GTM – U.S.

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S&P 500 Index at inflection points

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<tbody>
<tr>
<td>Index level</td>
<td>1,527</td>
<td>1,565</td>
<td>2,834</td>
</tr>
<tr>
<td>P/E ratio (fwd.)</td>
<td>27.2x</td>
<td>15.7x</td>
<td>16.4x</td>
</tr>
<tr>
<td>Dividend yield</td>
<td>1.1%</td>
<td>1.8%</td>
<td>2.1%</td>
</tr>
<tr>
<td>10-yr. Treasury</td>
<td>6.2%</td>
<td>4.7%</td>
<td>2.4%</td>
</tr>
</tbody>
</table>

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

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

Guide to the Markets – U.S. Data are as of March 31, 2019.
S&P 500 valuation measures


Price to earnings is price divided by consensus analyst estimates of earnings per share for the next 12 months as provided by IBES since April 1994, and FactSet for March 31, 2019. Average P/E and standard deviations are calculated using 25 years of IBES history. Shiller’s P/E uses trailing 10-years of inflation-adjusted earnings as reported by companies. Dividend yield is calculated as the next 12-month consensus dividend divided by most recent price. Price to book ratio is the price divided by book value per share. Price to cash flow is price divided by NTM cash flow. EY minus Baa yield is the forward earnings yield (consensus analyst estimates of EPS over the next 12 months divided by price) minus the Moody’s Baa seasoned corporate bond yield. Std. dev. over-/under-valued is calculated using the average and standard deviation over 25 years for each measure. *P/CF is a 20-year average due to cash flow data availability.}

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

<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>16.4x</td>
<td>16.2x</td>
<td>0.1</td>
</tr>
<tr>
<td>CAPE</td>
<td>Shiller's P/E</td>
<td>29.9</td>
<td>26.9</td>
<td>0.5</td>
</tr>
<tr>
<td>Div. Yield</td>
<td>Dividend yield</td>
<td>2.1%</td>
<td>1.9%</td>
<td>-0.3</td>
</tr>
<tr>
<td>P/B</td>
<td>Price to book</td>
<td>3.1</td>
<td>2.9</td>
<td>0.2</td>
</tr>
<tr>
<td>P/CF</td>
<td>Price to cash flow</td>
<td>12.2</td>
<td>10.7</td>
<td>0.8</td>
</tr>
<tr>
<td>EY Spread</td>
<td>EY minus Baa yield</td>
<td>1.4%</td>
<td>-0.1%</td>
<td>-0.8</td>
</tr>
</tbody>
</table>
Forward P/E and subsequent 1-yr. returns
S&P 500 Total Return Index

Source: FactSet, Standard & Poor’s, Thomson Reuters, J.P. Morgan Asset Management.
Returns are 12-month and 60-month annualized total returns, measured monthly, beginning March 31, 1994. R² represents the percent of total variation in total returns that can be explained by forward P/E ratios.

Guide to the Markets – U.S. Data are as of March 31, 2019.
Corporate profits

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

Net earnings revisions*
Current year, weekly, 13-week moving average, %

S&P 500 profit margins
Quarterly operating earnings/sales

Source: Compustat, FactSet, Standard & Poor's, J.P. Morgan Asset Management.
EPS levels are based on operating earnings per share. Earnings estimates are Standard & Poor's consensus analyst expectations. Past performance is not indicative of future returns. *Net earnings revisions are calculated as the number of upward revisions minus the number of downward revisions as a percentage of total revisions. Total revisions include upward, downward and unchanged revisions.

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

<table>
<thead>
<tr>
<th>Share of EPS growth</th>
<th>4Q18</th>
<th>Avg. ’01-’17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Margin</td>
<td>-1.7%</td>
<td>3.8%</td>
</tr>
<tr>
<td>Revenue</td>
<td>3.4%</td>
<td>3.0%</td>
</tr>
<tr>
<td>Share count</td>
<td>1.8%</td>
<td>0.2%</td>
</tr>
<tr>
<td>Total EPS</td>
<td>3.5%</td>
<td>6.9%</td>
</tr>
</tbody>
</table>

Source: Compustat, FactSet, Standard & Poor’s, J.P. Morgan Asset Management.
EPS levels are based on annual operating earnings per share except for 2018, which is quarterly. Percentages may not sum due to rounding. Past performance is not indicative of future returns.

Guide to the Markets – U.S. Data are as of March 31, 2019.
Uses of profits

S&P 500 announced buybacks
Value of announced buybacks, $bn

Net debt to EBITDA
Current net debt to EBITDA ratio, 5-yr. growth in net debt to EBITDA

Corporate spending
Value of deals announced, $tn, private non-residential fixed investment, y/y

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

M&A activity is the quarterly value of officially announced transactions, and capital expenditures are private non-residential fixed domestic investment. Buybacks are based on company announcements year to date. Net debt is gross debt minus cash and cash equivalents. Small caps are represented by the Russell 2000, large caps by the S&P 500, growth by the S&P 500 Growth Index and value by the S&P 500 Value Index.

Guide to the Markets – U.S. Data are as of March 31, 2019.
### Returns and valuations by style

**Equities**

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<tbody>
<tr>
<td></td>
<td></td>
<td>Value</td>
<td>Blend</td>
<td>Growth</td>
</tr>
<tr>
<td>Large</td>
<td></td>
<td>11.9%</td>
<td>13.6%</td>
<td>16.1%</td>
</tr>
<tr>
<td>Mid</td>
<td></td>
<td>14.4%</td>
<td>16.5%</td>
<td>19.6%</td>
</tr>
<tr>
<td>Small</td>
<td></td>
<td>11.9%</td>
<td>14.6%</td>
<td>17.1%</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Value</th>
<th>Blend</th>
<th>Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large</td>
<td></td>
<td>13.9</td>
<td>13.7</td>
<td>20.5</td>
</tr>
<tr>
<td>Mid</td>
<td></td>
<td>14.2</td>
<td>14.1</td>
<td>22.1</td>
</tr>
<tr>
<td>Small</td>
<td></td>
<td>14.5</td>
<td>16.1</td>
<td>36.0</td>
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</table>

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

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Value</th>
<th>Blend</th>
<th>Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large</td>
<td></td>
<td>101.6%</td>
<td>104.3%</td>
<td>104.9%</td>
</tr>
<tr>
<td>Mid</td>
<td></td>
<td>100.6%</td>
<td>103.7%</td>
<td>104.8%</td>
</tr>
<tr>
<td>Small</td>
<td></td>
<td>90.1%</td>
<td>104.7%</td>
<td>123.0%</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 10/9/07 – 3/31/19, illustrating market returns since the S&P 500 Index high on 10/9/07. Since Market Low represents period 3/9/09 – 3/31/19, illustrating market returns since the S&P 500 Index low on 3/9/09. Returns are cumulative returns, not annualized. For all time periods, total return is based on Russell style indices with the exception of the large blend category, which is based on the S&P 500 Index. Past performance is not indicative of future returns. The price to earnings is a bottom-up calculation based on the most recent index price, divided by consensus estimates for earnings in the next 12 months (NTM), and is provided by FactSet Market Aggregates.

*Guide to the Markets – U.S. Data are as of March 31, 2019.*
## Returns and valuations by sector


### Equities

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</thead>
<tbody>
<tr>
<td>S&amp;P weight</td>
<td>2.6%</td>
<td>12.7%</td>
<td>9.5%</td>
<td>10.1%</td>
<td>5.4%</td>
<td>21.2%</td>
<td>3.1%</td>
<td>10.1%</td>
<td>14.6%</td>
<td>7.3%</td>
<td>3.3%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Russell Growth weight</td>
<td>1.8%</td>
<td>4.3%</td>
<td>11.8%</td>
<td>15.1%</td>
<td>0.7%</td>
<td>33.0%</td>
<td>2.4%</td>
<td>12.1%</td>
<td>13.2%</td>
<td>5.7%</td>
<td>0.0%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Russell Value weight</td>
<td>4.0%</td>
<td>21.7%</td>
<td>7.8%</td>
<td>5.3%</td>
<td>9.7%</td>
<td>9.8%</td>
<td>5.2%</td>
<td>6.9%</td>
<td>15.3%</td>
<td>7.9%</td>
<td>6.4%</td>
<td>100.0%</td>
</tr>
<tr>
<td>QTD</td>
<td>10.3</td>
<td>8.6</td>
<td>17.2</td>
<td>15.7</td>
<td>16.4</td>
<td>19.9</td>
<td>17.5</td>
<td>14.0</td>
<td>6.6</td>
<td>12.0</td>
<td>10.8</td>
<td>13.6</td>
</tr>
<tr>
<td>YTD</td>
<td>10.3</td>
<td>8.6</td>
<td>17.2</td>
<td>15.7</td>
<td>16.4</td>
<td>19.9</td>
<td>17.5</td>
<td>14.0</td>
<td>6.6</td>
<td>12.0</td>
<td>10.8</td>
<td>13.6</td>
</tr>
<tr>
<td>Since market peak</td>
<td></td>
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<td></td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>(October 2007)</td>
<td>66.2</td>
<td>12.1</td>
<td>117.2</td>
<td>261.5</td>
<td>10.9</td>
<td>257.4</td>
<td>92.4</td>
<td>53.9</td>
<td>215.2</td>
<td>177.7</td>
<td>120.4</td>
<td>131.5</td>
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<tr>
<td>Since market low</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>(March 2009)</td>
<td>296.0</td>
<td>512.0</td>
<td>496.9</td>
<td>736.8</td>
<td>103.0</td>
<td>648.8</td>
<td>613.3</td>
<td>194.1</td>
<td>408.1</td>
<td>289.4</td>
<td>285.7</td>
<td>417.3</td>
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<tr>
<td>Beta to S&amp;P 500</td>
<td>1.31</td>
<td>1.30</td>
<td>1.22</td>
<td>1.14</td>
<td>1.12</td>
<td>1.10</td>
<td>0.99</td>
<td>0.96*</td>
<td>0.76</td>
<td>0.58</td>
<td>0.29</td>
<td>1.00</td>
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<tr>
<td>Correl. to Treas. yields</td>
<td>0.16</td>
<td>0.47</td>
<td>0.25</td>
<td>0.15</td>
<td>0.35</td>
<td>0.11</td>
<td>-0.27</td>
<td>0.13</td>
<td>0.26</td>
<td>0.06</td>
<td>-0.22</td>
<td>0.24</td>
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<tr>
<td>Foreign % of sales</td>
<td>52.7</td>
<td>31.2</td>
<td>44.6</td>
<td>34.1</td>
<td>54.1</td>
<td>56.9</td>
<td>-</td>
<td>-</td>
<td>38.2</td>
<td>32.5</td>
<td>41.3</td>
<td>43.6</td>
</tr>
<tr>
<td>NTM Earnings Growth</td>
<td>1.7%</td>
<td>8.6%</td>
<td>9.3%</td>
<td>9.1%</td>
<td>-3.3%</td>
<td>4.7%</td>
<td>2.8%</td>
<td>6.7%*</td>
<td>6.6%</td>
<td>3.5%</td>
<td>3.7%</td>
<td>5.9%</td>
</tr>
<tr>
<td>20-yr avg.</td>
<td>20.3%</td>
<td>22.5%</td>
<td>11.0%</td>
<td>15.6%</td>
<td>13.2%</td>
<td>15.0%</td>
<td>7.6%**</td>
<td>10.5%*</td>
<td>9.8%</td>
<td>8.7%</td>
<td>4.9%</td>
<td>11.8%</td>
</tr>
<tr>
<td>Forward P/E ratio</td>
<td>15.6x</td>
<td>11.3x</td>
<td>15.6x</td>
<td>20.8x</td>
<td>18.0x</td>
<td>18.5x</td>
<td>19.3x</td>
<td>17.4x</td>
<td>15.7x</td>
<td>18.8x</td>
<td>18.5x</td>
<td>16.4x</td>
</tr>
<tr>
<td>20-yr avg.</td>
<td>14.0x</td>
<td>12.6x</td>
<td>16.1x</td>
<td>17.9x</td>
<td>17.4x</td>
<td>20.4x</td>
<td>15.3x</td>
<td>18.2x*</td>
<td>16.7x</td>
<td>16.8x</td>
<td>14.2x</td>
<td>15.8x</td>
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<tr>
<td>Trailing P/E ratio</td>
<td>15.7x</td>
<td>12.5x</td>
<td>17.2x</td>
<td>22.0x</td>
<td>17.0x</td>
<td>18.6x</td>
<td>19.2x</td>
<td>18.1x</td>
<td>16.6x</td>
<td>18.9x</td>
<td>18.8x</td>
<td>17.1x</td>
</tr>
<tr>
<td>20-yr avg.</td>
<td>16.7x</td>
<td>15.3x</td>
<td>17.8x</td>
<td>20.8x</td>
<td>21.5x</td>
<td>23.7x</td>
<td>16.4x</td>
<td>20.0x*</td>
<td>18.3x</td>
<td>18.2x</td>
<td>14.8x</td>
<td>17.5x</td>
</tr>
<tr>
<td>Dividend yield</td>
<td>2.3%</td>
<td>2.4%</td>
<td>2.1%</td>
<td>1.4%</td>
<td>3.5%</td>
<td>1.6%</td>
<td>3.3%</td>
<td>1.5%</td>
<td>1.8%</td>
<td>3.1%</td>
<td>3.4%</td>
<td>2.1%</td>
</tr>
<tr>
<td>20-yr avg.</td>
<td>2.6%</td>
<td>2.3%</td>
<td>2.1%</td>
<td>1.4%</td>
<td>2.3%</td>
<td>1.0%</td>
<td>4.4%</td>
<td>1.7%</td>
<td>1.8%</td>
<td>2.7%</td>
<td>4.0%</td>
<td>2.0%</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 10/9/07 – 3/31/19. Since market low represents period 3/9/09 – 3/31/19. Correlation to Treasury yields are trailing 2-year monthly correlations between S&P 500 sector price returns and 10-year Treasury yield movements. Foreign percent of sales is from Standard & Poor’s, S&P 500 2017: Global Sales report as of June 2018. Real Estate and Comm. Services foreign sales are not included due to lack of availability. NTM earnings growth is the percent change in next 12 months earnings estimates compared to last 12 months earnings provided by brokers. Forward P/E ratio is a bottom-up calculation based on the most recent S&P 500 Index price, divided by consensus estimates for earnings in the next 12 months (NTM), and is provided by FactSet Market Aggregates. Trailing P/E ratios are bottom-up values defined as month-end price divided by the last 12 months of available reported earnings from brokers. Dividend yield is calculated as the next 12-month consensus dividend divided by most recent price. Beta calculations are based on 10-years of monthly price returns for the S&P 500 and its sub-indices. *Communication Services (formerly Telecom) averages and beta are based on 5-years of backtested data by JPMAM. **Real estate NTM earnings growth is a 15-year average due to data availability. Past performance is not indicative of future returns.
**Cyclical and defensive sectors**

### Cyclicals vs. defensive valuations*

Relative fwd. P/E ratio of cyclicals vs. defensives, z-score

**S&P 500 sector returns: Dividends vs. cap. apprec.**

25-year annualized return, %

---

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

*Cyclical sectors include Consumer Discretionary, Information Technology, Industrials, Financials, Energy and Materials. REITs are excluded from this analysis. It is more appropriate to value a REIT by looking at its price relative to its funds from operations (FFO), an income measure that excludes depreciation. P/E ratios look at price relative to net income, a measure that includes depreciation, making the comparison of valuations across sectors inappropriate. Defensive sectors include Telecommunications, Health Care, Utilities and Consumer Staples. From 9/30/2018 to present Communication Services (previously Telecommunications) is included in the cyclical sectors and removed from the defensive sectors due to changes in the composition of the sector. Sector valuations are equal weighted. 25-yr. annualized return calculated from 3/31/1994 to 3/31/2019. Past performance is not indicative of future returns.

Guide to the Markets – U.S. Data are as of March 31, 2019.
Factor performance

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</tr>
</thead>
<tbody>
<tr>
<td>Multi-Factor</td>
<td>21.1%</td>
<td>19.3%</td>
<td>22.0%</td>
<td>17.8%</td>
<td>-25.7%</td>
<td>36.9%</td>
<td>26.9%</td>
<td>14.3%</td>
<td>20.1%</td>
<td>38.8%</td>
<td>16.5%</td>
<td>9.3%</td>
<td>21.3%</td>
<td>37.8%</td>
<td>1.5%</td>
<td>16.9%</td>
<td>10.4%</td>
</tr>
<tr>
<td>Small Cap</td>
<td>18.3%</td>
<td>15.7%</td>
<td>21.1%</td>
<td>17.7%</td>
<td>-26.7%</td>
<td>32.0%</td>
<td>18.3%</td>
<td>12.9%</td>
<td>37.4%</td>
<td>14.8%</td>
<td>7.0%</td>
<td>16.9%</td>
<td>27.3%</td>
<td>-1.6%</td>
<td>15.7%</td>
<td>9.6%</td>
<td>17.4%</td>
</tr>
<tr>
<td>Momen.</td>
<td>16.9%</td>
<td>11.1%</td>
<td>18.4%</td>
<td>10.6%</td>
<td>-27.6%</td>
<td>29.8%</td>
<td>18.2%</td>
<td>10.1%</td>
<td>35.0%</td>
<td>14.8%</td>
<td>5.6%</td>
<td>16.3%</td>
<td>26.0%</td>
<td>-2.3%</td>
<td>14.6%</td>
<td>9.4%</td>
<td>16.2%</td>
</tr>
<tr>
<td>Value</td>
<td>14.6%</td>
<td>6.6%</td>
<td>16.6%</td>
<td>5.5%</td>
<td>-39.2%</td>
<td>27.2%</td>
<td>17.9%</td>
<td>8.4%</td>
<td>21.5%</td>
<td>2.6%</td>
<td>14.0%</td>
<td>10.4%</td>
<td>21.5%</td>
<td>9.3%</td>
<td>15.4%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min. Vol.</td>
<td>14.5%</td>
<td>6.0%</td>
<td>15.9%</td>
<td>4.3%</td>
<td>-33.8%</td>
<td>18.4%</td>
<td>15.9%</td>
<td>7.3%</td>
<td>15.0%</td>
<td>33.5%</td>
<td>13.6%</td>
<td>0.7%</td>
<td>13.7%</td>
<td>19.5%</td>
<td>2.9%</td>
<td>12.7%</td>
<td>8.8%</td>
</tr>
<tr>
<td>Defens.</td>
<td>11.9%</td>
<td>4.6%</td>
<td>15.0%</td>
<td>0.5%</td>
<td>-35.4%</td>
<td>18.4%</td>
<td>14.7%</td>
<td>6.1%</td>
<td>14.0%</td>
<td>32.3%</td>
<td>13.0%</td>
<td>0.4%</td>
<td>10.7%</td>
<td>19.2%</td>
<td>-5.3%</td>
<td>12.0%</td>
<td>8.4%</td>
</tr>
<tr>
<td>High Div.</td>
<td>11.8%</td>
<td>3.7%</td>
<td>15.0%</td>
<td>0.0%</td>
<td>-39.3%</td>
<td>18.0%</td>
<td>14.4%</td>
<td>1.5%</td>
<td>11.2%</td>
<td>28.9%</td>
<td>12.3%</td>
<td>-0.9%</td>
<td>8.0%</td>
<td>15.4%</td>
<td>-7.2%</td>
<td>11.5%</td>
<td>7.5%</td>
</tr>
<tr>
<td>Quality</td>
<td>10.2%</td>
<td>2.5%</td>
<td>12.0%</td>
<td>0.8%</td>
<td>-40.9%</td>
<td>17.6%</td>
<td>12.6%</td>
<td>-3.4%</td>
<td>10.7%</td>
<td>28.9%</td>
<td>11.8%</td>
<td>-1.9%</td>
<td>7.7%</td>
<td>14.6%</td>
<td>-9.7%</td>
<td>10.6%</td>
<td>7.3%</td>
</tr>
<tr>
<td>Cyclical</td>
<td>10.0%</td>
<td>2.5%</td>
<td>10.7%</td>
<td>1.6%</td>
<td>-44.8%</td>
<td>16.5%</td>
<td>12.0%</td>
<td>-4.2%</td>
<td>10.6%</td>
<td>25.3%</td>
<td>4.9%</td>
<td>-4.4%</td>
<td>5.1%</td>
<td>12.3%</td>
<td>-11.0%</td>
<td>10.0%</td>
<td>7.0%</td>
</tr>
</tbody>
</table>

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 Quality Index are selected based on three main variables: high return on equity, stable year-over-year earnings growth and low financial leverage. Constituents of the MSCI value index are based on three main variables: book value to price, 12-month forward earnings to price and dividend yield. 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 March 31, 2019.
S&P 500 intra-year declines vs. calendar year returns

Despite average intra-year drops of 13.9%, annual returns positive in 29 of 39 years

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

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

Guide to the Markets – U.S. Data are as of March 31, 2019.
### Characteristics of recessions and related stock market declines

<table>
<thead>
<tr>
<th>Recessions and S&amp;P 500 composite declines from all-time highs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Recession</strong></td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>1 Recession of 1949</td>
</tr>
<tr>
<td>2 Recession of 1953</td>
</tr>
<tr>
<td>3 Recession of 1958</td>
</tr>
<tr>
<td>4 Recession of 1960-61</td>
</tr>
<tr>
<td>5 Recession of 1969-70</td>
</tr>
<tr>
<td>6 Recession of 1973-75</td>
</tr>
<tr>
<td>8 Recession of 1981-82</td>
</tr>
<tr>
<td>9 Early 1990s recession</td>
</tr>
<tr>
<td>10 Early 2000s recession</td>
</tr>
<tr>
<td>11 Great Recession</td>
</tr>
</tbody>
</table>

#### Non-recession Bear Markets

<table>
<thead>
<tr>
<th>Non-recession Bear Markets</th>
<th><strong>% Decline</strong></th>
<th><strong>Peak Date</strong></th>
<th><strong>Trough Date</strong></th>
<th><strong>% Decline</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1 1962 flash crash, Cuban Missile Crisis</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2 1987 flash crash, program trading, overheating markets</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Average: **-1.9%**  

Related Market Sell-off: 20% Market decline*

Macro Environment:

- **Commodity Spike**
- **Aggressive Fed**
- **Extreme Valuations**

---

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

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

*Guide to the Markets – U.S. Data are as of March 31, 2019.*
Correlations between weekly stock returns and interest rate movements

Positive relationship between yield movements and stock returns

Negative relationship between yield movements and stock returns

When yields are below 5%, rising rates have historically been associated with rising stock prices

Source: FactSet, FRB, Standard & Poor’s, J.P. Morgan Asset Management.
Returns are based on price index only and do not include dividends. Markers represent monthly 2-year correlations only.
Guide to the Markets – U.S. Data are as of March 31, 2019.
Stock market since 1900

S&P Composite Index
Log scale, annual

Data shown in log scale to best illustrate long-term index patterns. Past performance is not indicative of future returns. Chart is for illustrative purposes only.

Guide to the Markets – U.S. Data are as of March 31, 2019.
The length and strength of expansions

**Length of economic expansions and recessions**

- **Average length (months):**
  - Expansions: 48 months
  - Recessions: 15 months

- **Economy**
  - 1900: 25 months
  - 1912: 25 months
  - 1933: 25 months
  - 1949: 25 months
  - 1961: 25 months
  - 1980: 25 months
  - 2001: 25 months

**Strength of economic expansions**

- **Cumulative real GDP growth since prior peak, percent**
  - **Prior expansion peak**
    - 4Q48: -6%
    - 2Q53: 4%
    - 3Q57: 14%
    - 4Q69: 24%
    - 4Q73: 34%
    - 4Q07: 54%

Source: BEA, NBER, J.P. Morgan Asset Management. *Chart assumes current expansion started in July 2009 and continued through March 2019, lasting 117 months so far. Data for length of economic expansions and recessions obtained from the National Bureau of Economic Research (NBER). These data can be found at www.nber.org/cycles/ and reflect information through March 2019. Past performance is not a reliable indicator of current and future results.

Guide to the Markets – U.S. Data are as of March 31, 2019.
Economic growth and the composition of GDP

**Real GDP**
Year-over-year % change

- Nominal GDP, USD trillions: 4Q18
- YoY % chg: 3.0%
- QoQ % chg: 2.2%
- Average: 2.7%
- Expansion average: 2.3%

**Components of GDP**
4Q18 nominal GDP, USD trillions

- Housing: 3.8%
- Investment ex-housing: 14.2%
- Gov’t spending: 17.1%
- Consumption: 68.0%
- Net exports: -3.2%

Source: BEA, FactSet, J.P. Morgan Asset Management.
Values may not sum to 100% due to rounding. Quarter-over-quarter percent changes are at an annualized rate. Average represents the annualized growth rate for the full period. Expansion average refers to the period starting in the third quarter of 2009.

Guide to the Markets – U.S. Data are as of March 31, 2019.
Consumer finances

**Consumer balance sheet**
4Q18, trillions of dollars outstanding, not seasonally adjusted

- Total assets: $120.4tn
- Homes: 24%
- Other tangible: 5%
- Deposits: 9%
- Pension funds: 21%
- Other financial assets: 40%
- Mortgages: 66%
- Total liabilities: $16.1tn

3Q07 Peak: $83.5tn
1Q09 Low: $71.0tn

**Household debt service ratio**
Debt payments as % of disposable personal income, SA

- 4Q07: 13.2%
- 1Q19**: 9.9%
- 1Q80: 10.6%

**Household net worth**
Not seasonally adjusted, USD billions

- 3Q07 Peak: $83.5tn
- 1Q19**: $109,068
- 1Q19**: $69,182

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. **1Q19 figures for debt service ratio and household net worth are J.P. Morgan Asset Management estimates.

Guide to the Markets – U.S. Data are as of March 31, 2019.
Cyclical sectors

Residential investment as a % of GDP
Quarterly, seasonally adjusted

Business fixed investment as a % of GDP
Quarterly, seasonally adjusted

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

Change in private inventories as a % of GDP
Quarterly, seasonally adjusted

Source: BEA, FactSet, J.P. Morgan Asset Management.
Guide to the Markets – U.S. Data are as of March 31, 2019.
Long-term drivers of economic growth

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 4Q18. Future working-age population is calculated as the total estimated number of Americans from the Census Bureau, per the September 2018 report, controlled for military enrollment, growth in institutionalized population and demographic trends. Growth in working-age population does not include illegal immigration; DOD Troop Readiness reports used to estimate percent of population enlisted. Growth in workers includes growth in real output per worker. Growth in real GDP includes growth in workers. Data are as of March 31, 2019.
Federal finances

The 2019 federal budget
CBO Baseline forecast, USD trillions

- Medicare & Medicaid: $1,174bn (27%)
- Social Security: $1,039bn (24%)
- Defense: $664bn (15%)
- Non-defense disc.: $670bn (15%)
- Net int.: $383bn (9%)
- Other: $482bn (11%)
- Borrowing: $897bn (20%)
- Income: $1,756bn (40%)
- Corp.: $245bn (6%)

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

CBO’s Baseline economic assumptions

<table>
<thead>
<tr>
<th></th>
<th>2019</th>
<th>'20-'21</th>
<th>'22-'23</th>
<th>'24-'29</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real GDP growth</td>
<td>2.9%</td>
<td>1.8%</td>
<td>1.6%</td>
<td>1.8%</td>
</tr>
<tr>
<td>10-year Treasury</td>
<td>3.3%</td>
<td>3.6%</td>
<td>3.7%</td>
<td>3.7%</td>
</tr>
<tr>
<td>Headline inflation (CPI)</td>
<td>2.2%</td>
<td>2.5%</td>
<td>2.5%</td>
<td>2.4%</td>
</tr>
<tr>
<td>Unemployment</td>
<td>3.6%</td>
<td>3.8%</td>
<td>4.7%</td>
<td>4.8%</td>
</tr>
</tbody>
</table>

Source: CBO, J.P. Morgan Asset Management; (Top and bottom right) BEA, Treasury Department.
2019 Federal Budget is based on the Congressional Budget Office (CBO) January 2019 Baseline Budget Forecast. CBO Baseline is based on the Congressional Budget Office (CBO) January 2019 Update to Economic Outlook. Other spending includes, but is not limited to, health insurance subsidies, income security and federal civilian and military retirement. Note: Years shown are fiscal years (Oct. 1 through Sep. 30).
Guide to the Markets – U.S. Data are as of March 31, 2019.
Civilian unemployment rate and year-over-year wage growth for private production and non-supervisory workers
Seasonally adjusted, percent

- May 1975: 9.0%
- Nov. 1982: 10.8%
- Jun. 1992: 7.8%
- Jun. 2003: 6.3%
- Oct. 2009: 10.0%
- Mar. 2019: 3.8%
- Mar. 2019: 3.3%

50-year avg.

<table>
<thead>
<tr>
<th></th>
<th>Unemployment rate</th>
<th>Wage growth</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>6.2%</td>
<td>4.1%</td>
</tr>
</tbody>
</table>

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

Guide to the Markets – U.S. Data are as of March 31, 2019.
Employment and income by educational attainment

Unemployment rate by education level

<table>
<thead>
<tr>
<th>Education level</th>
<th>Mar. 2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than high school degree</td>
<td>5.9%</td>
</tr>
<tr>
<td>High school no college</td>
<td>3.7%</td>
</tr>
<tr>
<td>Some college</td>
<td>3.4%</td>
</tr>
<tr>
<td>College or greater</td>
<td>2.0%</td>
</tr>
</tbody>
</table>

Average annual earnings by highest degree earned

Workers aged 18 and older, 2017

- High school graduate: $38,145
- Bachelor's degree: $67,763
- Advanced degree: $98,368

Source: J.P. Morgan Asset Management; (Left) BLS, FactSet; (Right) Census Bureau.
Unemployment rates shown are for civilians aged 25 and older. Earnings by educational attainment comes from the Current Population Survey and is published under historical income tables by person by the Census Bureau.

Guide to the Markets – U.S. Data are as of March 31, 2019.
CPI and core CPI
% change vs. prior year, seasonally adjusted

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Headline CPI</td>
<td>4.0%</td>
<td>1.5%</td>
<td>1.5%</td>
</tr>
<tr>
<td>Core CPI</td>
<td>4.0%</td>
<td>2.1%</td>
<td>2.1%</td>
</tr>
<tr>
<td>Food CPI</td>
<td>4.0%</td>
<td>1.6%</td>
<td>2.0%</td>
</tr>
<tr>
<td>Energy CPI</td>
<td>4.4%</td>
<td>-4.9%</td>
<td>-5.1%</td>
</tr>
<tr>
<td>Headline PCE deflator</td>
<td>3.5%</td>
<td>1.4%</td>
<td>-</td>
</tr>
<tr>
<td>Core PCE deflator</td>
<td>3.4%</td>
<td>1.8%</td>
<td>-</td>
</tr>
</tbody>
</table>

Source: BLS, FactSet, J.P. Morgan Asset Management.
CPI used is CPI-U and values shown are % change vs. one year ago. Core CPI is defined as CPI excluding food and energy prices. The Personal Consumption Expenditure (PCE) deflator employs an evolving chain-weighted basket of consumer expenditures instead of the fixed-weight basket used in CPI calculations.

Guide to the Markets – U.S. Data are as of March 31, 2019.
Dollar drivers

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

The U.S. trade balance
Current account balance, % of GDP

Developed markets interest rate differentials
Difference between U.S. and international 10-year yields*

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

Guide to the Markets – U.S. Data are as of March 31, 2019.
### Oil markets

**Change in production and consumption of liquid fuels**
Production, consumption, and inventories, millions of barrels per day

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019*</th>
<th>2020*</th>
<th>Growth since '16</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S.</td>
<td>14.8</td>
<td>15.7</td>
<td>17.9</td>
<td>19.8</td>
<td>21.0</td>
<td>41.5%</td>
</tr>
<tr>
<td>OPEC</td>
<td>37.4</td>
<td>37.3</td>
<td>37.3</td>
<td>36.0</td>
<td>35.6</td>
<td>-4.9%</td>
</tr>
<tr>
<td>Russia</td>
<td>11.3</td>
<td>11.2</td>
<td>11.4</td>
<td>11.5</td>
<td>11.7</td>
<td>3.7%</td>
</tr>
<tr>
<td>Global</td>
<td>97.4</td>
<td>98.1</td>
<td>100.5</td>
<td>101.6</td>
<td>103.3</td>
<td>6.0%</td>
</tr>
</tbody>
</table>

**Consumption**

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019*</th>
<th>2020*</th>
<th>Growth since '16</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S.</td>
<td>19.7</td>
<td>20.0</td>
<td>20.5</td>
<td>20.8</td>
<td>21.0</td>
<td>6.8%</td>
</tr>
<tr>
<td>China</td>
<td>12.8</td>
<td>13.4</td>
<td>13.9</td>
<td>14.3</td>
<td>14.8</td>
<td>15.9%</td>
</tr>
<tr>
<td>Global</td>
<td>96.9</td>
<td>98.5</td>
<td>99.9</td>
<td>101.4</td>
<td>102.9</td>
<td>6.1%</td>
</tr>
</tbody>
</table>

| Inventory Change | 0.5 | -0.4 | 0.6 | 0.2 | 0.4 |

**U.S. crude oil inventories and rig count**
Million barrels, number of active rigs

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Price of oil</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WTI crude, nominal prices, USD/barrel</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Price of oil**

<table>
<thead>
<tr>
<th></th>
<th>2019*</th>
<th>2020*</th>
<th>Change in production and consumption of liquid fuels</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. crude oil inventories and rig count**</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

Guide to the Markets – U.S. Data are as of March 31, 2019.
Federal funds rate expectations
FOMC and market expectations for the federal funds rate

FOMC March 2019 forecasts
Percent

<table>
<thead>
<tr>
<th></th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
<th>Long run*</th>
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</thead>
<tbody>
<tr>
<td>Change in real GDP, 4Q to 4Q</td>
<td>2.1</td>
<td>1.9</td>
<td>1.8</td>
<td>1.9</td>
</tr>
<tr>
<td>Unemployment rate, 4Q</td>
<td>3.7</td>
<td>3.8</td>
<td>3.9</td>
<td>4.3</td>
</tr>
<tr>
<td>PCE inflation, 4Q to 4Q</td>
<td>1.8</td>
<td>2.0</td>
<td>2.0</td>
<td>2.0</td>
</tr>
</tbody>
</table>

Market expectations are the federal funds rates priced into the fed futures market as of the date of the March 2019 FOMC meeting and are through December 2021. *Long-run projections are the rates of growth, unemployment and inflation to which a policymaker expects the economy to converge over the next five to six years in absence of further shocks and under appropriate monetary policy.

Guide to the Markets – U.S. Data are as of March 31, 2019.
Nominal and real 10-year Treasury yields

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Nominal yields</td>
<td>6.02%</td>
<td>2.41%</td>
</tr>
<tr>
<td>Real yields</td>
<td>2.35%</td>
<td>0.33%</td>
</tr>
<tr>
<td>Inflation</td>
<td>3.68%</td>
<td>2.08%</td>
</tr>
</tbody>
</table>

Real 10-year Treasury yields are calculated as the daily Treasury yield less year-over-year core CPI inflation for that month except for March 2019, where real yields are calculated by subtracting out February 2019 year-over-year core inflation.

Guide to the Markets – U.S. Data are as of March 31, 2019.
Interest rates and inflation at the end of rate hiking cycles

Nominal and real effective federal funds rates and U.S. 10-year Treasury

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal federal funds rate</td>
<td>11.23%</td>
<td>9.36%</td>
<td>5.92%</td>
<td>6.27%</td>
<td>4.99%</td>
<td>7.55%</td>
<td>2.41%</td>
</tr>
<tr>
<td>Core CPI</td>
<td>5.21%</td>
<td>4.70%</td>
<td>2.97%</td>
<td>2.38%</td>
<td>2.64%</td>
<td>3.58%</td>
<td>2.08%*</td>
</tr>
<tr>
<td>Real federal funds rate</td>
<td>6.02%</td>
<td>4.66%</td>
<td>2.95%</td>
<td>3.89%</td>
<td>2.35%</td>
<td>3.97%</td>
<td>0.33%</td>
</tr>
<tr>
<td>Real U.S. 10-year Treasury</td>
<td>8.17%</td>
<td>4.47%</td>
<td>4.50%</td>
<td>4.06%</td>
<td>2.46%</td>
<td>4.73%</td>
<td>0.49%</td>
</tr>
</tbody>
</table>

Source: Bureau of Labor Statistics, FactSet, Federal Reserve, J.P. Morgan Asset Management. The real effective federal funds rate and the real 10-year Treasury are calculated as the nominal yields less core CPI. Between 1979 and 1982, the FOMC changed its approach to monetary policy, focusing on the money supply, rather than the federal funds rate. In the fall of 1982, however, the Federal Reserve shifted back to its approach of targeting the “price” rather than the “quantity” of money. Thus, because the federal funds rate was not the FOMC’s key policy tool, we exclude increases in the federal funds rate between 1979 to 1982 in our analysis of rate hiking cycles. Rates as of end of month cycle based on monthly averages. *Latest core CPI reading is as of February 2019. Guide to the Markets – U.S. Data are as of March 31, 2019.
Yield curve
U.S. Treasury yield curve

Source: FactSet, Federal Reserve, J.P. Morgan Asset Management.
Guide to the Markets – U.S. Data are as of March 31, 2019.
U.S. yield curve inversion and recessions

U.S. yield curve steepness
Difference between 10-year and 2-year U.S. Treasuries*

<table>
<thead>
<tr>
<th>Date of inversion</th>
<th>Time to recession</th>
</tr>
</thead>
<tbody>
<tr>
<td>April 11, 1968</td>
<td>19 months</td>
</tr>
<tr>
<td>March 9, 1973</td>
<td>7 months</td>
</tr>
<tr>
<td>August 18, 1978</td>
<td>16 months</td>
</tr>
<tr>
<td>September 12, 1980</td>
<td>9 months</td>
</tr>
<tr>
<td>December 13, 1988</td>
<td>18 months</td>
</tr>
<tr>
<td>February 2, 2000</td>
<td>12 months</td>
</tr>
<tr>
<td>June 8, 2006</td>
<td>17 months</td>
</tr>
<tr>
<td>Average</td>
<td>14 months</td>
</tr>
</tbody>
</table>

Source: FactSet, Federal Reserve, J.P. Morgan Asset Management. *From January 1962 to May 1976, short-term bond is U.S. 1-year note, and from June 1976 onwards the short-term bond is the 2-year note due to lack of data availability. Time to recession is calculated as the time between the final sustained inversion of the yield curve prior to recession and the onset of recession.

Guide to the Markets – U.S. Data are as of March 31, 2019.
Duration and yield of the Bloomberg Barclays U.S. Aggregate Index

Years (left) and yield to worst (right)

<table>
<thead>
<tr>
<th>Average</th>
<th>Mar. 31, 2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yield (right)</td>
<td>4.99%</td>
</tr>
<tr>
<td>Duration (left)</td>
<td>4.8 years</td>
</tr>
</tbody>
</table>

Higher duration = more sensitive to interest rates
Lower duration = less sensitive to interest rates

Source: Barclays, Bloomberg, FactSet, J.P. Morgan Asset Management.
Duration measures the sensitivity of the price of a bond to a change in interest rates. The higher the duration the greater the sensitivity of the bond is to movements in the interest rate. Yield is yield to worst.

Guide to the Markets – U.S. Data are as of March 31, 2019.
Fixed income yields and correlation to the equity market

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

Source: Bloomberg, FactSet, ICE, J.P. Morgan Asset Management. Sectors shown above are represented by Bloomberg indices except for EMD – U.S. Aggregate; MBS: U.S. Aggregate Securitized - MBS; US corps: U.S. Corporates; Munis: Muni Bond 10-year; U.S. HY: Corporate High Yield; TIPS: Treasury Inflation-Protection Securities (TIPS); Floating Rate: FRN (BBB); Convertibles: U.S. Convertibles Composite; EMD ($) – J.P. Morgan EMBIG Diversified Index; EMD (LCL) – J.P. Morgan GBI EM Global Diversified Index; EM Corp: J.P. Morgan CEMBI Broad Diversified Index; Euro Corp.: Euro Aggregate Corporate Index; Euro HY: Pan-European High Yield index. Convertibles yield is based on the US portion of the Bloomberg Barclays Global Convertibles. Country yields are represented by the global aggregate for each country except where noted. Yield and return information based on bellwethers for Treasury securities. Correlations are based on 15-years of monthly returns for all sectors. International fixed income sector correlations are in hedged U.S. dollar returns except EMD local index. Yields for all indices are in hedged returns using three-month LIBOR rates between the U.S. and international LIBOR. Yields for each asset class are a 12-month average. Guide to the Markets – U.S. Data are as of March 31, 2019.
### U.S. debt to GDP ratios

<table>
<thead>
<tr>
<th></th>
<th>Percentage of nominal GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Government</strong></td>
<td>97.2%</td>
</tr>
<tr>
<td><strong>Household</strong></td>
<td>76.4%</td>
</tr>
<tr>
<td><strong>Non-financial corporate</strong></td>
<td>73.9%</td>
</tr>
</tbody>
</table>

Source: J.P. Morgan Asset Management; (Left) Bank for International Settlements (BIS), FactSet; (Top right) Barclays, Bloomberg, FactSet; (Bottom right) J.P. Morgan Credit Research. 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 is based on the Bloomberg Barclays U.S. Aggregate Investment Grade Corporate Credit Index. Baa debt is the lowest credit rating issued by Moody’s for investment-grade debt. **Rising stars and fallen angels refer to the overall high yield and investment grade market. A rising star is defined as a company whose credit rating gets upgraded from non-investment grade to investment grade. A fallen angel is defined as a company whose credit rating gets downgraded from investment grade to non-investment grade. Average rising stars and fallen angels from 2001-2018.

### Baa corporate debt

<table>
<thead>
<tr>
<th></th>
<th>Percentage of investment-grade debt outstanding (Mar. 2019: 50.3%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>

### Upgrades to and downgrades from IG debt

<table>
<thead>
<tr>
<th></th>
<th>Number of issuers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rising stars</strong></td>
<td>Avg. 26</td>
</tr>
<tr>
<td><strong>Fallen angels</strong></td>
<td>-30</td>
</tr>
</tbody>
</table>

Source: J.P. Morgan Asset Management. Data are as of March 31, 2019.
Default rate and spread to worst

Percent

Recession

<table>
<thead>
<tr>
<th></th>
<th>30-yr. avg.</th>
<th>Latest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Default rate</td>
<td>3.73%</td>
<td>0.94%</td>
</tr>
<tr>
<td>Spread to worst</td>
<td>5.79%</td>
<td>4.52%</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. Spread to worst indicated are the difference between the yield-to-worst of a bond and yield-to-worst of a U.S. Treasury security with a similar duration. High yield is represented by the J.P. Morgan Domestic High Yield Index.

Guide to the Markets – U.S. Data are as of March 31, 2019.
Global monetary policy

Global central bank bond purchases*
USD billions, 12-month rolling flow

Number of rate changes by top-10 DM central banks**

Source: J.P. Morgan Asset Management; (Left) Bank of England, Bank of Japan, European Central Bank, FactSet, Federal Reserve System, J.P. Morgan Global Economic Research; (Right) Bloomberg. *Includes the Bank of Japan (BoJ), Bank of England (BoE), European Central Bank (ECB) and Federal Reserve. **Bond purchase forecast assumes no further purchases from BoE or ECB through 2019 or 2020; continued BoJ QE of 35tn JPY ann. for 2019 and 2020; and conclusion of Fed balance sheet reduction per the March 2019 FOMC statement, in which the cap for maturing Treasury securities is lowered from 30bn to 15bn from May to September 2019 and beginning October 2019, maturing MBS holdings will be reinvested in Treasuries up to $20bn per month, anything in excess of that is reinvested back into MBS. The Fed balance sheet begins to rise again due to rising liabilities. **Including: Australia, Canada, Denmark, eurozone, Japan, Norway, Sweden, Switzerland, UK and U.S. Guide to the Markets – U.S. Data are as of March 31, 2019.
### Global fixed income

#### Yield

<table>
<thead>
<tr>
<th>Aggregates</th>
<th>3/29/2019</th>
<th>12/31/2018</th>
<th>Local</th>
<th>USD</th>
<th>Duration</th>
<th>Correl to 10-year</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S.</td>
<td>2.93%</td>
<td>3.28%</td>
<td>2.94%</td>
<td>2.94%</td>
<td>5.8 years</td>
<td>0.87</td>
</tr>
<tr>
<td>Gbl. ex-U.S.</td>
<td>1.05%</td>
<td>1.26%</td>
<td>-</td>
<td>1.78%</td>
<td>7.8</td>
<td>0.24</td>
</tr>
<tr>
<td>Japan</td>
<td>0.08%</td>
<td>0.18%</td>
<td>1.49%</td>
<td>0.60%</td>
<td>9.5</td>
<td>0.51</td>
</tr>
<tr>
<td>Germany</td>
<td>0.39%</td>
<td>0.62%</td>
<td>2.48%</td>
<td>0.66%</td>
<td>6.5</td>
<td>0.03</td>
</tr>
<tr>
<td>UK</td>
<td>1.62%</td>
<td>1.92%</td>
<td>3.03%</td>
<td>5.42%</td>
<td>10.4</td>
<td>0.15</td>
</tr>
<tr>
<td>Italy</td>
<td>1.83%</td>
<td>2.00%</td>
<td>1.97%</td>
<td>0.16%</td>
<td>6.6</td>
<td>-0.11</td>
</tr>
<tr>
<td>Spain</td>
<td>0.73%</td>
<td>0.98%</td>
<td>2.93%</td>
<td>1.10%</td>
<td>7.0</td>
<td>-0.09</td>
</tr>
</tbody>
</table>

#### 2019 Return

<table>
<thead>
<tr>
<th>Aggregates</th>
<th>12/31/2018</th>
<th>Local</th>
<th>USD</th>
<th>Duration</th>
<th>Correl to 10-year</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S.</td>
<td>37.1%</td>
<td>3.28%</td>
<td>2.94%</td>
<td>5.8 years</td>
<td>0.87</td>
</tr>
<tr>
<td>Gbl. ex-U.S.</td>
<td>41.8%</td>
<td>1.26%</td>
<td>1.78%</td>
<td>7.8</td>
<td>0.24</td>
</tr>
<tr>
<td>Japan</td>
<td>21.2%</td>
<td>0.60%</td>
<td>0.66%</td>
<td>6.5</td>
<td>0.03</td>
</tr>
<tr>
<td>Germany</td>
<td>21.2%</td>
<td>3.03%</td>
<td>5.42%</td>
<td>10.4</td>
<td>0.15</td>
</tr>
<tr>
<td>Italy</td>
<td>21.2%</td>
<td>1.97%</td>
<td>0.16%</td>
<td>6.6</td>
<td>-0.11</td>
</tr>
<tr>
<td>Spain</td>
<td>21.2%</td>
<td>2.93%</td>
<td>1.10%</td>
<td>7.0</td>
<td>-0.09</td>
</tr>
</tbody>
</table>

#### Fixed income

**Global bond market USD trillions**

<table>
<thead>
<tr>
<th>Region</th>
<th>12/31/89</th>
<th>9/30/18</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S.</td>
<td>61.3%</td>
<td>37.1%</td>
</tr>
<tr>
<td>Dev. ex-U.S.</td>
<td>37.8%</td>
<td>41.8%</td>
</tr>
<tr>
<td>EM</td>
<td>1.0%</td>
<td>21.2%</td>
</tr>
</tbody>
</table>

**Source:** J.P. Morgan Asset Management; (Left) Barclays, Bloomberg, FactSet; (Right) BIS.

Fixed income sectors shown above are provided by Bloomberg and are represented by the global aggregate for each country except where noted. EMD sectors are represented by the J.P. Morgan EMBIG Diversified Index (USD), the J.P. Morgan GBI EM Global Diversified Index (LCL) and the J.P. Morgan CEMBI Broad Diversified Index (Corp). European Corporates are represented by the Bloomberg Barclays Euro Aggregate Corporate Index and the Bloomberg Barclays Pan-European High Yield index. Sector yields reflect yield to worst. Correlations are based on 10 years of monthly returns for all sectors. Past performance is not indicative of future results. Global bond market regional breakdown may not sum to 100% due to rounding.

*Guide to the Markets – U.S. Data are as of March 31, 2019.*
## Fixed income sector returns

<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>23.0%</td>
<td>10.2%</td>
<td>15.2%</td>
<td>18.1%</td>
<td>13.7%</td>
<td>58.2%</td>
<td>15.7%</td>
<td>13.6%</td>
<td>7.4%</td>
<td>8.7%</td>
<td>3.8%</td>
<td>17.1%</td>
<td>15.2%</td>
<td>1.4%</td>
<td>7.3%</td>
<td>17.5%</td>
<td>7.0%</td>
<td>17.5%</td>
<td></td>
</tr>
<tr>
<td>2005</td>
<td>11.6%</td>
<td>6.3%</td>
<td>11.8%</td>
<td>8.3%</td>
<td>29.8%</td>
<td>15.1%</td>
<td>12.3%</td>
<td>16.8%</td>
<td>-1.4%</td>
<td>7.5%</td>
<td>1.5%</td>
<td>10.2%</td>
<td>10.3%</td>
<td>1.0%</td>
<td>7.0%</td>
<td>12.6%</td>
<td>7.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2006</td>
<td>11.1%</td>
<td>9.9%</td>
<td>7.0%</td>
<td>18.7%</td>
<td>13.6%</td>
<td>12.2%</td>
<td>9.8%</td>
<td>15.6%</td>
<td>-1.5%</td>
<td>7.4%</td>
<td>1.2%</td>
<td>15.1%</td>
<td>12.3%</td>
<td>0.9%</td>
<td>5.1%</td>
<td>10.0%</td>
<td>4.8%</td>
<td>6.0%</td>
<td></td>
</tr>
<tr>
<td>2007</td>
<td>8.5%</td>
<td>2.8%</td>
<td>5.7%</td>
<td>11.4%</td>
<td>2.4%</td>
<td>14.7%</td>
<td>7.9%</td>
<td>8.1%</td>
<td>7.7%</td>
<td>6.1%</td>
<td>0.8%</td>
<td>6.1%</td>
<td>6.4%</td>
<td>4.6%</td>
<td>5.9%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>6.8%</td>
<td>2.8%</td>
<td>6.9%</td>
<td>6.5%</td>
<td>11.4%</td>
<td>6.5%</td>
<td>7.8%</td>
<td>7.0%</td>
<td>2.2%</td>
<td>4.7%</td>
<td>0.5%</td>
<td>4.7%</td>
<td>5.3%</td>
<td>3.2%</td>
<td>3.0%</td>
<td>2.8%</td>
<td>1.5%</td>
<td>4.3%</td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>5.4%</td>
<td>2.7%</td>
<td>4.7%</td>
<td>6.7%</td>
<td>11.4%</td>
<td>9.9%</td>
<td>6.3%</td>
<td>7.3%</td>
<td>0.8%</td>
<td>5.8%</td>
<td>-0.7%</td>
<td>5.8%</td>
<td>3.8%</td>
<td>2.9%</td>
<td>3.5%</td>
<td>4.3%</td>
<td>3.9%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>4.7%</td>
<td>2.7%</td>
<td>6.2%</td>
<td>4.3%</td>
<td>2.4%</td>
<td>6.6%</td>
<td>7.8%</td>
<td>7.0%</td>
<td>2.2%</td>
<td>5.5%</td>
<td>-0.3%</td>
<td>5.5%</td>
<td>3.2%</td>
<td>4.4%</td>
<td>3.3%</td>
<td>4.6%</td>
<td>3.9%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>4.3%</td>
<td>2.6%</td>
<td>4.6%</td>
<td>-5.2%</td>
<td>4.6%</td>
<td>5.9%</td>
<td>6.2%</td>
<td>5.9%</td>
<td>-5.3%</td>
<td>3.6%</td>
<td>-1.4%</td>
<td>3.6%</td>
<td>2.9%</td>
<td>1.7%</td>
<td>2.5%</td>
<td>-3.9%</td>
<td>3.8%</td>
<td>2.8%</td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>4.1%</td>
<td>2.4%</td>
<td>3.1%</td>
<td>6.2%</td>
<td>-12.0%</td>
<td>5.9%</td>
<td>5.4%</td>
<td>5.0%</td>
<td>-8.6%</td>
<td>2.6%</td>
<td>-1.6%</td>
<td>2.6%</td>
<td>5.0%</td>
<td>1.0%</td>
<td>-4.5%</td>
<td>-4.3%</td>
<td>2.2%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>4.3%</td>
<td>3.1%</td>
<td>4.3%</td>
<td>5.9%</td>
<td>4.3%</td>
<td>5.4%</td>
<td>5.0%</td>
<td>4.9%</td>
<td>-8.6%</td>
<td>2.5%</td>
<td>-1.5%</td>
<td>2.5%</td>
<td>4.9%</td>
<td>1.0%</td>
<td>-4.3%</td>
<td>-4.3%</td>
<td>2.2%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>3.5%</td>
<td>1.8%</td>
<td>1.9%</td>
<td>1.9%</td>
<td>-26.2%</td>
<td>4.0%</td>
<td>4.0%</td>
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<td>2015</td>
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Past performance is not indicative of future returns. Fixed income sectors shown above are provided by Bloomberg unless otherwise noted and are represented by Broad Market: Bloomberg Barclays U.S. Aggregate Index; MBS: Bloomberg Barclays US Aggregate Securitized - MBS Index; Corporate: Bloomberg Barclays U.S. Aggregate Credit - Corporate; Municipal: Bloomberg Barclays Municipal Bond 10-Year Index; High Yield: Bloomberg Barclays U.S. Aggregate Credit - Corporate - High Yield Index; Treasuries: Bloomberg Barclays Global U.S. Treasury; TIPS: Bloomberg Barclays 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, 20% in Corporate, 15% in Municipal, 5% in Emerging Debt USD, 5% in Emerging Debt LCL, 10% in High Yield, 20% in Treasuries, 5% in TIPS. Asset allocation portfolio assumes annual rebalancing.

Guide to the Markets – U.S. Data are as of March 31, 2019.
### Global equity markets

#### Weights in MSCI All Country World Index

% global market capitalization, float adjusted

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<tr>
<th></th>
<th>Emerging markets</th>
<th>Europe ex-UK</th>
<th>Japan</th>
<th>Pacific</th>
<th>Canada</th>
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<tr>
<td>United States</td>
<td>55%</td>
<td>14%</td>
<td>7%</td>
<td>4%</td>
<td>3%</td>
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15-years return and beta figures are calculated for the time period 12/31/03-12/31/18. Beta is for monthly returns relative to the MSCI AC World Index. Annualized volatility is calculated as the standard deviation of quarterly returns multiplied by the square root of 4. Chart is for illustrative purposes only. Please see disclosure page for index definitions. Past performance is not a reliable indicator of current and future results. Sector breakdown includes the following aggregates: Technology (communication services and technology), consumer (consumer discretionary and staples) and commodities (energy and materials). The graph excludes the utilities and real estate sectors for illustrative purposes.

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 12/31/03-12/31/18. Beta is for monthly returns relative to the MSCI AC World Index. Annualized volatility is calculated as the standard deviation of quarterly returns multiplied by the square root of 4. Chart is for illustrative purposes only. Please see disclosure page for index definitions. Past performance is not a reliable indicator of current and future results. Sector breakdown includes the following aggregates: Technology (communication services and technology), consumer (consumer discretionary and staples) and commodities (energy and materials). The graph excludes the utilities and real estate sectors for illustrative purposes.

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

### Returns

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<tr>
<td>U.S. (S&amp;P 500)</td>
<td>-</td>
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### Selected Countries

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<tr>
<th>Countries</th>
<th>2019 YTD Local</th>
<th>2019 YTD USD</th>
<th>2018 Local</th>
<th>2018 USD</th>
<th>15-years Local</th>
<th>15-years USD</th>
<th>Ann. Beta</th>
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<td>0.5</td>
<td>4.8</td>
<td>1.54</td>
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</table>
Global equity markets: Returns

Sources of global equity returns*
Total return, USD

2004-2018 annualized

-4.4% 12.6% -14.2% -14.4%

2018

13.6% 10.7% 10.0% 6.8%

2019 YTD

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

Guide to the Markets – U.S. Data are as of March 31, 2019.
Currency and international equity returns

**U.S. dollar in historical perspective**
Index level, nom. major trade-weighted exchange rate, Jan. 2006=100

- Dollar strengthening, hurts international returns
  - 6 years: +56%
  - 7 years: +38%
  - 10 years: -43%
  - 9.5 years: -38%
  - 6.5 years: +56%
  - 5.5 years: +38%

- Dollar weakening, helps international returns
  - 6 years: -18%

**Currency impact on international returns**
MSCI All Country World ex-U.S. Index, total return

- 6 years: -18%
- 10 years: -43%
- 9.5 years: -38%

**Local currency return**
- 2003: 41.4%
- 2005: 21.4%
- 2007: 27.2%
- 2009: 42.1%
- 2011: 11.6%
- 2013: 17.4%
- 2015: 5.0%
- 2017: 10.4%
- 2019: -45.2%

**Currency return**
- 2003: 17.1%
- 2005: 17.1%
- 2007: 27.2%
- 2009: 15.8%
- 2011: -3.4%
- 2013: -5.3%
- 2015: -13.8%
- 2017: 27.8%
- 2019: -60%

**U.S. dollar return**
- 2003: 0%
- 2005: 20%
- 2007: 40%
- 2009: 60%
- 2011: 0%
- 2013: 20%
- 2015: 40%
- 2017: 60%
- 2019: -60%

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

Guide to the Markets – U.S. Data are as of March 31, 2019.
MSCI All Country World ex-U.S. and S&P 500 indices
Dec. 1996 = 100, U.S. dollar, price return

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<tbody>
<tr>
<td>S&amp;P 500</td>
<td>16.4x</td>
<td>15.8x</td>
<td>2.1%</td>
<td>2.0%</td>
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<tr>
<td>ACWI ex-U.S.</td>
<td>13.0x</td>
<td>14.1x</td>
<td>3.5%</td>
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<tr>
<td>As % of U.S.</td>
<td>79%</td>
<td>89%</td>
<td>168%</td>
<td>149%</td>
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</table>

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

Source: FactSet, MSCI, Standard & Poor’s, J.P. Morgan Asset Management.
Forward price to earnings ratio is a bottom-up calculation based on the most recent index price, divided by consensus estimates for earnings in the next 12 months (NTM), and is provided by FactSet Market Aggregates. Returns are cumulative and based on price movement only, and do not include the reinvestment of dividends. Dividend yield is calculated as the consensus estimates of dividends for the next 12 months, divided by most recent price, as provided by FactSet Market Aggregates. Past performance is not a reliable indicator of current and future results.
Global earnings
EPS, local currency, next 12 months, Jan. 2006 = 100

Global valuations
Current and 25-year historical valuations*

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

Guide to the Markets – U.S. Data are as of March 31, 2019.
The Citi Economic Surprise Index is a 90-day weighted moving average of surprises in economic indicators relative to consensus. A positive reading means that the data releases have been stronger than expected and a negative reading means that the data releases have been worse than expected.

Source: Citi, FactSet, J.P. Morgan Asset Management.

Guide to the Markets – U.S. Data are as of March 31, 2019.
Global economic growth

Global PMI for manufacturing and services
Monthly

- Manufacturing
- Services

Mar. 2019: 50.6
Mar. 2019: 53.7

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

Guide to the Markets – U.S. Data are as of March 31, 2019.
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<td>Jan 5.0% 5.2%</td>
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Heatmap is based on quarterly averages, with the exception of the two most recent figures, which are single month readings. Colors determined by percentiles of inflation values over the last 10 years. Deep blue = lowest value, light blue = median, deep red = highest value. DM and EM represent developed markets and emerging markets, respectively.

Guide to the Markets – U.S. Data are as of March 31, 2019.
Global trade

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

Exports as a share of GDP
Goods exports, 2018

Source: FactSet, J.P. Morgan Asset Management; (Left) CPB Netherlands Bureau for Economic Policy Analysis; (Right) IMF.

Guide to the Markets – U.S. Data are as of March 31, 2019.
European recovery

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

Eurozone unemployment and wage growth
Seasonally adjusted, year-over-year compensation growth

Eurozone credit demand
Net % of banks reporting positive loan demand

Source: FactSet, J.P. Morgan Asset Management; (Left and top right) ECB, Eurostat; (Bottom right) ECB.
Eurozone shown is the aggregate of the 19 countries that currently use the euro.
Guide to the Markets – U.S. Data are as of March 31, 2019.
Japanese economic growth
Real GDP, y/y % change

20-yr. average: 0.9%
4Q18: 0.3%

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

Unemployment rate
Feb. 2019: 2.3%
Jan. 2019: 1.3%

Japanese yen and the stock market

Nikkei 225 Index

China: Economic growth

China real GDP contribution
Year-over-year % change

Monetary stimulus: Reserve requirement ratio

Fiscal stimulus: Local government bond issuance
RMB billions, monthly new issuance

Source: FactSet, J.P. Morgan Asset Management; (Left) CEIC; (Top right) People's Bank of China; (Bottom right) Ministry of Finance of China.
Guide to the Markets – U.S. Data are as of March 31, 2019.
Emerging markets

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

**Growth of the middle class**
Percent of total population

**Relative price-to-book ratio**
MSCI Emerging Markets vs. S&P 500

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

Guide to the Markets – U.S. Data are as of March 31, 2019.
## Correlations and Volatility


Indices used – Large Cap: S&P 500 Index; Currencies: Federal Reserve Trade Weighted Dollar; EAFE: MSCI EAFE; EME: MSCI Emerging Markets; Bonds: Bloomberg Barclays Aggregate; Corp HY: Bloomberg Barclays Corporate High Yield; EMD: Bloomberg Barclays Emerging Market; Cmdty.: Bloomberg Commodity Index; REIT: NAREIT All equity Index; Hedge Funds: CS/Tremont Hedge Fund Index; Private equity: Cambridge Associates Global Buyout & Growth Index. Private equity data are reported on a one- to two-quarter lag. All correlation coefficients and annualized volatility are calculated based on quarterly total return data for period 3/31/09 to 3/31/19, except for Private equity, which is based on the period from 9/30/08 to 9/30/18. This chart is for illustrative purposes only.

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

### Correlations and Volatility Table

<table>
<thead>
<tr>
<th></th>
<th>U.S. Large Cap</th>
<th>EAFE</th>
<th>EME</th>
<th>Bonds</th>
<th>Corp. HY</th>
<th>Munis</th>
<th>Curr.</th>
<th>EMD</th>
<th>Cmdty.</th>
<th>REITs</th>
<th>Hedge funds</th>
<th>Private equity</th>
<th>Ann. Volatility</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. Large Cap</td>
<td>1.00</td>
<td>0.87</td>
<td>0.76</td>
<td>-0.16</td>
<td>0.72</td>
<td>-0.07</td>
<td>-0.46</td>
<td>0.54</td>
<td>0.56</td>
<td>0.73</td>
<td>0.88</td>
<td>0.77</td>
<td>14%</td>
</tr>
<tr>
<td>EAFE</td>
<td>1.00</td>
<td>0.92</td>
<td>-0.05</td>
<td>0.81</td>
<td>0.03</td>
<td>-0.66</td>
<td>0.70</td>
<td>0.58</td>
<td>0.68</td>
<td>0.89</td>
<td>0.80</td>
<td></td>
<td>17%</td>
</tr>
<tr>
<td>EME</td>
<td>1.00</td>
<td>0.09</td>
<td>0.86</td>
<td>0.08</td>
<td>-0.72</td>
<td>0.82</td>
<td>0.63</td>
<td>0.67</td>
<td>0.81</td>
<td>0.74</td>
<td></td>
<td></td>
<td>20%</td>
</tr>
<tr>
<td>Bonds</td>
<td>1.00</td>
<td>0.21</td>
<td>0.88</td>
<td>-0.16</td>
<td>0.53</td>
<td>-0.02</td>
<td>0.32</td>
<td>-0.10</td>
<td>-0.27</td>
<td></td>
<td></td>
<td></td>
<td>3%</td>
</tr>
<tr>
<td>Corp. HY</td>
<td>1.00</td>
<td>0.15</td>
<td>-0.57</td>
<td>0.84</td>
<td>0.63</td>
<td>0.80</td>
<td>0.76</td>
<td>0.57</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10%</td>
</tr>
<tr>
<td>Munis</td>
<td>1.00</td>
<td></td>
<td>-0.19</td>
<td>0.53</td>
<td>-0.12</td>
<td>0.36</td>
<td>-0.07</td>
<td>-0.21</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4%</td>
</tr>
<tr>
<td>Currencies</td>
<td>1.00</td>
<td></td>
<td></td>
<td>-0.65</td>
<td>-0.56</td>
<td>-0.39</td>
<td>-0.44</td>
<td>-0.62</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7%</td>
</tr>
<tr>
<td>EMD</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td>0.51</td>
<td>0.71</td>
<td>0.59</td>
<td>0.42</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7%</td>
</tr>
<tr>
<td>Commodities</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td>0.41</td>
<td>0.61</td>
<td>0.65</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>15%</td>
</tr>
<tr>
<td>REITs</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.68</td>
<td>0.48</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>18%</td>
</tr>
<tr>
<td>Hedge funds</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.78</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5%</td>
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<tr>
<td>Private equity</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10%</td>
</tr>
</tbody>
</table>
Hedge funds

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

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

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

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

- MSCI ACWI
- Buyout & Growth Equity Index

Number of U.S. listed companies**

Global private capital dry powder
Trillions USD

Sources: Cambridge Associates, Prequin, Standard & Poor’s, World Federation of Exchanges, J.P. Morgan Asset Management.

*Global Buyout & Growth Equity and MSCI AC World total return data are as of September 30, 2018. **Number of listed U.S. companies is represented by the sum of number of companies listed on the NYSE and the NASDAQ.

Guide to the Markets – U.S. Data are as of March 31, 2019.
Yield alternatives: Domestic and global

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

Asset class yields

Source: FactSet, Standard & Poor’s, J.P. Morgan Asset Management; (Top) Ibbotson; (Bottom) Alerian, BAML, Barclays, Bloomberg, Clarkson, Drewry Maritime Consultants, Federal Reserve, FTSE, MSCI, NCREIF, Dividend vs. capital appreciation returns are through 12/31/18. Yields are as of 3/29/19, except Global Transport (12/31/18) and Global Infrastructure (9/30/18) and U.S. Real Estate (12/31/18). Global Transport: Levered yields for transport assets are calculated as the difference between charter rates (rental income), operating expenses, debt amortization and interest expenses, as a percentage of equity value. Yields for each of the sub-vessel types above are calculated and respective weightings are applied to each of the sub-sectors to arrive at the current levered yields for Global Transportation; MLPs: Alerian MLP; Preferreds: BAML Hybrid Preferred Securities; U.S. High Yield: Bloomberg US Aggregate Corporate High Yield; Global Infrastructure: MSCI Global Infrastructure Asset Index-Low risk; U.S. Real Estate: NCREIF-ODCE Index; Global REITs: FTSE NAREIT Global REITs; Convertibles: Bloomberg Barclays U.S. Convertibles Composite; International Equity: MSCI AC World ex-U.S.; U.S. 10-year: Tullett Prebon; U.S. Equity: MSCI USA. Guide to the Markets – U.S. Data are as of March 31, 2019.
## Global commodities

### Commodity prices

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Current Year (USD)</th>
<th>High level</th>
<th>Low level</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bloomberg Commodity Index</td>
<td>$72.88</td>
<td>$175.42</td>
<td>$72.88</td>
<td>Low level</td>
</tr>
<tr>
<td>Agriculture</td>
<td>$39.89</td>
<td>$97.67</td>
<td>$39.89</td>
<td>Current</td>
</tr>
<tr>
<td>Natural gas</td>
<td>$1.64</td>
<td>$6.15</td>
<td>$1.64</td>
<td>High level</td>
</tr>
<tr>
<td>Silver</td>
<td>$11.79</td>
<td>$48.60</td>
<td>$11.79</td>
<td></td>
</tr>
<tr>
<td>Livestock</td>
<td>$22.99</td>
<td>$41.63</td>
<td>$22.99</td>
<td></td>
</tr>
<tr>
<td>Crude oil</td>
<td>$26.21</td>
<td>$113.93</td>
<td>$26.21</td>
<td></td>
</tr>
<tr>
<td>Industrial metals</td>
<td>$84.23</td>
<td>$211.51</td>
<td>$84.23</td>
<td></td>
</tr>
<tr>
<td>Gold</td>
<td>$868</td>
<td>$1,892</td>
<td>$868</td>
<td></td>
</tr>
</tbody>
</table>

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.

**Gold prices**

<table>
<thead>
<tr>
<th>Year-over-year % change</th>
<th>Bloomberg Commodity Index</th>
<th>Gold, inflation adjusted</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019</td>
<td>$1,299</td>
<td>Mar. 2019: $1,299</td>
</tr>
</tbody>
</table>

Guide to the Markets – U.S. Data are as of March 31, 2019.
| Year | REITs | EM Equity | DM Equity | Fixed Income | EM Equity | REITs | Small Cap | REITs | REITs | REITs | Small Cap | EM Equity | Cash | REITs | REITs | REITs | REITs | REITs | REITs | REITs | Small Cap | EM Equity | Cash | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | REITs | Re
**Fund flows**

**Table: Registered product flows**

<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>U.S. equity</strong></td>
<td>8,404</td>
<td>1</td>
<td>(7)</td>
<td>17</td>
<td>(19)</td>
<td>(22)</td>
<td>106</td>
<td>176</td>
<td>(34)</td>
<td>(33)</td>
<td>34</td>
<td>22</td>
<td>0</td>
<td>23</td>
<td>77</td>
<td>114</td>
<td>173</td>
<td>142</td>
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<tr>
<td><strong>World equity</strong></td>
<td>3,352</td>
<td>14</td>
<td>84</td>
<td>242</td>
<td>11</td>
<td>207</td>
<td>148</td>
<td>201</td>
<td>61</td>
<td>19</td>
<td>86</td>
<td>56</td>
<td>(35)</td>
<td>186</td>
<td>169</td>
<td>132</td>
<td>87</td>
<td>38</td>
</tr>
<tr>
<td><strong>Taxable bond</strong></td>
<td>3,737</td>
<td>69</td>
<td>122</td>
<td>390</td>
<td>223</td>
<td>56</td>
<td>85</td>
<td>(8)</td>
<td>295</td>
<td>167</td>
<td>210</td>
<td>301</td>
<td>57</td>
<td>104</td>
<td>50</td>
<td>45</td>
<td>27</td>
<td>44</td>
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<tr>
<td><strong>Tax-free bond</strong></td>
<td>734</td>
<td>19</td>
<td>7</td>
<td>33</td>
<td>31</td>
<td>21</td>
<td>33</td>
<td>(54)</td>
<td>52</td>
<td>(8)</td>
<td>14</td>
<td>71</td>
<td>12</td>
<td>14</td>
<td>17</td>
<td>8</td>
<td>(6)</td>
<td>(3)</td>
</tr>
<tr>
<td><strong>Multi-asset</strong></td>
<td>2,493</td>
<td>10</td>
<td>(9)</td>
<td>61</td>
<td>30</td>
<td>60</td>
<td>94</td>
<td>96</td>
<td>51</td>
<td>33</td>
<td>58</td>
<td>39</td>
<td>12</td>
<td>97</td>
<td>78</td>
<td>80</td>
<td>81</td>
<td>51</td>
</tr>
<tr>
<td><strong>Liquidity</strong></td>
<td>2,929</td>
<td>39</td>
<td>168</td>
<td>92</td>
<td>200</td>
<td>40</td>
<td>29</td>
<td>31</td>
<td>0</td>
<td>(47)</td>
<td>(346)</td>
<td>(234)</td>
<td>673</td>
<td>526</td>
<td>172</td>
<td>49</td>
<td>(53)</td>
<td>(90)</td>
</tr>
</tbody>
</table>

**Cumulative flows into long-term asset products**

Mutual fund and ETF flows, quarterly, USD billions

- **Bonds**: $2,229bn in cumulative flows since 2007
- **Stocks**: $1,525bn in cumulative flows since 2007
- **Multi-asset**: $620bn in cumulative flows since 2007

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

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

Source: Strategic Insight Simfund, J.P. Morgan Asset Management. All data include flows through February 2019 and capture all registered product flows (open-end mutual funds and ETFs). Simfund data are subject to periodic revisions. World equity flows are inclusive of emerging market, global equity and regional equity flows. Multi-asset flows include asset allocation, balanced fund, flexible portfolio and mixed income flows.

Guide to the Markets – U.S. Data are as of March 31, 2019.
Life expectancy and retirement

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

- Men: 90% for 80 years, 63% for 90 years
- Women: 73% for 80 years, 22% for 90 years
- Couple – at least one lives to specified age: 48% for 90 years

Retirement savings gap
Anticipated amount needed vs. actual savings, thousands

- % of people who think they need >$500,000 for retirement: 64%
- Median value of retirement account by age of head:
  - 55-64: $120
  - 65-74: $126
  - >75: $120


EBRI survey was conducted from January 6, 2017 to January 13, 2017 through online interviews with 1,671 individuals (1,082 workers and 589 retirees) ages 25 and older in the United States.

Guide to the Markets – U.S. Data are as of March 31, 2019.
Time, diversification and the volatility of returns

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

<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>11.0%</td>
<td>$811,451</td>
</tr>
<tr>
<td>Bonds</td>
<td>5.8%</td>
<td>$311,366</td>
</tr>
<tr>
<td>50/50 portfolio</td>
<td>8.8%</td>
<td>$542,133</td>
</tr>
</tbody>
</table>

Returns shown are based on calendar year returns from 1950 to 2018. Stocks represent the S&P 500 Shiller Composite and Bonds represent Strategas/Ibbotson for periods from 1950 to 2010 and Bloomberg Barclays Aggregate thereafter. Growth of $100,000 is based on annual average total returns from 1950 to 2018.

Guide to the Markets – U.S. Data are as of March 31, 2019.
Diversification and the average investor

Portfoli o returns: Equities vs. equity and fixed income blend

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

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

Chart is based on return data from 11 bear markets since 1945. A bear market is defined as a decline of 20% or more in the S&P 500 benchmark. Monthly total return data from 1945 to 1970 is from the S&P Shiller Composite index. From 1970 to present, return data is from Standard & Poor’s. Guide to the Markets – U.S. Data are as of March 31, 2019.
Income earned on $100,000 in a savings account vs. a cash investment account*


*Savings account is based on the national average annual percentage rate (APR) on money-market accounts from Bankrate.com from 2010 onward. Prior to 2010, money market yield is based on taxable money market funds return data from the Federal Reserve. Investment account return is based on the average yield-to-worst on a 6-month U.S. Treasury over the calendar year. Annual income is for illustrative purposes and is calculated based on the 6-month Treasury yield and money market yield on average during each year and $100,000 invested. Past performance is not indicative of comparable future results.

Guide to the Markets – U.S. Data are as of March 31, 2019.
Institutional investor behavior

Asset allocation: Corporate DB plans vs. endowments

- **Equities**: Endowments - 36.0%, Corporate DB plans - 36.4%
- **Fixed Income**: Endowments - 45.4%
- **Hedge Funds**: Endowments - 19.0%, Corporate DB plans - 3.9%
- **Private Equity**: Endowments - 11.0%, Corporate DB plans - 4.0%
- **Real Estate**: Endowments - 6.0%, Corporate DB plans - 3.2%
- **Other Alternatives**: Endowments - 16.0%, Corporate DB plans - 3.4%
- **Cash**: Endowments - 4.0%, Corporate DB plans - 3.7%

Defined benefit plans: Milliman 100 companies

- Assets ($tn)
  - 2017: $1.2 trn
  - 2018: $1.6 trn

- Liabilities ($tn)
  - 2017: $0.8 trn
  - 2018: $1.2 trn

- Funded status (%)
  - 2017: 90%
  - 2018: 95%

Pension return assumptions: S&P 500 companies

- **1999**: Average 9.2%
- **2018**: Average 6.5%

Investing principles

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) Compustat/FactSet, S&P 500 corporate 10-Ks. Endowment and Corporate DB plan asset allocations as of 2017. Endowments represents dollar-weighted average data of 805 colleges and universities. Corporate DB plans represents aggregate asset allocation of Fortune 1000 pension plans. Pension return assumptions based on all available and reported data from S&P 500 Index companies. Pension assets, liabilities and funded status based on Milliman 100 companies reporting pension data as of February 28, 2019. Return assumption bands are inclusive of upper range. Percentages may not sum due to rounding. All information is shown for illustrative purposes only.

Guide to the Markets – U.S. Data are as of March 31, 2019.
Local investing and global opportunities

Investment universe & U.S. investors
Percentage of total net assets, 2018

- Global GDP: 76%
- Global stock & bond markets*: 64%
- U.S. investor allocation: 29%

Investor allocation by region
Likelihood of owning stocks in an industry vs. national average**

- Financials: -2% +9%
- Technology: +0%
- Energy: -10%
- Industrials: -9% +11%

Source: IMF, Openfolio, Strategic Insight Simfund, J.P. Morgan Asset Management.
*Global stock and bond markets data are as of 2013. U.S. investor allocation is the total value of investments in global or domestic equity mutual funds and ETFs as of 2018. **Investor allocation by region is based on data collected by Openfolio. Average sector allocations at the national level are determined by looking at the sector allocations of over 20,000 brokerage accounts, and taking a simple average. Portfolio allocations are then evaluated on a regional basis, and the regional averages are compared to the national average to highlight any investor biases. Further details can be found on openfolio.com.

Guide to the Markets – U.S. Data are as of March 31, 2019.
All indexes are unmanaged and an individual cannot invest directly in an index. Index returns do not include fees or expenses.

**Equities:**

- **The Dow Jones Industrial Average** is a price-weighted average of 30 actively traded blue-chip U.S. stocks.
- **The MSCI ACWI (All Country World Index)** is a free float-adjusted market capitalization weighted index that is designed to measure the equity market performance of developed and emerging markets.
- **The MSCI EAFE Index (Europe, Australasia, Far East)** is a free float-adjusted market capitalization index that is designed to measure the equity market performance of developed markets, excluding the US & Canada.
- **The MSCI Emerging Markets Index** is a free float-adjusted market capitalization index that is designed to measure equity market performance in the global emerging markets.
- **The MSCI Europe Index** is a free float-adjusted market capitalization index that is designed to measure developed market equity performance in Europe.
- **The MSCI Pacific Index** is a free float-adjusted market capitalization index that is designed to measure equity market performance in the Pacific region.
- **The Russell 1000 Index®** measures the performance of the 1,000 largest companies in the Russell 3000.
- **The Russell 1000 Growth Index®** measures the performance of those Russell 1,000 companies with higher price-to-book ratios and higher forecasted growth values.
- **The Russell 1000 Value Index®** measures the performance of those Russell 1,000 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 2,000 companies with higher price-to-book ratios and higher forecasted growth values.
- **The Russell 2000 Value Index®** measures the performance of those Russell 2,000 companies with lower price-to-book ratios and lower forecasted growth values.
- **The Russell 3000 Index®** measures the performance of the 3,000 largest U.S. companies based on total market capitalization.
- **The Russell Midcap Index®** measures the performance of the 800 smallest companies in the Russell 1000 Index.
- **The Russell Midcap Growth Index®** measures the performance of those Russell Midcap companies with higher price-to-book ratios and higher forecasted growth values. The stocks are also members of the Russell 1000 Growth index.
- **The Russell Midcap Value Index®** measures the performance of those Russell Midcap companies with lower price-to-book ratios and lower forecasted growth values. The stocks are also members of the Russell 1000 Value index.
- **The S&P 500 Index** is widely regarded as the best single gauge of the U.S. equities market. The index includes a representative sample of 500 leading companies in leading industries of the U.S. economy. The S&P 500 Index focuses on the large-cap segment of the market; however, since it includes a significant portion of the total value of the market, it also represents the market.

**Fixed income:**

- **The Bloomberg Barclays 1-3 Month U.S. Treasury Bill Index** includes all publicly issued zero-coupon U.S. Treasury Bills that have a remaining maturity of less than 3 months and more than 1 month, are rated investment grade, and have $250 million or more of outstanding face value. In addition, the securities must be denominated in U.S. dollars and must be fixed rate and non-convertible.
- **The Bloomberg Barclays Global High Yield Index** is a multi-currency flagship measure of the global high yield debt market. The index represents the union of the US High Yield, the Pan-European High Yield, and Emerging Markets (EM) Hard Currency High Yield Indices. The high yield and emerging markets sub-components are mutually exclusive. Until January 1, 2011, the index also included CMBS high yield securities.
- **The Bloomberg Barclays Municipal Index** is designed to mirror the investable universe of the U.S. dollar denominated floating rate note market.
- **The Bloomberg Barclays US Dollar Floating Rate Note (FRN) Index** provides a measure of the U.S. dollar denominated floating rate note market.
- **The Bloomberg Barclays US Corporate Investment Grade Index** is an unmanaged index consisting of publicly issued US Corporate and specified foreign debentures and secured notes that are rated investment grade (Baa1/BBB+ or higher) by at least two ratings agencies, have at least one year to final maturity and have at least $250 million par amount outstanding. To qualify, bonds must be SEC-registered.
- **The Bloomberg Barclays US High Yield Index** covers the universe of fixed rate, non-investment grade debt. Eurobonds and debt issues from countries designated as emerging markets (sovereign rating of Baa1/BBB+/BBB+ and below using the middle of Moody’s, S&P, and Fitch) are excluded, but Canadian and global bonds (SEC registered) of issuers in non-EMG countries are included.
- **The Bloomberg Barclays US Mortgage Backed Securities Index** is an unmanaged index that measures the performance of investment grade fixed-rate mortgage backed pass-through securities of GNMA, FNMA and FHLMC.
- **The Bloomberg Barclays US TIPS Index** consists of Inflation-Protection securities issued by the U.S. Treasury.
- **The J.P. Morgan Emerging Market Bond Global Index (EMBI)** includes U.S. dollar denominated Brady bonds, Eurobonds, traded loans and local market debt instruments issued by sovereign and quasi-sovereign entities.
- **The J.P. Morgan Domestic High Yield Index** is designed to mirror the investable universe of the U.S. dollar domestic high yield corporate debt market.
- **The J.P. Morgan Corporate Emerging Markets Bond Index Broad Diversified (CEMBI Broad Diversified)** is an expansion of the J.P. Morgan Corporate Emerging Markets Bond Index (CEMBI). The CEMBI is a market capitalization weighted index consisting of U.S. dollar denominated emerging market corporate bonds.
- **The J.P. Morgan Emerging Markets Bond Index Global Diversified (EMBI Global Diversified)** tracks total returns for U.S. dollar-denominated debt instruments issued by emerging market sovereign and quasi-sovereign entities: Brady bonds, loans, Eurobonds. The index limits the exposure of some of the larger countries.
- **The J.P. Morgan GBI EM Global Diversified** tracks the performance of local currency debt issued by emerging market governments, whose debt is accessible by most of the international investor base.
- **The U.S. Treasury Index** is a component of the U.S. Government index.
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 use sophisticated quantitative techniques of analyzing price data to ascertain information about future price movement and relationships between securities, select securities for purchase and sale. Equity Market Neutral Strategies typically maintain characteristic net equity market exposure no greater than 10% long or short.

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

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

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

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

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

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

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

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

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

Other asset classes:

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

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

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

The CS/Tremont Hedge Fund Index is compiled by Credit Suisse Tremont Index, LLC. It is an asset-weighted hedge fund index and includes only funds, as opposed to separate accounts. The index uses the Credit Suisse/Tremont database, which tracks over 4,500 funds, and consists only of funds with a minimum of US$50 million under management, a 12-month track record, and audited financial statements. It is calculated and rebalanced on a monthly basis, and shows net of all performance fees and expenses. It is the exclusive property of Credit Suisse Tremont Index, LLC.

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

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

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

Definitions:

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

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

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

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

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