Guide to the Markets®

U.S. | 4Q 2021 | As of December 2, 2021
Equities
4. S&P 500 Index at inflection points
5. S&P 500 valuation measures
6. P/E ratios and equity returns
7. Corporate profits and sources of total return
8. Sources of earnings per share growth
9. Profit margins and wages
10. Value vs. Growth
11. S&P 500: Index concentration, valuations and earnings
12. S&P 500 valuation dispersion
13. Returns and valuations by style
14. Returns and valuations by sector
15. Factor performance
16. Annual returns and intra-year declines
17. Interest rates and equities

Economy
18. Economic growth and the composition of GDP
19. COVID-19: Cases, fatalities and immunity
20. High-frequency economic activity
21. Long-term drivers of economic growth
22. Federal finances
23. Consumer finances
24. Income inequality and financial asset appreciation
25. Labor demand
26. Unemployment and wages
27. Inflation
28. Dollar drivers
29. Oil markets
30. Global energy transition

Fixed income
31. The Fed and interest rates
32. The Federal Reserve balance sheet
33. Interest rates and inflation
34. Fixed income market dynamics
35. Yield curve
36. High yield bonds
37. Fixed income valuations
38. Corporate debt dynamics
39. Global monetary policy
40. Global fixed income
41. Emerging market debt
42. Fixed income sector returns

International
43. Global equity markets
44. Currency and international equity returns
45. Cycles of U.S. equity outperformance
46. International valuations and dividend yields
47. International equity earnings and valuations
48. International markets
49. Global COVID-19 vaccinations
50. Global supply chains and inflation
51. Global economic activity momentum
52. Global inflation
53. Emissions targets and global energy mix
54. The emergence of the EM middle class
55. China: Economic growth
56. Chinese equity and fixed income markets

Alternatives
57. Correlations and volatility
58. Alternative sources of income and diversification
59. Private equity
60. Global commodities

Investing principles
61. Asset class returns
62. Market volume and investment flows
63. Time, diversification and the volatility of returns
64. Diversification and the average investor
65. Cash account returns
66. Equity market correlations and yields
67. Yield alternatives: Domestic and global
68. Institutional investor behavior

Voice activated: J.P. Morgan Insights is available on Amazon Alexa and Google Home. Hear weekly commentary from Dr. Kelly as well as an outline of this quarter’s key investment themes using Guide to the Markets slides. Enable the skill by saying, “Open J.P. Morgan Insights!” To learn how to access and use, visit: jpmorgan.com/funds/MIVoiceSkill
S&P 500 Index at inflection points

Source: Compustat, FactSet, Federal Reserve, Standard & Poor's, J.P. Morgan Asset Management.
Dividend yield is calculated as consensus estimates of dividends for the next 12 months, divided by most recent price, as provided by Compustat.
Forward price-to-earnings ratio is a bottom-up calculation based on 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.
S&P 500 Index: Forward P/E ratio

<table>
<thead>
<tr>
<th>Valuation measure</th>
<th>Description</th>
<th>Latest</th>
<th>25-year avg.*</th>
<th>Std. dev. Over-/under- Valued</th>
</tr>
</thead>
<tbody>
<tr>
<td>P/E</td>
<td>Forward P/E</td>
<td>20.94x</td>
<td>16.82x</td>
<td>1.23</td>
</tr>
<tr>
<td>CAPE</td>
<td>Shiller’s P/E</td>
<td>39.27</td>
<td>27.86</td>
<td>1.79</td>
</tr>
<tr>
<td>Div. Yield</td>
<td>Dividend yield</td>
<td>1.43%</td>
<td>2.00%</td>
<td>1.73</td>
</tr>
<tr>
<td>P/B</td>
<td>Price to book</td>
<td>4.19</td>
<td>3.08</td>
<td>1.39</td>
</tr>
<tr>
<td>P/CF</td>
<td>Price to cash flow</td>
<td>15.34</td>
<td>11.11</td>
<td>1.92</td>
</tr>
<tr>
<td>EY Spread</td>
<td>EY minus Baa yield</td>
<td>1.54%</td>
<td>0.16%</td>
<td>-0.69</td>
</tr>
</tbody>
</table>

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 2, 2021. Current next 12-months consensus earnings estimates are $221. 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.

Returns are 12-month and 60-month annualized total returns, measured monthly, beginning 10/31/96. R² 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 November 1996, and J.P. Morgan Asset Management for December 2, 2021.

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.

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

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.

Guide to the Markets – U.S. Data are as of December 2, 2021
Value vs. Growth

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

S&P 500 sector earnings correlation to real GDP
1Q 2009 - 2Q 2021

Growth is represented by the Russell 1000 Growth Index and Value is represented by the Russell 1000 Value Index. *Communication services correlation is since 3Q13 and based on backtested data by JPMAM.
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.

S&P 500 valuation dispersion

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

<table>
<thead>
<tr>
<th></th>
<th>25-yr. average</th>
<th>Current</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median S&amp;P 500 P/Es</td>
<td>16.0</td>
<td>19.2</td>
</tr>
<tr>
<td>Valuation spread</td>
<td>11.3</td>
<td>20.9</td>
</tr>
</tbody>
</table>

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

# Returns and valuations by style

## 10-year annualized YTD

<table>
<thead>
<tr>
<th>Style</th>
<th>Value</th>
<th>Blend</th>
<th>Growth</th>
<th>Value</th>
<th>Blend</th>
<th>Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large</td>
<td>12.7%</td>
<td>16.2%</td>
<td>19.4%</td>
<td>19.1%</td>
<td>23.5%</td>
<td>24.0%</td>
</tr>
<tr>
<td>Mid</td>
<td>13.1%</td>
<td>14.5%</td>
<td>16.3%</td>
<td>22.4%</td>
<td>18.3%</td>
<td>11.2%</td>
</tr>
<tr>
<td>Small</td>
<td>11.9%</td>
<td>13.1%</td>
<td>14.0%</td>
<td>24.5%</td>
<td>12.7%</td>
<td>2.0%</td>
</tr>
</tbody>
</table>

## Since market peak (February 2020) Since market low (March 2020)

<table>
<thead>
<tr>
<th>Style</th>
<th>Value</th>
<th>Blend</th>
<th>Growth</th>
<th>Value</th>
<th>Blend</th>
<th>Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large</td>
<td>20.9%</td>
<td>39.1%</td>
<td>57.2%</td>
<td>95.5%</td>
<td>110.2%</td>
<td>129.4%</td>
</tr>
<tr>
<td>Mid</td>
<td>26.3%</td>
<td>33.5%</td>
<td>40.9%</td>
<td>123.3%</td>
<td>123.5%</td>
<td>119.2%</td>
</tr>
<tr>
<td>Small</td>
<td>33.1%</td>
<td>33.1%</td>
<td>30.7%</td>
<td>134.0%</td>
<td>124.3%</td>
<td>112.4%</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Style</th>
<th>Value</th>
<th>Blend</th>
<th>Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large</td>
<td>15.3%</td>
<td>13.7%</td>
<td>29.8%</td>
</tr>
<tr>
<td>Mid</td>
<td>15.2%</td>
<td>14.5%</td>
<td>33.0%</td>
</tr>
<tr>
<td>Small</td>
<td>15.0%</td>
<td>17.0%</td>
<td>43.4%</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Style</th>
<th>Value</th>
<th>Blend</th>
<th>Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large</td>
<td>111.4%</td>
<td>132.0%</td>
<td>160.8%</td>
</tr>
<tr>
<td>Mid</td>
<td>104.8%</td>
<td>115.3%</td>
<td>161.5%</td>
</tr>
<tr>
<td>Small</td>
<td>88.6%</td>
<td>105.2%</td>
<td>122.0%</td>
</tr>
</tbody>
</table>

Source: FactSet, Russell Investment Group, Standard & Poor’s, J.P. Morgan Asset Management.

All calculations are cumulative total return, including dividends reinvested for the stated period. Since Market Peak represents period from 2/19/20 to December 2, 2021. Since Market Low represents period from 3/23/20 to December 2, 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. Guide to the Markets – U.S. Data are as of December 2, 2021.
<table>
<thead>
<tr>
<th>Category</th>
<th>Energy</th>
<th>Materials</th>
<th>Financials</th>
<th>Industrials</th>
<th>Consumer Discretionary</th>
<th>Technology</th>
<th>Consumer Services</th>
<th>Real Estate</th>
<th>Health Care</th>
<th>Communication Services</th>
<th>Utilities</th>
<th>S&amp;P 500 Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>S&amp;P weight</td>
<td>2.8%</td>
<td>2.5%</td>
<td>11.0%</td>
<td>7.9%</td>
<td>13.0%</td>
<td>29.2%</td>
<td>10.3%</td>
<td>2.6%</td>
<td>12.7%</td>
<td>5.6%</td>
<td>2.4%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Russell Growth weight</td>
<td>0.3%</td>
<td>1.0%</td>
<td>2.4%</td>
<td>5.8%</td>
<td>19.0%</td>
<td>46.1%</td>
<td>11.6%</td>
<td>1.7%</td>
<td>8.4%</td>
<td>3.7%</td>
<td>0.0%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Russell Value weight</td>
<td>5.3%</td>
<td>3.8%</td>
<td>21.6%</td>
<td>11.7%</td>
<td>5.8%</td>
<td>10.0%</td>
<td>7.4%</td>
<td>5.0%</td>
<td>17.4%</td>
<td>7.1%</td>
<td>5.0%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Russell 2000 weight</td>
<td>4.4%</td>
<td>3.8%</td>
<td>16.2%</td>
<td>15.4%</td>
<td>11.6%</td>
<td>14.4%</td>
<td>3.2%</td>
<td>7.2%</td>
<td>18.0%</td>
<td>3.3%</td>
<td>2.6%</td>
<td>100.0%</td>
</tr>
<tr>
<td>QTD</td>
<td>6.7</td>
<td>8.1</td>
<td>3.0</td>
<td>4.6</td>
<td>12.4</td>
<td>12.4</td>
<td>-2.9</td>
<td>8.0</td>
<td>2.2</td>
<td>3.2</td>
<td>4.5</td>
<td>6.5</td>
</tr>
<tr>
<td>YTD</td>
<td>52.8</td>
<td>19.4</td>
<td>33.0</td>
<td>16.6</td>
<td>23.9</td>
<td>29.6</td>
<td>18.1</td>
<td>34.4</td>
<td>16.0</td>
<td>8.1</td>
<td>8.9</td>
<td>23.5</td>
</tr>
<tr>
<td>Since market peak</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(February 2020)</td>
<td>11.3</td>
<td>46.4</td>
<td>29.3</td>
<td>25.5</td>
<td>55.2</td>
<td>66.4</td>
<td>37.1</td>
<td>23.3</td>
<td>28.9</td>
<td>16.7</td>
<td>0.7</td>
<td>39.1</td>
</tr>
<tr>
<td>Since market low</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(March 2020)</td>
<td>152.5</td>
<td>129.0</td>
<td>126.5</td>
<td>115.1</td>
<td>127.4</td>
<td>141.6</td>
<td>91.9</td>
<td>97.9</td>
<td>78.8</td>
<td>53.6</td>
<td>56.5</td>
<td>110.2</td>
</tr>
</tbody>
</table>

Correlation to Treasury yields

<table>
<thead>
<tr>
<th>Category</th>
<th>20-yr. avg.</th>
<th>20-yr. avg.</th>
<th>20-yr. avg.</th>
<th>20-yr. avg.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beta to S&amp;P 500</td>
<td>1.47</td>
<td>1.12</td>
<td>1.17</td>
<td>1.13</td>
</tr>
<tr>
<td>Correl. to Treas. yields</td>
<td>0.58</td>
<td>0.41</td>
<td>0.58</td>
<td>0.47</td>
</tr>
<tr>
<td>Foreign % of sales</td>
<td>51.3</td>
<td>56.8</td>
<td>30.1</td>
<td>43.8</td>
</tr>
<tr>
<td>NTM earnings growth</td>
<td>37.8%</td>
<td>5.7%</td>
<td>-5.2%</td>
<td>39.8%</td>
</tr>
<tr>
<td>20-yr. avg.</td>
<td>84.6%</td>
<td>18.7%</td>
<td>21.9%</td>
<td>13.3%</td>
</tr>
<tr>
<td>Forward P/E ratio</td>
<td>10.8x</td>
<td>16.0x</td>
<td>14.1x</td>
<td>20.0x</td>
</tr>
<tr>
<td>20-yr. avg.</td>
<td>14.2x</td>
<td>14.8x</td>
<td>12.4x</td>
<td>16.2x</td>
</tr>
<tr>
<td>Buyback yield</td>
<td>0.4%</td>
<td>1.4%</td>
<td>2.7%</td>
<td>1.4%</td>
</tr>
<tr>
<td>20-yr. avg.</td>
<td>1.5%</td>
<td>0.7%</td>
<td>0.1%</td>
<td>2.1%</td>
</tr>
<tr>
<td>Dividend yield</td>
<td>4.4%</td>
<td>1.9%</td>
<td>1.9%</td>
<td>1.6%</td>
</tr>
<tr>
<td>20-yr. avg.</td>
<td>2.7%</td>
<td>2.5%</td>
<td>2.3%</td>
<td>2.2%</td>
</tr>
</tbody>
</table>

Source: FactSet, Russell Investment Group, Standard & Poor’s, J.P. Morgan Asset Management. All calculations are cumulative total return, not annualized, including dividends for the stated period. Since market peak represents period from 2/19/20 to December 2, 2021. Since market low represents period from 3/23/20 to December 2, 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.

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.

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 2, 2021.
S&P 500 intra-year declines vs. calendar year returns

Despite average intra-year drops of 14.3%, annual returns were positive in 31 of 41 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 2020, over which time period the average annual return was 9.0%.

Stock returns and interest rate movements before and after the Global Financial Crisis
Monthly S&P 500 returns, 10yr UST, rolling 2yr correlation, 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.

Economic growth and the composition of GDP

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

<table>
<thead>
<tr>
<th>GDP (%)</th>
<th>4Q20</th>
<th>1Q21</th>
<th>2Q21</th>
<th>3Q21</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q/Q saar</td>
<td>4.5</td>
<td>6.3</td>
<td>6.7</td>
<td>2.1</td>
</tr>
<tr>
<td>Y/Y</td>
<td>-2.3</td>
<td>0.5</td>
<td>12.2</td>
<td>4.9</td>
</tr>
</tbody>
</table>

Components of GDP
3Q21 nominal GDP, USD trillions

- 68.8% Consumption
- 17.6% Gov’t spending
- 13.0% Investment ex-housing
- 4.7% Housing
- -4.1% Net exports

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.

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 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 assumes those infected equally likely to be vaccinated as those not infected.

Source: App Annie, Chase, Mortgage Bankers Association (MBA), 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. App Annie data is compared to 2019 average and includes over 600 travel and navigation apps globally, including Google Maps, Uber, Airbnb and Booking.com. 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 is 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.

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

Drivers of GDP growth
Average year-over-year % change

Growth in private non-residential capital stock
Non-residential fixed assets, 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.

Federal finances

The 2022 federal budget
CBO Baseline forecast, USD trillions

<table>
<thead>
<tr>
<th>Category</th>
<th>2022</th>
<th>'23-'24</th>
<th>'25-'26</th>
<th>'27-'31</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real GDP growth</td>
<td>6.1%</td>
<td>1.6%</td>
<td>1.3%</td>
<td>1.6%</td>
</tr>
<tr>
<td>10-year Treasury</td>
<td>1.9%</td>
<td>2.1%</td>
<td>2.6%</td>
<td>3.2%</td>
</tr>
<tr>
<td>Headline inflation (CPI)</td>
<td>2.7%</td>
<td>2.3%</td>
<td>2.4%</td>
<td>2.4%</td>
</tr>
<tr>
<td>Unemployment</td>
<td>4.1%</td>
<td>3.8%</td>
<td>4.2%</td>
<td>4.4%</td>
</tr>
</tbody>
</table>

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

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.

Sources:
- CBO
- J.P. Morgan Asset Management
- (Top and bottom right) BEA, Treasury Department.

**Consumer balance sheet**

2Q21, trillions of dollars outstanding, not seasonally adjusted

- **Total assets:** $159.3tn
- **Total liabilities:** $17.7tn

- **Homes:** 24%
- **Deposits:** 9%
- **Pension funds:** 19%
- **Other financial assets:** 43%
- **Mortgages:** 65%
- **Other tangible:** 5%

**Household debt service ratio**

Debt payments as % of disposable personal income, SA

- **3Q07 Peak:** 13.2%
- **3Q21**: 9.1%

**Household net worth**

Not seasonally adjusted, USD billions

- **3Q21:** $144,564
- **3Q07:** $70,730

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. **3Q21 figures for debt service ratio and household net worth are J.P. Morgan Asset Management estimates.

Income inequality and financial asset appreciation

Top 10% share of pre-tax national income

Source: Bureau of Labor Statistics, Piketty, Saez, J.P. Morgan Asset Management; *3Q21 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 2019; (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. Guide to the Markets – U.S. Data are as of December 2, 2021.

Ratio of U.S. financial assets to GDP

Spending as a share of income after tax

Consumer expenditure survey, 2020
Source: Conference Board, National Federation of Independent Business, U.S. Department of Labor, J.P. Morgan Asset Management. The diffusion index is calculated as the percentage of consumers reporting jobs plentiful minus those reporting jobs hard to get plus 50.

Civilian unemployment rate and annualized y/2y wage growth for private production and non-supervisory workers
Seasonally adjusted, percent

<table>
<thead>
<tr>
<th>Year</th>
<th>Unemployment Rate</th>
<th>Wage Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>'72</td>
<td></td>
<td></td>
</tr>
<tr>
<td>'74</td>
<td></td>
<td></td>
</tr>
<tr>
<td>'76</td>
<td></td>
<td></td>
</tr>
<tr>
<td>'78</td>
<td></td>
<td></td>
</tr>
<tr>
<td>'80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>'82</td>
<td></td>
<td></td>
</tr>
<tr>
<td>'84</td>
<td></td>
<td></td>
</tr>
<tr>
<td>'86</td>
<td></td>
<td></td>
</tr>
<tr>
<td>'88</td>
<td></td>
<td></td>
</tr>
<tr>
<td>'90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>'92</td>
<td></td>
<td></td>
</tr>
<tr>
<td>'94</td>
<td></td>
<td></td>
</tr>
<tr>
<td>'96</td>
<td></td>
<td></td>
</tr>
<tr>
<td>'98</td>
<td></td>
<td></td>
</tr>
<tr>
<td>'00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>'02</td>
<td></td>
<td></td>
</tr>
<tr>
<td>'04</td>
<td></td>
<td></td>
</tr>
<tr>
<td>'06</td>
<td></td>
<td></td>
</tr>
<tr>
<td>'08</td>
<td></td>
<td></td>
</tr>
<tr>
<td>'10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>'12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>'14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>'16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>'18</td>
<td></td>
<td></td>
</tr>
<tr>
<td>'20</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: BLS, FactSet, J.P. Morgan Asset Management.
CPI and core CPI
% change vs. prior year, seasonally adjusted

Recession

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.

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.

Source: J.P. Morgan Asset Management; (Left) FactSet, ICE; (Top right) Bureau of Economic Analysis, FactSet; (Bottom right) Tullett Prebon.

**Oil markets**

**Change in production and consumption of liquid fuels**

<table>
<thead>
<tr>
<th></th>
<th>Production, consumption and inventories, millions of barrels per day</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>Growth since '18</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2018</td>
<td>2019</td>
<td>2020</td>
<td>2021*</td>
<td>2022*</td>
<td></td>
</tr>
<tr>
<td>U.S.</td>
<td>17.9</td>
<td>19.5</td>
<td>18.6</td>
<td>18.8</td>
<td>20.2</td>
<td>12.6%</td>
</tr>
<tr>
<td>OPEC</td>
<td>36.7</td>
<td>34.7</td>
<td>30.7</td>
<td>31.7</td>
<td>33.9</td>
<td>-7.7%</td>
</tr>
<tr>
<td>Russia</td>
<td>11.4</td>
<td>11.5</td>
<td>10.5</td>
<td>10.8</td>
<td>11.6</td>
<td>1.7%</td>
</tr>
<tr>
<td>Global</td>
<td>100.7</td>
<td>100.7</td>
<td>94.2</td>
<td>96.0</td>
<td>101.4</td>
<td>0.7%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Consumption, millions of barrels per day</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S.</td>
<td>20.5</td>
<td>20.5</td>
<td>18.2</td>
<td>19.7</td>
<td>20.4</td>
<td>-0.7%</td>
</tr>
<tr>
<td>China</td>
<td>14.1</td>
<td>14.5</td>
<td>14.4</td>
<td>15.3</td>
<td>15.9</td>
<td>12.2%</td>
</tr>
<tr>
<td>Global</td>
<td>100.3</td>
<td>101.1</td>
<td>92.4</td>
<td>97.5</td>
<td>100.9</td>
<td>0.6%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Inventory Change, millions of barrels per day</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S.</td>
<td>0.5</td>
<td>-0.4</td>
<td>1.8</td>
<td>-1.6</td>
<td>0.5</td>
<td></td>
</tr>
</tbody>
</table>

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

- Inventories (incl. SPR)
- Active rigs

**Price of oil**

WTI crude, nominal prices, USD/barrel

- Jul. 3, 2008: $145.29
- Jun. 13, 2014: $106.91
- Oct. 3, 2018: $76.41
- Feb. 12, 2009: $33.98
- Feb. 11, 2016: $26.21
- Apr. 21, 2020: $11.57
- Dec. 2, 2021: $66.50

Source: J.P. Morgan Asset Management; (Top and bottom left) EIA; (Right) FactSet; (Bottom left) Baker Hughes.
*Forecasts are from the November 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.

Global energy transition

Global investment in energy transition
Billions USD, nominal

- Storage, electrification, carbon capture, other
- Renewable energy

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.

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

FOMC September 2021 forecasts
Percent

<table>
<thead>
<tr>
<th></th>
<th>2021</th>
<th>2022</th>
<th>2023</th>
<th>2024</th>
<th>Long run*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change in real GDP, 4Q to 4Q</td>
<td>5.9</td>
<td>3.8</td>
<td>2.5</td>
<td>2.0</td>
<td>1.8</td>
</tr>
<tr>
<td>Unemployment rate, 4Q</td>
<td>4.8</td>
<td>3.8</td>
<td>3.5</td>
<td>3.5</td>
<td>4.0</td>
</tr>
<tr>
<td>Headline PCE inflation, 4Q to 4Q</td>
<td>4.2</td>
<td>2.2</td>
<td>2.2</td>
<td>2.1</td>
<td>2.0</td>
</tr>
</tbody>
</table>

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.

Currently, the balance sheet contains $5.6tn 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 $15bn per month, beginning November 2021 through mid-2022, as suggested in the November 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.
Real 10-year Treasury yields are calculated as the daily Treasury yield less year-over-year core CPI inflation for that month except for December and November 2021 where real yields are calculated by subtracting out December 2021 year-over-year core inflation.


Fixed income market dynamics

Impact of a 1% rise in interest rates
Assumes a parallel shift in the yield curve

<table>
<thead>
<tr>
<th>Sector</th>
<th>Total return</th>
<th>Price return</th>
</tr>
</thead>
<tbody>
<tr>
<td>2Y UST</td>
<td>-1.3%</td>
<td>-2.0%</td>
</tr>
<tr>
<td>TIPS</td>
<td>-3.4%</td>
<td>-4.7%</td>
</tr>
<tr>
<td>5Y UST</td>
<td>-1.3%</td>
<td>-2.0%</td>
</tr>
<tr>
<td>10Y UST</td>
<td>-7.4%</td>
<td>-4.7%</td>
</tr>
<tr>
<td>30Y UST</td>
<td>-18.1%</td>
<td>-8.8%</td>
</tr>
<tr>
<td>IG corps</td>
<td>-6.8%</td>
<td>-6.4%</td>
</tr>
<tr>
<td>U.S. Aggregate</td>
<td>-5.1%</td>
<td>-8.8%</td>
</tr>
<tr>
<td>Convertibles</td>
<td>-1.6%</td>
<td>-0.7%</td>
</tr>
<tr>
<td>U.S. HY</td>
<td>-0.7%</td>
<td>-4.0%</td>
</tr>
<tr>
<td>Municipals</td>
<td>-5.1%</td>
<td>-4.0%</td>
</tr>
<tr>
<td>MBS</td>
<td>-2.8%</td>
<td>-4.7%</td>
</tr>
<tr>
<td>ABS</td>
<td>-1.3%</td>
<td>-2.3%</td>
</tr>
<tr>
<td>Floating rate</td>
<td>-0.1%</td>
<td>0.3%</td>
</tr>
</tbody>
</table>

Source: Bloomberg, FactSet, SIFMA, 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. Issuance is based on monthly data provided by SIFMA. Past performance is not indicative of future results.

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.

Default rate and spread-to-worst

<table>
<thead>
<tr>
<th></th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Default rate</td>
<td>3.47%</td>
</tr>
<tr>
<td>Spread-to-worst</td>
<td>5.61%</td>
</tr>
<tr>
<td>Recovery rate</td>
<td>39.60%</td>
</tr>
</tbody>
</table>

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 September 2021 due to data availability. 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.

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 Treasuries and Municipals, which are based on 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.

Corporate debt dynamics

**U.S. debt to GDP ratios**
Percentage of nominal GDP

![Graph showing U.S. debt to GDP ratios](image)

- **Government**: 127.7%
- **Household**: 85.4%
- **Non-financial corporate**: 80.0%

**Baa corporate debt***
Percentage of Baa-rated investment-grade corporate debt outstanding

![Graph showing Baa corporate debt](image)

- **Recession**: Nov. 2021: 50.4%

**Duration of investment-grade corporate credit universe**

![Graph showing duration of investment-grade corporate credit universe](image)

- **Recession**: Nov. 2021: 8.7 years
- **Average**: 6.4 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.

Source: J.P. Morgan Asset Management; (Left) Bank of England (BoE), Bank of Japan (BoJ), European Central Bank (ECB), FactSet, Federal Reserve System (Fed). J.P. Morgan Global Economic Research; (Right) Bloomberg. *Bond purchase forecast assumes $38bn GBP in net purchases from BoE through Dec. 2022; BoJ QE of $10tn JPY ann. for 2021; $830bn EUR in net purchases from the ECB through Dec. 2022; and the Fed to purchase $660bn of Treasuries and agency MBS through Dec. 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 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 2, 2021.
Global fixed income

<table>
<thead>
<tr>
<th>Aggregates</th>
<th>Yield 12/02/2021</th>
<th>Yield 12/31/2020</th>
<th>Local 2021</th>
<th>USD 2021</th>
<th>Duration</th>
<th>Correl. to 10-year</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S.</td>
<td>1.72%</td>
<td>1.12%</td>
<td>-1.34%</td>
<td>-1.34%</td>
<td>6.8 years</td>
<td>0.89</td>
</tr>
<tr>
<td>Gbl. ex-U.S.</td>
<td>1.00%</td>
<td>0.68%</td>
<td>-</td>
<td>-5.89%</td>
<td>8.2</td>
<td>0.37</td>
</tr>
<tr>
<td>Japan</td>
<td>0.16%</td>
<td>0.11%</td>
<td>0.23%</td>
<td>-8.39%</td>
<td>9.7</td>
<td>0.53</td>
</tr>
<tr>
<td>Germany</td>
<td>-0.09%</td>
<td>-0.28%</td>
<td>-0.27%</td>
<td>-7.76%</td>
<td>7.5</td>
<td>0.16</td>
</tr>
<tr>
<td>UK</td>
<td>1.02%</td>
<td>0.60%</td>
<td>-2.21%</td>
<td>-4.80%</td>
<td>11.3</td>
<td>0.26</td>
</tr>
<tr>
<td>Italy</td>
<td>0.60%</td>
<td>0.32%</td>
<td>-1.26%</td>
<td>-8.67%</td>
<td>7.4</td>
<td>0.01</td>
</tr>
<tr>
<td>Spain</td>
<td>0.20%</td>
<td>0.00%</td>
<td>-1.15%</td>
<td>-8.57%</td>
<td>7.6</td>
<td>0.02</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sector</th>
<th>US 1989-2021</th>
<th>Global bond market</th>
</tr>
</thead>
<tbody>
<tr>
<td>Euro Corp.</td>
<td>0.45%</td>
<td>USD trillions</td>
</tr>
<tr>
<td>Euro HY</td>
<td>3.59%</td>
<td></td>
</tr>
<tr>
<td>EMD($)</td>
<td>5.32%</td>
<td></td>
</tr>
<tr>
<td>EMD(LCL)</td>
<td>5.68%</td>
<td></td>
</tr>
<tr>
<td>EM Corp.</td>
<td>4.20%</td>
<td></td>
</tr>
</tbody>
</table>

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.

Emerging market debt

**Average credit rating of EM debt universe**

- **EMBIG index**
  - Investment-grade rating
  - High yield rating

**Emerging and developed markets duration**

- Current modified duration


*Guide to the Markets – U.S. Data are as of December 2, 2021.*
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.

Global equity markets

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

Representation of cyclical and technology sectors
% of index market capitalization

Returns
2021 YTD 2020 15-years
<table>
<thead>
<tr>
<th>Regions</th>
<th>Local USD</th>
<th>Local USD</th>
<th>Ann.</th>
<th>Beta</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. (S&amp;P 500)</td>
<td>-23.5</td>
<td>-18.4</td>
<td>9.9</td>
<td>0.89</td>
</tr>
<tr>
<td>AC World ex-U.S.</td>
<td>10.7</td>
<td>6.5</td>
<td>11.1</td>
<td>5.4</td>
</tr>
<tr>
<td>EAFE</td>
<td>14.7</td>
<td>1.3</td>
<td>8.3</td>
<td>5.0</td>
</tr>
<tr>
<td>Europe ex-UK</td>
<td>18.8</td>
<td>2.1</td>
<td>11.6</td>
<td>5.9</td>
</tr>
<tr>
<td>Emerging markets</td>
<td>0.3</td>
<td>-2.1</td>
<td>19.5</td>
<td>18.7</td>
</tr>
</tbody>
</table>

Selected Countries

United Kingdom  15.4  12.4  -13.2  -10.4  2.9  1.02
France          23.4  14.2  -3.9   4.7   5.5  1.22
Germany         10.0  1.8   3.0   12.3  6.5  1.31
Japan           10.0  0.6   9.2   14.9  3.7  0.73
China           -18.7 -18.8  28.3  29.7 11.9 1.12
India           28.5  25.2  18.6  15.9 8.0  1.28
Brazil          -11.2 -18.1  4.8   -18.9 4.8  1.51
Russia          25.6  26.1  3.4   -11.6 2.7  1.51

Source: FactSet, Federal Reserve, MSCI, Standard & Poor’s, J.P. Morgan Asset Management. All return values are MSCI Gross Index (official) data. 15-year history based on U.S. dollar returns. 15-year return and beta figures are calculated for the time period 12/31/2005 to 12/31/2020. 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.

Currency and international equity returns

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

<table>
<thead>
<tr>
<th></th>
<th>'87-'91</th>
<th>92-'00</th>
<th>01-'11</th>
<th>12-'19</th>
<th>20-'25</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S.</td>
<td>2.6%</td>
<td>3.8%</td>
<td>1.7%</td>
<td>2.4%</td>
<td>1.3%</td>
</tr>
<tr>
<td>World ex-U.S.</td>
<td>3.7%</td>
<td>2.6%</td>
<td>2.9%</td>
<td>2.9%</td>
<td>3.5%</td>
</tr>
<tr>
<td>Difference</td>
<td>-1.1%</td>
<td>1.2%</td>
<td>-1.2%</td>
<td>-0.5%</td>
<td>-2.2%</td>
</tr>
</tbody>
</table>

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.

Cycles of U.S. equity outperformance

MSCI EAFE and MSCI USA relative performance
U.S. dollar, total return, cumulative outperformance*

Regime change determined when there is sustained outperformance of one region over the other for a cumulative 12 months.

Source: FactSet, MSCI, J.P. Morgan Asset Management.
*Cycles of outperformance include a qualitative component to determine turning points in leadership.

International: Price-to-earnings discount vs. U.S.
MSCI AC World ex-U.S. vs. S&P 500 Indices, next 12 months

<table>
<thead>
<tr>
<th></th>
<th>20 yr. avg. P/E Ratio</th>
<th>Current P/E Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>S&amp;P 500</td>
<td>15.5x</td>
<td>20.4x</td>
</tr>
<tr>
<td>ACWI ex-U.S.</td>
<td>13.3x</td>
<td>14.1x</td>
</tr>
</tbody>
</table>

Dec. 2, 2021: -31.2%

+1 Std. dev.: -5.9%

Average: -13.2%

-1 Std. dev.: -20.4%

-2 Std. dev.: -26.5%

International: Difference in dividend yields vs. U.S.
MSCI AC World ex-U.S. minus S&P 500 Indices, next 12 months

Dec. 2, 2021: 1.6%

+1 Std. dev.: 1.4%

Average: 1.1%

-1 Std. dev.: 0.9%

Source: FactSet, MSCI, Standard & Poor’s, J.P. Morgan Asset Management.
Global earnings growth

Calendar year consensus estimates

- U.S.
- China
- EM
- Europe
- Japan

% cyclical sectors

- 2020: 50%
- 2021: 55%
- 60%
- 54%
- 56%
- 20%
- 33%
- 4%
- 14%
- 46%
- -3%
- -26%
- -29%
- -13%

Global valuations

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

- U.S.
- Japan
- Europe
- China
- EM

Current
- 21.0x
- 19.7x
- 14.8x
- 12.5x
- 12.4x

25-year range
- 16.8x
- 14.2x
- 14.8x
- 12.3x
- 11.7x

25-year average
- 25%
- 20%
- 14%
- 50%
- 56%

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 cyclical 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 2, 2021.
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


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.

*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.

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.

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

<table>
<thead>
<tr>
<th>Year</th>
<th>Global</th>
<th>DM</th>
<th>EM</th>
<th>U.S.</th>
<th>Canada</th>
<th>Japan</th>
<th>UK</th>
<th>Euro Area</th>
<th>Germany</th>
<th>France</th>
<th>Italy</th>
<th>Spain</th>
<th>Greece</th>
<th>China</th>
<th>Indonesia</th>
<th>Korea</th>
<th>Taiwan</th>
<th>India</th>
<th>Brazil</th>
<th>Mexico</th>
<th>Russia</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2016</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2017</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2018</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2019</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2020</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>'21</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


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.

*Guide to the Markets – U.S.* Data are as of December 2, 2021.
Emissions targets and global energy mix

**Greenhouse gas emissions targets**
Billions of tons per year, CO₂ equivalent

- China
- U.S.
- EU

**Path to net zero**

Current policy forecast

**Global energy mix**
% of primary energy consumption

- Renewables
- Gas
- Nuclear & Hydro
- Oil
- Coal

**Net zero 2050 forecast**

Source: J.P. Morgan Asset Management; (Left) ClimateActionTracker, J.P. Morgan Asset Management. (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 forward statements, actual events, results or performance may differ materially from those reflected or contemplated.

Growth of the middle class

Percent of total population

India 1% 4% 0% 72% 30% 79%
Indonesia 21% 41% 41% 30% 40% 79%
China 79% 72% 61% 40% 55% 73%
Brazil 4% 4% 7% 5% 16% 21%
Mexico

Regional contribution to middle class growth: 2020 to 2030

 Millions of people

Asia Pacific
Sub-Saharan Africa
Middle East and North Africa
Central and South America
North America
Europe

Rest of Asia, 133
China, 453
India, 883

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. This slide comes from our Guide to China, Guide to the Markets – U.S. Data are as of December 2, 2021.
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.


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.
Chinese equity and fixed income markets

MSCI Emerging Markets Index: Inclusion of China A-shares

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.

## Correlations and Volatility

<table>
<thead>
<tr>
<th>U.S. Large Cap</th>
<th>EAFE</th>
<th>EME</th>
<th>Bonds</th>
<th>Corp. HY</th>
<th>Munis</th>
<th>Currcy.</th>
<th>EMD</th>
<th>Cmdty.</th>
<th>REITs</th>
<th>Hedge funds</th>
<th>Private equity</th>
<th>Gold</th>
<th>Ann. Volatility</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. Large Cap</td>
<td>1.00</td>
<td>0.89</td>
<td>0.81</td>
<td>-0.19</td>
<td>0.85</td>
<td>0.04</td>
<td>-0.41</td>
<td>0.65</td>
<td>0.75</td>
<td>0.90</td>
<td>0.79</td>
<td>-0.03</td>
<td>15%</td>
</tr>
<tr>
<td>EAFE</td>
<td>1.00</td>
<td>0.91</td>
<td>-0.20</td>
<td>0.85</td>
<td>0.03</td>
<td>-0.55</td>
<td>0.70</td>
<td>0.65</td>
<td>0.62</td>
<td>0.92</td>
<td>0.84</td>
<td>0.07</td>
<td>16%</td>
</tr>
<tr>
<td>EME</td>
<td>1.00</td>
<td>-0.08</td>
<td>0.83</td>
<td>0.13</td>
<td>-0.67</td>
<td>0.79</td>
<td>0.65</td>
<td>0.55</td>
<td>0.82</td>
<td>0.81</td>
<td>0.28</td>
<td>19%</td>
<td></td>
</tr>
<tr>
<td>Bonds</td>
<td>1.00</td>
<td>0.01</td>
<td>0.79</td>
<td>-0.09</td>
<td>0.36</td>
<td>-0.12</td>
<td>0.08</td>
<td>-0.22</td>
<td>-0.14</td>
<td>0.70</td>
<td>3%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corp. HY</td>
<td>1.00</td>
<td>0.21</td>
<td>-0.47</td>
<td>0.85</td>
<td>0.74</td>
<td>0.72</td>
<td>0.84</td>
<td>0.74</td>
<td>0.18</td>
<td>8%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Munis</td>
<td>1.00</td>
<td>-0.15</td>
<td>0.52</td>
<td>0.06</td>
<td>0.36</td>
<td>0.01</td>
<td>0.02</td>
<td>0.59</td>
<td>3%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Currencies</td>
<td>1.00</td>
<td>-0.56</td>
<td>-0.54</td>
<td>-0.15</td>
<td>-0.37</td>
<td>-0.63</td>
<td>-0.47</td>
<td>6%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EMD</td>
<td>1.00</td>
<td>0.59</td>
<td>0.61</td>
<td>0.64</td>
<td>0.62</td>
<td>0.52</td>
<td>7%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commodities</td>
<td>1.00</td>
<td>0.48</td>
<td>0.69</td>
<td>0.71</td>
<td>0.26</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REITs</td>
<td>1.00</td>
<td>0.66</td>
<td>0.53</td>
<td>0.02</td>
<td>16%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hedge funds</td>
<td>1.00</td>
<td>0.83</td>
<td>-0.02</td>
<td>5%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private equity</td>
<td>1.00</td>
<td>0.09</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gold</td>
<td>1.00</td>
<td>15%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Bloomberg, Cambridge Associates, Credit Suisse/Tremont, FactSet, Federal Reserve, MSCI, Standard & Poor’s, J.P. Morgan Asset Management. Indices used – Large Cap: S&P 500 Index; Currencies: Federal Reserve Trade-Weighted Dollar; EAFE: MSCI EAFE; EME: MSCI Emerging Markets; Bonds: Bloomberg 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: Cambridge Associates Global Buyout & Growth Index; 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 9/30/2011 to 9/30/2021, 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. Guide to the Markets – U.S. Data are as of December 2, 2021.
Alternative sources of income and diversification

Alternative asset class yields

Global Transport: 9.8%
Direct Lending: 8.8%
Global Infrastructure: 4.9%
APAC Real Estate: 4.2%
Europe Real Estate: 4.0%
U.S. Real Estate: 3.9%

Hedge fund returns in different market environments

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

HFRI FW Comp.: 1.2%
S&P 500: 3.3%

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

HFRI FW Comp.: 0.9%
Bloomberg Barclays U.S. Agg.: 0.0%

Source: BEA, Bloomberg, Clarkson, Cliffwater, Drewry Maritime Consultants, FactSet, HFRI, J.P. Morgan Asset Management. Global Transport and Direct Lending yields are as of 6/30/2021. Global Infrastructure and U.S., Europe and APAC Real Estate yields are as of 3/31/2021. 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.

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.
### Commodity prices

**Commodity price z-scores**

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Low level</th>
<th>Current</th>
<th>High level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bloomberg Commodity Index</td>
<td>$59.48</td>
<td>$95.12</td>
<td>$152.01</td>
</tr>
<tr>
<td>Livestock</td>
<td>$16.21</td>
<td>$22.45</td>
<td>$41.63</td>
</tr>
<tr>
<td>Crude oil</td>
<td>$11.57</td>
<td>$66.50</td>
<td>$110.53</td>
</tr>
<tr>
<td>Agriculture</td>
<td>$34.15</td>
<td>$49.66</td>
<td>$97.40</td>
</tr>
<tr>
<td>Silver</td>
<td>$11.77</td>
<td>$22.32</td>
<td>$37.14</td>
</tr>
<tr>
<td>Gold</td>
<td>$1,049.60</td>
<td>$1,762.70</td>
<td>$2,069.40</td>
</tr>
<tr>
<td>Industrial metals</td>
<td>$84.23</td>
<td>$161.82</td>
<td>$184.18</td>
</tr>
<tr>
<td>Natural gas</td>
<td>$1.48</td>
<td>$4.57</td>
<td>$6.31</td>
</tr>
</tbody>
</table>

### Gold prices

**USD per ounce**

- **Gold, Inflation adjusted**
- **Gold**

Dec. 2, 2021: $1,763

### Commodity prices and inflation

**Year-over-year % change**

- **Headline CPI**
- **Bloomberg Commodity Index**

Source: FactSet, J.P. Morgan Asset Management; (Left) Bloomberg, CME; (Top right) BLS, CME; (Bottom right) Bloomberg, BLS. Commodity prices are represented by the appropriate Bloomberg Commodity sub-index. Crude oil shown is WTI. Other commodity prices are represented by futures contracts. Z-scores are calculated using daily prices over the past 10 years.

*Guide to the Markets – U.S.* Data are as of December 2, 2021.
### Asset class returns

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>35.1%</td>
<td>39.8%</td>
<td>16.2%</td>
<td>1.8%</td>
<td>18.9%</td>
<td>5.2%</td>
<td>79.0%</td>
<td>61.1%</td>
<td>2.9%</td>
<td>19.7%</td>
<td>8.3%</td>
<td>1.8%</td>
<td>31.5%</td>
<td>20.0%</td>
<td>2020</td>
<td>5.1%</td>
<td>11.8%</td>
</tr>
<tr>
<td>2007</td>
<td>35.1%</td>
<td>39.8%</td>
<td>16.2%</td>
<td>1.8%</td>
<td>18.9%</td>
<td>5.2%</td>
<td>79.0%</td>
<td>61.1%</td>
<td>2.9%</td>
<td>19.7%</td>
<td>8.3%</td>
<td>1.8%</td>
<td>31.5%</td>
<td>20.0%</td>
<td>2020</td>
<td>5.1%</td>
<td>11.8%</td>
</tr>
<tr>
<td>2008</td>
<td>35.1%</td>
<td>39.8%</td>
<td>16.2%</td>
<td>1.8%</td>
<td>18.9%</td>
<td>5.2%</td>
<td>79.0%</td>
<td>61.1%</td>
<td>2.9%</td>
<td>19.7%</td>
<td>8.3%</td>
<td>1.8%</td>
<td>31.5%</td>
<td>20.0%</td>
<td>2020</td>
<td>5.1%</td>
<td>11.8%</td>
</tr>
<tr>
<td>2009</td>
<td>35.1%</td>
<td>39.8%</td>
<td>16.2%</td>
<td>1.8%</td>
<td>18.9%</td>
<td>5.2%</td>
<td>79.0%</td>
<td>61.1%</td>
<td>2.9%</td>
<td>19.7%</td>
<td>8.3%</td>
<td>1.8%</td>
<td>31.5%</td>
<td>20.0%</td>
<td>2020</td>
<td>5.1%</td>
<td>11.8%</td>
</tr>
<tr>
<td>2010</td>
<td>35.1%</td>
<td>39.8%</td>
<td>16.2%</td>
<td>1.8%</td>
<td>18.9%</td>
<td>5.2%</td>
<td>79.0%</td>
<td>61.1%</td>
<td>2.9%</td>
<td>19.7%</td>
<td>8.3%</td>
<td>1.8%</td>
<td>31.5%</td>
<td>20.0%</td>
<td>2020</td>
<td>5.1%</td>
<td>11.8%</td>
</tr>
<tr>
<td>2011</td>
<td>35.1%</td>
<td>39.8%</td>
<td>16.2%</td>
<td>1.8%</td>
<td>18.9%</td>
<td>5.2%</td>
<td>79.0%</td>
<td>61.1%</td>
<td>2.9%</td>
<td>19.7%</td>
<td>8.3%</td>
<td>1.8%</td>
<td>31.5%</td>
<td>20.0%</td>
<td>2020</td>
<td>5.1%</td>
<td>11.8%</td>
</tr>
<tr>
<td>2012</td>
<td>35.1%</td>
<td>39.8%</td>
<td>16.2%</td>
<td>1.8%</td>
<td>18.9%</td>
<td>5.2%</td>
<td>79.0%</td>
<td>61.1%</td>
<td>2.9%</td>
<td>19.7%</td>
<td>8.3%</td>
<td>1.8%</td>
<td>31.5%</td>
<td>20.0%</td>
<td>2020</td>
<td>5.1%</td>
<td>11.8%</td>
</tr>
<tr>
<td>2013</td>
<td>35.1%</td>
<td>39.8%</td>
<td>16.2%</td>
<td>1.8%</td>
<td>18.9%</td>
<td>5.2%</td>
<td>79.0%</td>
<td>61.1%</td>
<td>2.9%</td>
<td>19.7%</td>
<td>8.3%</td>
<td>1.8%</td>
<td>31.5%</td>
<td>20.0%</td>
<td>2020</td>
<td>5.1%</td>
<td>11.8%</td>
</tr>
<tr>
<td>2014</td>
<td>35.1%</td>
<td>39.8%</td>
<td>16.2%</td>
<td>1.8%</td>
<td>18.9%</td>
<td>5.2%</td>
<td>79.0%</td>
<td>61.1%</td>
<td>2.9%</td>
<td>19.7%</td>
<td>8.3%</td>
<td>1.8%</td>
<td>31.5%</td>
<td>20.0%</td>
<td>2020</td>
<td>5.1%</td>
<td>11.8%</td>
</tr>
<tr>
<td>2015</td>
<td>35.1%</td>
<td>39.8%</td>
<td>16.2%</td>
<td>1.8%</td>
<td>18.9%</td>
<td>5.2%</td>
<td>79.0%</td>
<td>61.1%</td>
<td>2.9%</td>
<td>19.7%</td>
<td>8.3%</td>
<td>1.8%</td>
<td>31.5%</td>
<td>20.0%</td>
<td>2020</td>
<td>5.1%</td>
<td>11.8%</td>
</tr>
<tr>
<td>2016</td>
<td>35.1%</td>
<td>39.8%</td>
<td>16.2%</td>
<td>1.8%</td>
<td>18.9%</td>
<td>5.2%</td>
<td>79.0%</td>
<td>61.1%</td>
<td>2.9%</td>
<td>19.7%</td>
<td>8.3%</td>
<td>1.8%</td>
<td>31.5%</td>
<td>20.0%</td>
<td>2020</td>
<td>5.1%</td>
<td>11.8%</td>
</tr>
<tr>
<td>2017</td>
<td>35.1%</td>
<td>39.8%</td>
<td>16.2%</td>
<td>1.8%</td>
<td>18.9%</td>
<td>5.2%</td>
<td>79.0%</td>
<td>61.1%</td>
<td>2.9%</td>
<td>19.7%</td>
<td>8.3%</td>
<td>1.8%</td>
<td>31.5%</td>
<td>20.0%</td>
<td>2020</td>
<td>5.1%</td>
<td>11.8%</td>
</tr>
<tr>
<td>2018</td>
<td>35.1%</td>
<td>39.8%</td>
<td>16.2%</td>
<td>1.8%</td>
<td>18.9%</td>
<td>5.2%</td>
<td>79.0%</td>
<td>61.1%</td>
<td>2.9%</td>
<td>19.7%</td>
<td>8.3%</td>
<td>1.8%</td>
<td>31.5%</td>
<td>20.0%</td>
<td>2020</td>
<td>5.1%</td>
<td>11.8%</td>
</tr>
<tr>
<td>2019</td>
<td>35.1%</td>
<td>39.8%</td>
<td>16.2%</td>
<td>1.8%</td>
<td>18.9%</td>
<td>5.2%</td>
<td>79.0%</td>
<td>61.1%</td>
<td>2.9%</td>
<td>19.7%</td>
<td>8.3%</td>
<td>1.8%</td>
<td>31.5%</td>
<td>20.0%</td>
<td>2020</td>
<td>5.1%</td>
<td>11.8%</td>
</tr>
<tr>
<td>2020</td>
<td>35.1%</td>
<td>39.8%</td>
<td>16.2%</td>
<td>1.8%</td>
<td>18.9%</td>
<td>5.2%</td>
<td>79.0%</td>
<td>61.1%</td>
<td>2.9%</td>
<td>19.7%</td>
<td>8.3%</td>
<td>1.8%</td>
<td>31.5%</td>
<td>20.0%</td>
<td>2020</td>
<td>5.1%</td>
<td>11.8%</td>
</tr>
</tbody>
</table>

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


Flow by firm as % of total U.S. equity market volume

2020 - 2Q21

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.


E*TRADE
Schwab
TD
Robinhood
Range of stock, bond and blended total returns
Annual total returns, 1950-2020

<table>
<thead>
<tr>
<th></th>
<th>Annual avg. total return</th>
<th>Growth of $100,000 over 20 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stocks</td>
<td>11.3%</td>
<td>$854,025</td>
</tr>
<tr>
<td>Bonds</td>
<td>5.9%</td>
<td>$315,105</td>
</tr>
<tr>
<td>50/50 portfolio</td>
<td>9.0%</td>
<td>$558,890</td>
</tr>
</tbody>
</table>


Returns shown are based on calendar year returns from 1950 to 2020. 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 2020.

Portfolio returns: Equities vs. equity and fixed income blend

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


* 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 October 2021 Core CPI, education inflation and medical care inflation. Current savings account is based on the November 2021 national average annual percentage rate (APR) on money market accounts. Past performance is not indicative of comparable future results.

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; 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; 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 9/30/2021, except Infra, and U.S., Europe and APAC Real Estate, which are through 3/31/2021. 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 3/31/2020 except Direct Lending, which is through 6/30/2021. U.S. Real Estate yield is calculated using the MSCI Global Property Fund Index – North America.
Yield alternatives: Domestic and global

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

Asset class yields


Asset allocation: Corporate DB plans vs. endowments

- **Equities**
  - Endowments: 35.2%
  - Corporate DB plans: 32.1%
- **Fixed Income**
  - Endowments: 9.0%
  - Corporate DB plans: 49.9%
- **Hedge Funds**
  - Endowments: 18.0%
  - Corporate DB plans: 3.8%
- **Private Equity**
  - Endowments: 12.3%
  - Corporate DB plans: 4.3%
- **Real Estate**
  - Endowments: 5.4%
  - Corporate DB plans: 3.7%
- **Other Alternatives**
  - Endowments: 15.7%
  - Corporate DB plans: 3.3%
- **Cash**
  - Endowments: 4.4%
  - Corporate DB plans: 2.9%

Corporate pension liabilities and 10-year UST yield

- Liabilities ($tn)
- 10yr UST (inv.)

Pension return assumptions

- S&P 500 companies
- State & local governments

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 November 2021. All information is shown for illustrative purposes only. Guide to the Markets – U.S. Data are as of December 2, 2021.
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.
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 borrowers.

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.
The Market Insights program provides comprehensive data and commentary on global markets without reference to products. Designed as a tool to help clients understand the markets and support investment decision-making, the program explores the implications of current economic data and changing market conditions.

For the purposes of MiFID II, the JPM Market Insights and Portfolio Insights programs are marketing communications and are not in scope for any MiFID II / MiFIR requirements specifically related to investment research. Furthermore, the J.P. Morgan Asset Management Market Insights and Portfolio Insights programs, as non-independent research, have not been prepared in accordance with legal requirements designed to promote the independence of investment research, nor are they subject to any prohibition on dealing ahead of the dissemination of investment research.

This document is a general communication being provided for informational purposes only. It is educational in nature and not designed to be taken as advice or a recommendation for any specific investment product, strategy, plan feature or other purpose in any jurisdiction, nor is it a commitment from J.P. Morgan Asset Management or any of its subsidiaries to participate in any of the transactions mentioned herein. Any examples used are generic, hypothetical and for illustration purposes only. This material does not contain sufficient information to support an investment decision and it should not be relied upon by you in evaluating the merits of investing in any securities or products. In addition, users should make an independent assessment of the legal, regulatory, tax, credit, and accounting implications and determine, together with their own financial professionals, if any investment mentioned herein is believed to be appropriate to their personal goals. Investors should ensure that they obtain all available relevant information before making any investment. Any forecasts, figures, opinions or investment techniques and strategies set out are for information purposes only, based on certain assumptions and current market conditions and are subject to change without prior notice. All information presented herein is considered to be accurate at the time of production, but no warranty of accuracy is given and no liability in respect of any error or omission is accepted. It should be noted that investment involves risks, the value of investments and the income from them may fluctuate in accordance with market conditions and taxation agreements and investors may not get back the full amount invested. Both past performance and yields are not reliable indicators of current and future results.

J.P. Morgan Asset Management is the brand for the asset management business of JPMorgan Chase & Co. and its affiliates worldwide. To the extent permitted by applicable law, we may record telephone calls and monitor electronic communications to comply with our legal and regulatory obligations and internal policies. Personal data will be collected, stored and processed by J.P. Morgan Asset Management in accordance with our privacy policies at https://iam.jpmorgan.com/global/privacy.

This communication is issued by the following entities:

In the United States, by J.P. Morgan Investment Management Inc. or J.P. Morgan Alternative Asset Management, Inc., both regulated by the Securities and Exchange Commission; in Latin America, for intended recipients’ use only, by local J.P. Morgan entities, as the case may be; in Canada, for institutional clients’ use only. JPMorgan Asset Management (Canada) Inc., which is a registered Portfolio Manager and Exempt Market Dealer in all Canadian provinces and territories except the Yukon and is also registered as an Investment Fund Manager in British Columbia, Ontario, Quebec and Newfoundland and Labrador. In the United Kingdom, by JPMorgan Asset Management (UK) Limited, which is authorized and regulated by the Financial Conduct Authority; in other European jurisdictions, by JPMorgan Asset Management (Europe) S.a.r.l. In Asia Pacific (“APAC”), by the following issuing entities and in the respective jurisdictions in which they are primarily regulated: JPMorgan Asset Management (Asia Pacific) Limited, or JPMorgan Funds (Asia) Limited, or JPMorgan Asset Management Real Assets (Asia) Limited, each of which is regulated by the Securities and Futures Commission of Hong Kong; JPMorgan Asset Management (Singapore) Limited (Co. Reg. No. 197601586K), which this advertisement or publication has not been reviewed by the Monetary Authority of Singapore; JPMorgan Asset Management (Taiwan) Limited; JPMorgan Asset Management (Japan) Limited, which is a member of the Investment Trusts Association, Japan, the Japan Investment Advisers Association, Type II Financial Instruments Firms Association and the Japan Securities Dealers Association and is regulated by the Financial Services Agency (registration number “Kanto Local Finance Bureau (Financial Instruments Firm) No. 330”); in Australia, to wholesale clients only as defined in section 761A and 761G of the Corporations Act 2001 (Commonwealth), by JPMorgan Asset Management (Australia) Limited (ABN 55143832080) (AFSL 376919). For all other markets in APAC, to intended recipients only.

For U.S. only: If you are a person with a disability and need additional support in viewing the material, please call us at 1-800-343-1113 for assistance.

Copyright 2021 JPMorgan Chase & Co. All rights reserved.

Google assistant is a trademark of Google Inc.

Amazon, Alexa and all related logos are trademarks of Amazon.com, Inc. or its affiliates.


Unless otherwise stated, all data are as of December 2, 2021 or most recently available.