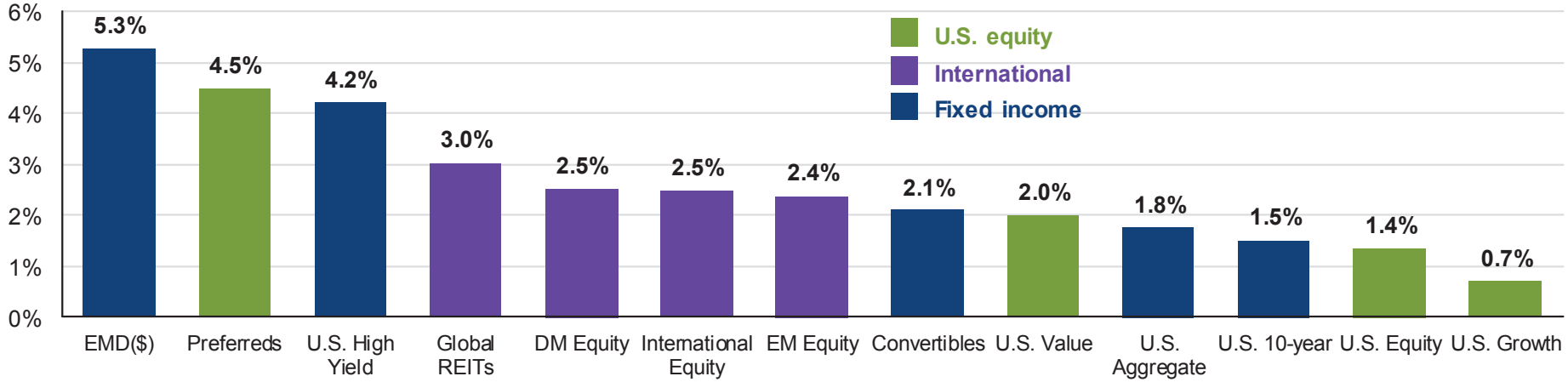
Yield alternatives: Domestic and global

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) BAML, Bloomberg, Federal Reserve, FTSE, J.P. Morgan, MSCI, NCREIF, Russell. Dividend vs. capital appreciation returns are through 12/31/2021. Yields are most current. Preferreds: BAML Hybrid Preferred Securities; U.S. High Yield: Bloomberg US Corporate High Yield; Global REITs: FTSE NAREIT Global REITs; U.S. Aggregate: Bloomberg US Aggregate; EMD($): J.P. Morgan EMBIG Diversified; Convertibles: Bloomberg U.S. Convertibles Composite; International Equity: MSCI AC World ex-U.S.; EM Equity: MSCI Emerging Markets; DM Equity: MSCI EAFE; U.S. Equity: S&P 500; U.S. Growth: Russell 1000 Growth; U.S. Value: Russell 1000 Value; U.S. 10-year: Tullett Prebon. Positive yield does not imply positive return.
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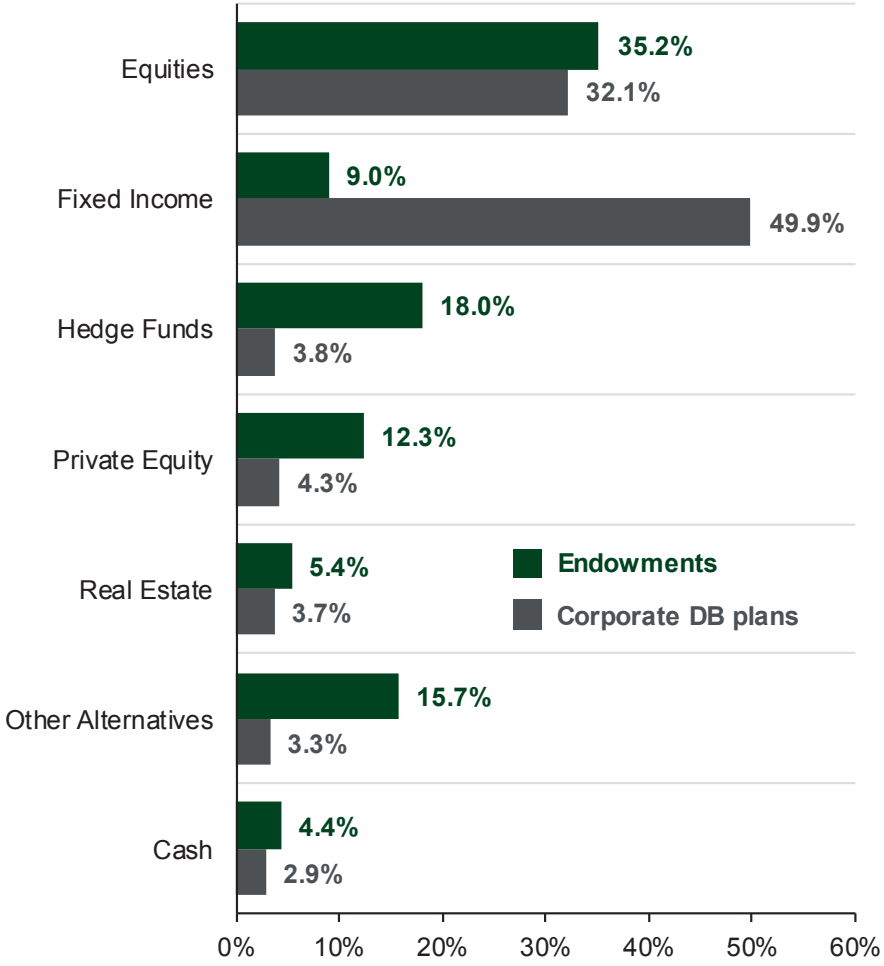
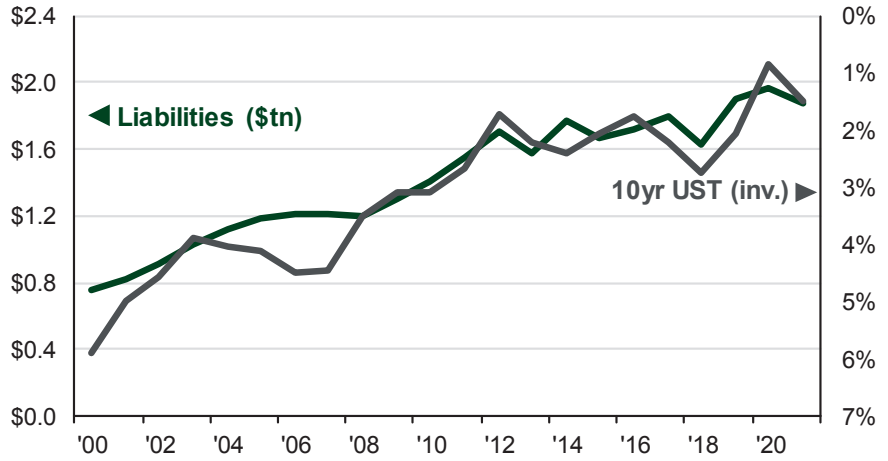
Institutional investor behavior

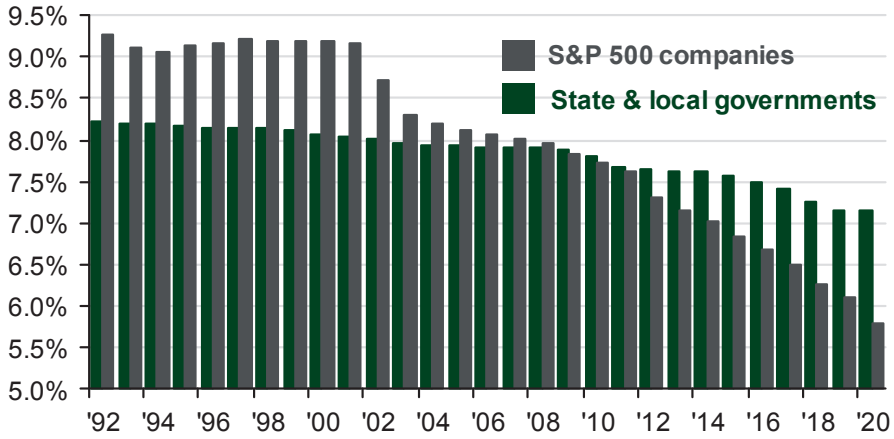
Asset allocation: Corporate DB plans. endowments



Corporate pension liabilities and 10-year UST yield



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 is as of 2019. Corporate DB plan asset allocation as of 2018. Endowments represents dollar-weighted average data of 749 colleges and universities. Corporate DB plans represents aggregate asset 12/31/2020 of Fortune 1000 pension plans. Pension return assumptions based on all available and reported data from S&P 500 Index companies and are as of 12/31/2019. 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 December 2021. All information is shown for illustrative purposes only.
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J.P. Morgan Asset Management – Index definitions

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

The **Bloomberg 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 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 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 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.

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J.P. Morgan Asset Management – Definitions

Other asset classes:

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

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

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

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

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

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

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

Definitions:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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J.P. Morgan Asset Management – Risks & disclosures

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