Global growth

Real GDP growth
% change year on year

2020 forecast
- US: -5.3%
- UK: -3.7%
- Eurozone: -3.4%
- Japan: -3.1%

Contribution to global real GDP growth
% change year on year

Source: (Left) BEA, Eurostat, Japan Cabinet Office, ONS, Refinitiv Datastream, J.P. Morgan Asset Management. Forecasts are from J.P. Morgan Securities Research.
(Right) Refinitiv Datastream, World Bank, J.P. Morgan Asset Management. EM is emerging markets. DM is developed markets.
The Global Purchasing Managers’ Index (PMI) for manufacturing assesses the economic health of the sector by surveying manufacturing businesses regarding output, new orders, stocks of purchases, supplier delivery times and employment. A score of 50 indicates that economic activity is neither expanding nor contracting, above 50 indicates expansion. The colours range from red to yellow to green, where red is below 50, yellow is at 50 and green is above 50. Quarterly averages are shown, except the two most recent monthly data points. Past performance is not a reliable indicator of current and future results. Guide to the Markets - Europe. Data as of 31 March 2020.
Global unemployment

Unemployment rates

- Eurozone
- UK
- US
- Japan

Global inflation

<table>
<thead>
<tr>
<th></th>
<th>2018</th>
<th></th>
<th>2019</th>
<th></th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mar</td>
<td>Apr</td>
<td>May</td>
<td>Jun</td>
<td>Jul</td>
</tr>
<tr>
<td>Global</td>
<td>2.2</td>
<td>2.2</td>
<td>2.4</td>
<td>2.6</td>
<td>2.7</td>
</tr>
<tr>
<td>Developed</td>
<td>1.9</td>
<td>1.8</td>
<td>2.2</td>
<td>2.3</td>
<td>2.4</td>
</tr>
<tr>
<td>Emerging</td>
<td>2.7</td>
<td>2.7</td>
<td>2.8</td>
<td>3.0</td>
<td>3.1</td>
</tr>
</tbody>
</table>

### Eurozone

<table>
<thead>
<tr>
<th></th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eurozone</td>
<td>1.4</td>
</tr>
<tr>
<td>France</td>
<td>1.7</td>
</tr>
<tr>
<td>Germany</td>
<td>1.5</td>
</tr>
<tr>
<td>Italy</td>
<td>0.9</td>
</tr>
<tr>
<td>Spain</td>
<td>1.3</td>
</tr>
<tr>
<td>Greece</td>
<td>0.2</td>
</tr>
<tr>
<td>Ireland</td>
<td>0.5</td>
</tr>
<tr>
<td>Sweden</td>
<td>2.0</td>
</tr>
<tr>
<td>Switzerland</td>
<td>0.7</td>
</tr>
<tr>
<td>UK</td>
<td>2.5</td>
</tr>
<tr>
<td>US</td>
<td>2.4</td>
</tr>
<tr>
<td>Japan</td>
<td>1.1</td>
</tr>
<tr>
<td>China</td>
<td>2.1</td>
</tr>
<tr>
<td>Indonesia</td>
<td>3.4</td>
</tr>
<tr>
<td>Korea</td>
<td>1.2</td>
</tr>
<tr>
<td>Taiwan</td>
<td>1.6</td>
</tr>
<tr>
<td>India</td>
<td>4.3</td>
</tr>
<tr>
<td>Brazil</td>
<td>2.7</td>
</tr>
<tr>
<td>Mexico</td>
<td>5.0</td>
</tr>
<tr>
<td>Russia</td>
<td>2.3</td>
</tr>
</tbody>
</table>

Global core inflation and inflation expectations

Core inflation
% change year on year

Market-based inflation expectations
% 5y5y inflation swap

Source: (Left) Bank of Japan, BLS, Eurostat, ONS, Refinitiv Datastream, J.P. Morgan Asset Management. CPI is the Consumer Price Index. Core inflation for the US is defined as CPI excluding food and energy. Core inflation for Japan is defined as CPI excluding fresh food and energy. Core inflation for the UK and the eurozone is defined as CPI less energy, food, alcohol and tobacco. Japan core CPI has been adjusted down by 2% from April 2014 to March 2015 to remove the estimated impact of the consumption tax hike over this period. (Right) Bloomberg, J.P. Morgan Asset Management. 5y5y inflation swap represents the market’s expectation of five-year average inflation, starting in five years’ time. Data for Japan starts in March 2007 due to data availability. Past performance is not a reliable indicator of current and future results. Guide to the Markets - Europe. Data as of 31 March 2020.
Global central bank policy

Market expectations for policy rate

- %
- 1.00
- 0.75
- 0.50
- 0.25
- 0.00
- 0.25
- 0.50
- 0.75
- 1.00

Mar '20 | Mar '21 | Mar '22 | Mar '23 | Mar '24

US
UK
Japan
Eurozone
Switzerland

Central bank balance sheets

USD trillions

12-month change in balance sheet

Global central bank balance sheet

Forecast*

Source: (Left) Bloomberg, J.P. Morgan Asset Management. Expectations are calculated using OIS forwards. (Right) Bank of England (BoE), Bank of Japan (BoJ), European Central Bank (ECB), Refinitiv Datastream, Swiss National Bank (SNB), US Federal Reserve (Fed), J.P. Morgan Asset Management. Global central bank balance sheet is the sum of the balance sheets of the BoE, BoJ, ECB, Fed and SNB. *Balance sheet forecast assumptions: BoE to have net asset purchases totalling GBP 200 billion until August, after which net purchases continue at GBP 10 bn per month; BoJ to have an annualised net asset purchase pace of JPY 50 tn over the forecast period; ECB to have net asset purchases totalling EUR 1.1 tn; SNB balance sheet to increase by CHF 165 bn over the remainder of 2020, with the balance sheet increasing at a slowing pace over the course of the year; Fed has set no limit to its asset purchases but we have assumed net asset purchases of USD 3.0 tn over the remainder of 2020. Past performance is not a reliable indicator of current and future results. Guide to the Markets - Europe. Data as of 31 March 2020.
**Real effective exchange rates**

Index level rebased to 100 in 2010, broad real effective exchange rate (REER)

Global trade

Exports of goods
% of nominal GDP, 2018

- US
- Eurozone
- Canada
- UK
- Brazil
- India
- China
- Russia
- Mexico
- Japan
- Korea

Global export volumes
% change year on year, three-month moving average

DM
Global
EM

Productivity and population growth

**Drivers of US GDP growth**

<table>
<thead>
<tr>
<th>Period</th>
<th>Annualised % change</th>
</tr>
</thead>
<tbody>
<tr>
<td>'58 - '67</td>
<td>2.8%</td>
</tr>
<tr>
<td>'68 - '77</td>
<td>1.0%</td>
</tr>
<tr>
<td>'78 - '87</td>
<td>1.3%</td>
</tr>
<tr>
<td>'88 - '97</td>
<td>1.6%</td>
</tr>
<tr>
<td>'98 - '07</td>
<td>1.9%</td>
</tr>
<tr>
<td>'08 - '19</td>
<td>1.0%</td>
</tr>
</tbody>
</table>

**Global working-age population growth**

**Growth in workers**

- Growth in real output per worker
- Growth in real GDP

Source: (Left) BEA, BLS, J.P. Morgan Asset Management. GDP drivers are calculated as the average annualised growth between 4Q from the preceding year in the period and 4Q of the last year of the period. (Right) United Nations (UN) Department of Economic and Social Affairs, J.P. Morgan Asset Management. Working-age population is defined as aged 15-69. Data from 2020 onwards are UN forecasts. Past performance is not a reliable indicator of current and future results.

Contribution to US real GDP growth and ISM composite
% change year on year (LHS); index level (RHS)

Source: BEA, Bloomberg, ISM, Refinitiv Datastream, J.P. Morgan Asset Management. The Institute for Supply Management (ISM) composite is an economy-weighted average of the manufacturing and non-manufacturing surveys. A score of 50 indicates that economic activity is neither expanding nor contracting, above 50 indicates expansion. ISM data is shown with quarterly frequency. Past performance is not a reliable indicator of current and future results. Guide to the Markets - Europe. Data as of 31 March 2020.
US Economic Monitor

Source: BLS, Conference Board, ISM, Refinitiv Datastream, J.P. Morgan Asset Management. Elevated recession risk flags are shown when the underlying indicator is at a level consistent with the onset of any of the past three US recessions, as determined by NBER. Transformations used for each of the indicators are: % change year on year for the Leading Economic Index and consumer confidence present situation, index level for Leading Credit Index, ISM non-manufacturing and ISM manufacturing new orders and three-month moving average of monthly absolute change for non-farm payrolls. Past performance is not a reliable indicator of current and future results. Guide to the Markets - Europe. Data as of 31 March 2020.
Source: (All charts) ISM, Refinitiv Datastream, J.P. Morgan Asset Management. Periods of “recession” are defined using US National Bureau of Economic Research (NBER) business cycle dates. Elevated recession risk line is shown as the highest value of the underlying indicator observed at the start of the past three US recessions, as determined by NBER. Past performance is not a reliable indicator of current and future results. Guide to the Markets - Europe.

Data as of 31 March 2020.
US future capex intentions and business investment

% change year on year (LHS); index level (RHS)

US consumer confidence: Present situation
% change year on year

Recession

Elevated recession risk


Periods of "recession" are defined using US National Bureau of Economic Research (NBER) business cycle dates. Elevated recession risk line is shown as the highest value of the underlying indicator observed at the start of the past three US recessions, as determined by NBER. Past performance is not a reliable indicator of current and future results. Guide to the Markets - Europe. Data as of 31 March 2020.
US labour market

**US unemployment rate and wage growth**

% wage growth is year on year

US non-farm payrolls and initial jobless claims

Source: (All charts) BLS, Refinitiv Datastream, J.P. Morgan Asset Management. Periods of “recession” are defined using US National Bureau of Economic Research (NBER) business cycle dates. Elevated recession risk line is shown as the highest value of the underlying indicator observed at the start of the past three US recessions, as determined by NBER. Past performance is not a reliable indicator of current and future results. Guide to the Markets - Europe.

Data as of 31 March 2020.
Source: (All charts) Conference Board, Refinitiv Datastream, J.P. Morgan Asset Management. Periods of “recession” are defined using US National Bureau of Economic Research (NBER) business cycle dates. Elevated recession risk line is shown as the highest value for the Leading Economic Index and lowest for the Leading Credit Index at the start of the past three US recessions, as determined by NBER. Past performance is not a reliable indicator of current and future results.

US household debt and net saving

% of nominal GDP

US inflation

**US headline and core inflation**

<table>
<thead>
<tr>
<th>% change year on year</th>
<th>Average since 2000</th>
<th>February 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Headline CPI</td>
<td>2,2%</td>
<td>2,3%</td>
</tr>
<tr>
<td>Core CPI</td>
<td>2,0%</td>
<td>2,4%</td>
</tr>
</tbody>
</table>

**Source:** (All charts) BLS, Refinitiv Datastream, J.P. Morgan Asset Management. CPI is the Consumer Price Index. Core CPI is defined as CPI excluding food and energy. Core goods CPI is defined as goods CPI excluding food and energy. Past performance is not a reliable indicator of current and future results. *Guide to the Markets - Europe.* Data as of 31 March 2020.
Federal Reserve policy actions

- Restarted asset purchase programme
  - Purchases of Treasuries and agency MBS are now unlimited
  - Expanded the programme to include agency CMBS
- Launched a Primary (PMCCF) and Secondary Corporate Credit Facility (SMCCF)
- Reduced reserve requirements for the banking sector
- Restarted Term Asset-backed securities Loan Facility (TALF)

Votes or seats in the Electoral College, Senate and the House of Representatives

<table>
<thead>
<tr>
<th>Electoral College</th>
<th>Last election result</th>
<th>270</th>
</tr>
</thead>
<tbody>
<tr>
<td>Democratic Party</td>
<td>227 vs. 304*</td>
<td></td>
</tr>
<tr>
<td>Republican Party</td>
<td>538</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Senate</th>
<th>51**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Democratic Party</td>
<td>47 vs. 53</td>
</tr>
<tr>
<td>Republican Party</td>
<td>100</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>House of Representatives</th>
<th>218</th>
</tr>
</thead>
<tbody>
<tr>
<td>Democratic Party</td>
<td>238 vs. 197</td>
</tr>
<tr>
<td>Republican Party</td>
<td>435</td>
</tr>
</tbody>
</table>

Source: 270 to Win, The Cook Political Report, J.P. Morgan Asset Management. *In 2016 Trump earned 306 pledged electors, Clinton 232. They lost, respectively, two and five votes to faithless electors in the official tally. **51 seats are needed for a simple majority if the dominant party in the Senate is not represented in the White House. If the president and majority party are the same, only 50 seats are needed for a majority because the vice president casts the tie-breaking vote. 2016 numbers include two independents that vote with the Democrats. Guide to the Markets - Europe. Data as of 31 March 2020.
US focus: Labour market and energy sector investment

**US job openings, hires and layoffs**
Millions, monthly

- **Job openings**
- **Job hires**
- **Job layoffs**

**Recession**

Contribution to eurozone real GDP growth and composite PMI

% change year on year (LHS); index level (RHS)

Source: Eurostat, Markit, Refinitiv Datastream, J.P. Morgan Asset Management. PMI is Purchasing Managers’ Index where a score of 50 indicates that economic activity is neither expanding nor contracting, above 50 indicates expansion. PMI data is shown with quarterly frequency. Past performance is not a reliable indicator of current and future results. Guide to the Markets - Europe. Data as of 31 March 2020.
Eurozone business investment and investment confidence
% change year on year (LHS); index level (RHS)

Global economy

Eurozone consumer

Eurozone consumer confidence
Index level

Recession

Eurozone house prices relative to income
Index level

Spain
France
Italy
Germany


Light grey columns indicate recession in the eurozone. Pre-2000, recessions are determined by a recession occurring in either Germany or at an EU-15 level.

Eurozone unemployment rate and wage growth
%

€urozone unemployment

Germany, France, Italy and Spain unemployment rates


Eurozone headline and core inflation

% change year on year

<table>
<thead>
<tr>
<th></th>
<th>Average since 2000</th>
<th>March 2020 (flash)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Headline CPI</td>
<td>1.7%</td>
<td>0.7%</td>
</tr>
<tr>
<td>Core CPI</td>
<td>1.4%</td>
<td>1.0%</td>
</tr>
</tbody>
</table>

Source: (All charts) Eurostat, Refinitiv Datastream, J.P. Morgan Asset Management. CPI is the Consumer Price Index. Core CPI is defined as CPI less energy, food, alcohol and tobacco. Core goods CPI is defined as goods CPI less energy, food, alcohol and tobacco. Past performance is not a reliable indicator of current and future results. Guide to the Markets - Europe. Data as of 31 March 2020.
European Central Bank policy rate expectations

% deposit rate, market expectations

European Central Bank policy actions

- Launched the Pandemic Emergency Purchase Programme (PEPP)
  - Minimum of €750bn to be purchased by the end of 2020
  - Increased flexibility on issuer and maturity limits
  - Short-term deviations from the capital key permitted
  - Greek bonds are eligible for purchase

- Expanded existing Asset Purchase Programme (APP) by €120bn

- Expanded eligibility of non-financial commercial paper for the Corporate Sector Purchase Programme (CSPP)

- Enhanced Targeted Longer-Term Refinancing Operations (TLTROs)

Eurozone debt to GDP ratios
% of nominal GDP

- Non-financial corporates
- Government
- Households

Source: (All charts) Bank for International Settlements, Refinitiv Datastream, J.P. Morgan Asset Management. Debt refers to gross debt. Debt service ratios are a GDP-weighted average of France, Germany, Italy and Spain. For the household sector, gross disposable income is the amount of money that all of the individuals in the household sector have available for spending or saving after income distribution measures (for example, taxes, social contributions and benefits) have taken effect. For the non-financial corporate sector, gross disposable income is essentially akin to gross operating surplus before dividends or interest are paid. Past performance is not a reliable indicator of current and future results. Guide to the Markets - Europe. Data as of 31 March 2020.
Eurozone government debt and bond spreads

France, Germany, Italy and Spain government debt to GDP

% of nominal GDP

% spread


Breakdown of eurozone inflation basket by type of consumption

% weight

Sectors most impacted by social distancing:
- Transport: 18.9
- Restaurants and hotels: 15.6
- Recreation and culture: 10.1
- Clothing and footwear: 8.8

Sectors less impacted by social distancing:
- Utilities: 15.1
- Food and non-alcoholic beverages: 9.6
- Misc. goods and services: 16.1
- Other: 5.9

Source: Markit, ONS, Refinitiv Datastream, J.P. Morgan Asset Management. PMI is Purchasing Managers’ Index where a score of 50 indicates that economic activity is neither expanding nor contracting, above 50 indicates expansion. PMI data is shown with quarterly frequency. Past performance is not a reliable indicator of current and future results. Guide to the Markets - Europe. Data as of 31 March 2020.
UK consumer confidence
Index level, three-month moving average

UK house prices relative to income
Index level

UK headline and core inflation
% change year on year

<table>
<thead>
<tr>
<th></th>
<th>Average since 2000</th>
<th>February 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Headline CPI</td>
<td>2,0%</td>
<td>1,7%</td>
</tr>
<tr>
<td>Core CPI</td>
<td>1,7%</td>
<td>1,7%</td>
</tr>
</tbody>
</table>

UK core goods and services inflation
% change year on year

<table>
<thead>
<tr>
<th></th>
<th>Average since 2000</th>
<th>February 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Services CPI</td>
<td>3,3%</td>
<td>2,5%</td>
</tr>
<tr>
<td>Core goods CPI</td>
<td>-0,7%</td>
<td>0,3%</td>
</tr>
</tbody>
</table>

Source: (All charts) ONS, Refinitiv Datastream, J.P. Morgan Asset Management. CPI is the Consumer Price Index. Core CPI is defined as CPI less energy, food, alcohol and tobacco. Core goods CPI is defined as goods CPI less energy, food, alcohol and tobacco. Past performance is not a reliable indicator of current and future results. Guide to the Markets - Europe. Data as of 31 March 2020.
UK and G7 ex-UK real business investment
Index level, rebased to 100 in 1Q 2007

Contribution to Japan real GDP growth and manufacturing PMI

% change year on year (LHS); index level (RHS)

Source: Japan Cabinet Office, Markit, Refinitiv Datastream, J.P. Morgan Asset Management. PMI is Purchasing Managers’ Index where a score of 50 indicates that economic activity is neither expanding nor contracting, above 50 indicates expansion. PMI data is shown with quarterly frequency. Past performance is not a reliable indicator of current and future results. Guide to the Markets - Europe. Data as of 31 March 2020.
China GDP

**Contribution to China real GDP growth**

|  | 2019 | 2020 forecast |
|-------------------------------|------------------|
| GDP growth                   | 6.1%             |
| Investment                   |                  |
| Consumption                  |                  |
| Net exports                  |                  |

% change year on year


China debt to GDP ratios
\[
\text{% of nominal GDP}
\]
\begin{align*}
\text{'00} & \quad \text{'02} & \quad \text{'04} & \quad \text{'06} & \quad \text{'08} & \quad \text{'10} & \quad \text{'12} & \quad \text{'14} & \quad \text{'16} & \quad \text{'18} & \quad \text{'20} \\
\text{Non-financial corporates} & \quad & \quad & \quad & \quad & \quad & \quad & \quad & \quad & \quad & \quad \\
\text{Government} & \quad & \quad & \quad & \quad & \quad & \quad & \quad & \quad & \quad & \quad \\
\text{Households} & \quad & \quad & \quad & \quad & \quad & \quad & \quad & \quad & \quad & \quad
\end{align*}

Source: (Left) Bank for International Settlements, Refinitiv Datastream, J.P. Morgan Asset Management. Debt refers to gross debt. (Right) People’s Bank of China (PBoC), J.P. Morgan Asset Management. This chart includes two measures of credit ranging from the narrowest – bank lending – to the more extensive broad credit. Specifically, bank lending is the sum of all loans made by the commercial banking system to domestic borrowers. Broad credit includes all finance provided to non-financial entities in private and public sectors. Broad credit includes all funding to domestic borrowers, including bank lending, trust loans, entrusted loans, bankers’ acceptances, corporate bonds, equity financing by non-financial enterprises, asset-backed securities, loan write-offs, central government and local government bonds.

China inflation and policy rates

**China inflation**

<table>
<thead>
<tr>
<th></th>
<th>Average since 2007</th>
<th>February 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Headline CPI</td>
<td>2.8%</td>
<td>5.2%</td>
</tr>
<tr>
<td>Core CPI</td>
<td>1.3%</td>
<td>1.0%</td>
</tr>
<tr>
<td>Headline PPI</td>
<td>1.0%</td>
<td>-0.4%</td>
</tr>
</tbody>
</table>

**China interbank rate and reserve requirement ratio (RRR)**

Source: (Left) Bloomberg, Refinitiv Datastream, J.P. Morgan Asset Management. CPI is the Consumer Price Index. Core CPI is defined as CPI excluding food and energy. PPI is the Producer Price Index. (Right) People’s Bank of China, Refinitiv Datastream, J.P. Morgan Asset Management. Average RRR for large and small banks. SHIBOR is the three-month interbank rate. Past performance is not a reliable indicator of current and future results. Guide to the Markets - Europe. Data as of 31 March 2020.
Emerging market currencies and current account

**EM currencies vs. US dollar**
% from fair value, relative to US dollar

- EM currencies expensive relative to USD
- Average
- +1 std. dev.
- -1 std. dev.

**EM current account balance**
% of nominal GDP

- EM current account balance improving

Source: (Left) J.P. Morgan Asset Management. Fair value is based on nominal exchange rates relative to PPP exchange rates and is adjusted for GDP per capita. (Right) Bloomberg, J.P. Morgan Asset Management. EM currencies and current account balances are created using the current weighted average of JPM GBI-EM Global Diversified Index countries. Current account balance is the balance of a country’s net trade in goods and services, its net earnings on cross-border investments and its net transfer payments. Past performance is not a reliable indicator of current and future results. *Guide to the Markets - Europe.* Data as of 31 March 2020.
Emerging market structural dynamics

Urbanisation, real GDP per capita and population size
Urbanisation rates, %, and GDP per capita, USD, bubble size is population

Share of global real GDP

Emerging market focus: Oil supply and net dependency

Crude oil production by country
Million barrels per day

Net oil production by country
% of nominal GDP, 2018

Global earnings expectations and equity valuations

Consensus estimates for global earnings per share growth
% change year on year, earnings per share estimates

Global forward price-to-earnings ratios
x, multiple

Source: (Left) FTSE, IBES, MSCI, Refinitiv Datastream, Standard & Poor’s, TOPIX, J.P. Morgan Asset Management. MSCI indices are used for Europe ex-UK and EM. UK is FTSE All-Share, US is S&P 500 and Japan is TOPIX. Data used are in local currency, except for EM, which is in US dollars. (Right) IBES, MSCI, Refinitiv Datastream, Standard & Poor’s, J.P. Morgan Asset Management. MSCI indices are used for all regions/countries (due to data availability), except for the US, which is represented by the S&P 500. Past performance is not a reliable indicator of current and future results. Guide to the Markets - Europe. Data as of 31 March 2020.
Guide to the Markets - Europe.

Data as of 31 March 2020.

Average Europe inflation: 1.5% (12 months to February 2020)

Asset yield comparison

% yield

-0.5 German Bunds
0.0 Cash
1.9 Euro IG
3.0 DM equity
3.2 EM equity
4.5 MSCI Europe
5.1 Global infrastructure
5.7 Global REITs
6.5 EM debt
6.9 Global convertibles
8.8 DM high yield
9.9 Global transport

Equity index yields

% yield

FTSE All-Share
MSCI Europe ex-UK
S&P 500
MSCI World
MSCI Japan
MSCI EM

Buying back yield
Dividend yield

Global equity sector weights

% of total market cap

MSCI World Growth and Value sector weights

% of total market cap

Source: (Top) MSCI, Refinitiv Datastream, Standard & Poor’s, J.P. Morgan Asset Management. Indices are all MSCI, except for US, which is S&P 500. (Bottom) MSCI, Refinitiv Datastream, J.P. Morgan Asset Management. Real estate is not included in these sector breakdowns due to the small size of the weight in each index. Past performance is not a reliable indicator of current and future results. Guide to the Markets - Europe. Data as of 31 March 2020.
Equity issuance and buybacks

Breakdown of US net equity issuance
USD billions, 12-month rolling

Breakdown of European net equity issuance
USD billions, 12-month rolling

**US earnings**

**S&P 500 earnings and performance**
Next 12 months’ earnings per share estimates (LHS); index level (RHS)

**US nominal GDP growth and earnings growth**
% change year on year

Source: (Left) IBES, Refinitiv Datastream, Standard & Poor’s, J.P. Morgan Asset Management. Earnings data is based on 12-month forward estimates. (Right) BEA, IBES, Refinitiv Datastream, Standard & Poor’s, J.P. Morgan Asset Management. Earnings data is last 12 months’ earnings per share. Nominal GDP forecasts are from J.P. Morgan Securities Research. Past performance and forecasts are not a reliable indicator of current and future results. Guide to the Markets - Europe.

Data as of 31 March 2020.
US equity valuations

S&P 500 forward P/E ratio

<table>
<thead>
<tr>
<th>Valuation measure</th>
<th>Average since 1990</th>
<th>Latest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shiller CAPE ratio</td>
<td>25,9x</td>
<td>23,2x</td>
</tr>
<tr>
<td>P/B ratio</td>
<td>2,9x</td>
<td>2,8x</td>
</tr>
</tbody>
</table>

Average: 15,9x

31 Mar 2020: 15,0x

S&P 500 forward P/E ratio sector breakdown

Difference between current P/E multiple and average P/E since 1990


Data as of 31 March 2020.
US valuations and subsequent returns

Forward P/E ratios and subsequent 1-year returns
% annualised total return*

Forward P/E ratios and subsequent 10-year returns
% annualised total return*

Equities and interest rates

US Fed funds rate and equities/government bonds relative performance
%
(LHS); relative total return index level, rebased to 100 in 1997 (RHS)


Source: (All charts) Bloomberg, Refinitiv Datastream, Standard & Poor’s, J.P. Morgan Asset Management. A bear market represents a 20% or more decline from the previous market high using a monthly frequency; a bull market represents a 20% increase from a market trough. Charts and labels refer to price return. Median values are calculated excluding data from current cycle. Past performance is not a reliable indicator of current and future results. Guide to the Markets - Europe. Data as of 31 March 2020.
Europe earnings

MSCI Europe earnings and performance
Next 12 months' earnings per share estimates, EUR (LHS); index level (RHS)

Europe nominal GDP growth and earnings growth
% change year on year


Data as of 31 March 2020.
Europe equity valuations

MSCI Europe forward P/E ratio

<table>
<thead>
<tr>
<th>Valuation measure</th>
<th>Average since 1990</th>
<th>Latest</th>
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</thead>
<tbody>
<tr>
<td>CAPE ratio</td>
<td>19,4x</td>
<td>14,9x</td>
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<tr>
<td>P/B ratio</td>
<td>2,1x</td>
<td>1,5x</td>
</tr>
</tbody>
</table>

Average: 14,3x

31 Mar 2020: 12,1x

MSCI Europe forward P/E ratio sector breakdown

<table>
<thead>
<tr>
<th>Sector</th>
<th>CAPE ratio</th>
<th>P/B ratio</th>
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</thead>
<tbody>
<tr>
<td>IT</td>
<td>15,7</td>
<td>-7</td>
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<tr>
<td>Comm. Serv.</td>
<td>10,6</td>
<td>-6</td>
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<td>Energy</td>
<td>7,5</td>
<td>-4</td>
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<tr>
<td>Financials</td>
<td>6,6</td>
<td>-3</td>
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<tr>
<td>Cons. Discr.</td>
<td>10,2</td>
<td>-2</td>
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<tr>
<td>Health Care</td>
<td>14,4</td>
<td>0</td>
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<tr>
<td>Industrials</td>
<td>11,9</td>
<td>1</td>
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<tr>
<td>MSCI Europe</td>
<td>12,1</td>
<td>2</td>
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<tr>
<td>Materials</td>
<td>11,0</td>
<td>3</td>
</tr>
<tr>
<td>Cons. Staples</td>
<td>15,7</td>
<td>4</td>
</tr>
<tr>
<td>Utilities</td>
<td>12,9</td>
<td>5</td>
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</table>

Cheap relative to history

Current forward P/E ratio


MSCI Europe and euro vs. US dollar
Index level (LHS); US dollars per euro (RHS)

Europe large, mid and small capitalisation equities

MSCI Europe large, mid & small cap performance
Index level, rebased to 100 in Jan 1995

MSCI Europe large, mid & small cap valuations
x, 12-month forward price-to-earnings ratio

FTSE All-Share earnings and performance
Next 12 months’ earnings per share estimates, GBP (LHS); index level (RHS)

FTSE All-Share earnings per share growth
% change year on year

Valuation gap between FTSE All-Share and MSCI World
% premium / discount of FTSE All-Share forward P/E vs. MSCI World

Brexit referendum

UK stocks cheapening relative to DM stocks

FTSE All-Share and sterling vs. US dollar
Index level (LHS); US dollars per UK pound (RHS)

Source: (Left) FTSE, MSCI, Refinitiv Datastream, J.P. Morgan Asset Management. The P/E gap is the percentage premium or discount of the 12-month forward price-to-earnings ratio of the FTSE All-Share index relative to the 12-month forward price-to-earnings ratio of the MSCI World index. A zero level represents both indices trading at the same valuation level, a negative level represents the FTSE All-Share trading on a cheaper valuation than MSCI World. (Right) FTSE, Refinitiv Datastream, J.P. Morgan Asset Management. Past performance is not a reliable indicator of current and future results. Guide to the Markets - Europe.

Data as of 31 March 2020.
Next 12 months’ earnings per share estimates, JPY (LHS); index level (RHS)

TOPIX earnings and performance

TOPIX earnings per share growth

% change year on year

Source: (All charts) FactSet, IBES, Refinitiv Datastream, TOPIX, J.P. Morgan Asset Management. Earnings data are based on 12-month forward estimates. Margin growth is the growth rate of earnings per share divided by sales per share. Past performance is not a reliable indicator of current and future results.

Japan equity market and currency

TOPIX and the yen vs. US dollar
Index level (LHS); Japanese yen per US dollar (RHS)


Emerging market equity drivers

EM / DM relative equity performance and growth gap
Relative index level (LHS); %, next 12 months' growth estimates (RHS)

Emerging market equity valuations and subsequent returns

MSCI EM price-to-book ratio
x, multiple

MSCI EM price-to-book ratio and subsequent 10-year returns
%
annualised total return*

### Valuations, earnings and price declines in S&P 500 downturns

<table>
<thead>
<tr>
<th>S&amp;P 500 peak to trough</th>
<th>Forward P/E at S&amp;P 500 peak</th>
<th>Forward P/E at S&amp;P 500 trough</th>
<th>% max drawdown in forward earnings**</th>
<th>% decline in S&amp;P 500 price index</th>
<th>% drawdown in US real GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aug 1987 – Dec 1987</td>
<td>15,2x</td>
<td>9,6x</td>
<td>0%</td>
<td>-34%</td>
<td>-</td>
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<tr>
<td>Jul 1990 – Oct 1990</td>
<td>12,6x</td>
<td>10,1x</td>
<td>-8%</td>
<td>-20%</td>
<td>-1,4%</td>
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<tr>
<td>Mar 2000 – Oct 2002</td>
<td>24,7x</td>
<td>13,8x</td>
<td>-18%</td>
<td>-49%</td>
<td>-0,4%</td>
</tr>
<tr>
<td>Oct 2007 – Mar 2009</td>
<td>15,1x</td>
<td>10,2x</td>
<td>-40%</td>
<td>-57%</td>
<td>-4,0%</td>
</tr>
<tr>
<td>*Feb 2020 -</td>
<td>19,1x</td>
<td>15,0x</td>
<td>-3%</td>
<td>-24%</td>
<td>-</td>
</tr>
</tbody>
</table>

Source: Refinitiv Datastream, Standard & Poor’s, J.P. Morgan Asset Management. *For the February 2020 downturn, the forward P/E at S&P 500 trough, % decline in forward earnings and % decline in S&P 500 price index are calculated based on the latest data available. **The max decline in forward earnings is the largest drawdown in earnings per share in the period around the S&P 500 downturn. There was no decline in US real GDP during the period of the Aug-Dec 1987 downturn. Past performance is not a reliable indicator of current and future results. Guide to the Markets - Europe. Data as of 31 March 2020.
### World stock market returns

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<tr>
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</thead>
<tbody>
<tr>
<td>EUR</td>
<td>-23.0% TOPIX</td>
<td>73.5% MSCI EM 62.8%</td>
<td>28.3% Asia ex-Jp</td>
<td>5.5% US S&amp;P 500 21.1%</td>
<td>20.8% Asia ex-Jp</td>
<td>26.7% US S&amp;P 500 32.4%</td>
<td>29.5% US S&amp;P 500 13.7%</td>
<td>24.4% TOPIX 12.1%</td>
<td>15.3% US S&amp;P 500 12.0%</td>
<td>24.8% Asia ex-Jp</td>
<td>0.4% US S&amp;P 500 35.9%</td>
<td>-15.0% TOPIX</td>
<td>-33.7% US S&amp;P 500 9.1%</td>
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<tr>
<td>Local</td>
<td>-37.0%</td>
<td>67.2% Asia ex-Jp 67.2%</td>
<td>27.5% MSCI EM 14.4%</td>
<td>-5.7% Portfolio -7.5%</td>
<td>18.1% Europe 16.4%</td>
<td>21.5% TOPIX 54.4%</td>
<td>19.7% Asia ex-Jp 7.7%</td>
<td>12.9% US S&amp;P 500 1.4%</td>
<td>14.9% MSCI EM 10.1%</td>
<td>21.0% MSCI EM 31.0%</td>
<td>-6.8% Portfolio -9.1%</td>
<td>26.9% Portfolio 24.5%</td>
<td>-16.5% Asia ex-Jp</td>
<td></td>
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<tr>
<td>Portfolio</td>
<td>-40.3%</td>
<td>36.0% Portfolio 34.9%</td>
<td>23.9% TOPIX 1.0%</td>
<td>-7.5% Europe -8.8%</td>
<td>16.8% MSCI EM 17.4%</td>
<td>20.5% Europe 22.3%</td>
<td>16.2% Portfolio 8.6%</td>
<td>8.8% Portfolio 2.2%</td>
<td>9.5% Portfolio 8.5%</td>
<td>12.7% Portfolio 21.8%</td>
<td>-9.4% TOPIX -16.0%</td>
<td>26.9% Portfolio 24.5%</td>
<td>-17.7% US S&amp;P 500</td>
<td></td>
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</tr>
<tr>
<td>Europe</td>
<td>-38.5%</td>
<td>32.6% Europe 28.6%</td>
<td>23.1% US S&amp;P 500 15.1%</td>
<td>-9.6% TOPIX -17.0%</td>
<td>15.8% Portfolio 17.2%</td>
<td>16.2% Portfolio 24.1%</td>
<td>11.8% MSCI EM 5.6%</td>
<td>8.9% MSCI EM 5.6%</td>
<td>8.9% Asia ex-Jp 6.4%</td>
<td>11.2% Asia ex-Jp 22.2%</td>
<td>-9.8% Portfolio -12.0%</td>
<td>21.4% TOPIX 18.1%</td>
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<td></td>
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<tr>
<td>Asia ex-Jp</td>
<td>-47.7%</td>
<td>22.5% US S&amp;P 500 26.5%</td>
<td>20.4% Portfolio 10.9%</td>
<td>-14.3% Asia ex-Jp -14.6%</td>
<td>14.2% US S&amp;P 500 16.0%</td>
<td>-1.1% Asia ex-Jp 6.2%</td>
<td>10.1% TOPIX 10.3%</td>
<td>1.5% Asia ex-Jp -5.3%</td>
<td>6.6% TOPIX 0.3%</td>
<td>10.9% Europe 13.7%</td>
<td>-9.9% MSCI EM -9.7%</td>
<td>21.1% MSCI EM 18.5%</td>
<td>-21.8% MSCI EM</td>
<td></td>
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</tr>
<tr>
<td>MSCI EM</td>
<td>-45.7%</td>
<td>1.5% TOPIX 7.6%</td>
<td>11.7% Europe 7.5%</td>
<td>-15.4% MSCI EM -12.5%</td>
<td>5.9% MSCI EM 20.9%</td>
<td>-6.5% MSCI EM 3.8%</td>
<td>7.4% Europe 5.2%</td>
<td>-4.9% MSCI EM -5.4%</td>
<td>3.2% Europe 7.9%</td>
<td>7.0% US S&amp;P 500 21.8%</td>
<td>-10.0% Europe -10.0%</td>
<td>20.7% Asia ex-Jp 18.2%</td>
<td>-22.5% Europe</td>
<td></td>
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<tr>
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<td>0.4% US S&amp;P 500 35.9%</td>
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<td>-14.3% Asia ex-Jp -14.6%</td>
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<td>10.1% TOPIX 10.3%</td>
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<td>6.6% TOPIX 0.3%</td>
<td>10.9% Europe 13.7%</td>
<td>-9.9% MSCI EM -9.7%</td>
<td>21.1% MSCI EM 18.5%</td>
<td>-21.8% MSCI EM</td>
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<td>MSCI EM</td>
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<td>1.5% TOPIX 7.6%</td>
<td>11.7% Europe 7.5%</td>
<td>-15.4% MSCI EM -12.5%</td>
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<td>20.7% Asia ex-Jp 18.2%</td>
<td>-22.5% Europe</td>
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</tbody>
</table>

**Current and historical yields for selected indices**

% yield, since 2008*

<table>
<thead>
<tr>
<th>Index</th>
<th>1-3 years</th>
<th>10+ years</th>
<th>US Treasury: all years</th>
<th>Euro inv. grade</th>
<th>US inv. grade</th>
<th>Euro high yield</th>
<th>US high yield</th>
<th>Global convertibles</th>
<th>EMD (USD Sov.)</th>
<th>EMD (Local Sov.)</th>
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</thead>
<tbody>
<tr>
<td>Euro Gov.</td>
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<td>Euro Gov.</td>
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<td>EMD (Local Sov.)</td>
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</table>

**Illustration of the impact a 1% rise in local interest rates may have on selected indices**

% change, assumes a parallel shift in the yield curve and spreads are maintained

-20 -16 -12 -8 -4 0 4 8 12 16 20

<table>
<thead>
<tr>
<th>Index</th>
<th>1-3 years</th>
<th>10+ years</th>
<th>US Treasury: all years</th>
<th>Euro inv. grade</th>
<th>US inv. grade</th>
<th>Euro high yield</th>
<th>US high yield</th>
<th>Global convertibles</th>
<th>EMD (USD Sov.)</th>
<th>EMD (Local Sov.)</th>
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<tr>
<td>Euro Gov.</td>
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Source: (All charts) Refinitiv Datastream, J.P. Morgan Asset Management.

*Historical yield range is since Jan 2008, convertibles is since Dec 2008.


For illustrative purposes only. Change in bond price is calculated using both duration and convexity, with the exception of convertibles, which is historical change. Past performance is not a reliable indicator of current and future results.

Guide to the Markets - Europe.

Data as of 31 March 2020.
Global government bond yields

Nominal 10-year government bond yields

Real 10-year government bond yields

Yield curve inversion and recession
Number of months from

<table>
<thead>
<tr>
<th>Yield curve inversion date</th>
<th>Curve inversion to S&amp;P 500 peak before recession</th>
<th>S&amp;P 500 peak to start of recession</th>
<th>Curve inversion to recession</th>
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<td>Sep '80</td>
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<td>Dec '88</td>
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<td>May '98</td>
<td>22</td>
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<td>Dec '05</td>
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<td>Median</td>
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<td>20</td>
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<tr>
<td>Average</td>
<td>17</td>
<td>5</td>
<td>22</td>
</tr>
</tbody>
</table>

US investment-grade bonds

**US investment-grade spread**

% option-adjusted spread over US government bond yield


Data as of 31 March 2020.
US high yield bonds

**US high yield spread and defaults**

<table>
<thead>
<tr>
<th></th>
<th>Latest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Default rate* (LHS)</td>
<td>3.4%</td>
</tr>
<tr>
<td>Energy spread (RHS)</td>
<td>20.5%</td>
</tr>
<tr>
<td>Ex-energy spread (RHS)</td>
<td>7.5%</td>
</tr>
</tbody>
</table>

Source: (Left) Bloomberg Barclays, J.P. Morgan Securities Research, J.P. Morgan Asset Management. HY spreads are using the Bloomberg Barclays US High Yield Energy and ex-Energy indices. 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. *2020 default rate is for the last 12 months. (Right) J.P. Morgan Economic Research, J.P. Morgan Asset Management. Net leverage is net debt divided by earnings before interest, tax, depreciation and amortisation (EBITDA). Interest coverage ratio is EBITDA divided by interest expense. Past performance is not a reliable indicator of current and future results. Guide to the Markets - Europe. Data as of 31 March 2020.
Europe and UK investment-grade bonds

Euro and UK investment-grade spreads
% option-adjusted spread over local government bond yield

- Euro
- UK

31 Mar 2020: 2.6%
31 Mar 2020: 2.4%

Europe high yield bonds

**Euro high yield spread and defaults**

%, default rate (LHS); %, option-adjusted spread (RHS)

<table>
<thead>
<tr>
<th>Year</th>
<th>Default rate* (LHS)</th>
<th>Spread (RHS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>'00</td>
<td>1,6%</td>
<td>7,7%</td>
</tr>
</tbody>
</table>

Latest: 1,6% for default rate; 7,7% for spread.

Source: (Left) BofA/Merrill Lynch, Refinitiv Datastream, J.P. Morgan Asset Management. Spread to worst is BofA/Merrill Lynch Euro Non-Financial High Yield Constrained. Default rates are reported by JPMAM GFICCC Quantitative Research Group. Defaults are defined as a bond rated as Ca or lower. The calculation universe is based on par value percentage of the BofA/Merrill Lynch Global High Yield Index (HW00) that is covered by Moody’s and filtered for EUR Developed Markets Ex-Financial. *2020 default rate is for the last 12 months. (Right) J.P. Morgan Securities Research, J.P. Morgan Asset Management. Net leverage is net debt divided by earnings before interest, tax, depreciation and amortisation (EBITDA). Interest coverage ratio is EBITDA divided by interest expense. Past performance is not a reliable indicator of current and future results. *Guide to the Markets - Europe.* Data as of 31 March 2020.
Emerging market bonds

Real 10-year government bond yields
% yield, local currency

- Developed markets
- Emerging markets

Corporate and sovereign EMD spreads
% spread over 10-year US Treasury

<table>
<thead>
<tr>
<th></th>
<th>Average since 2008</th>
<th>Latest</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM sovereigns local</td>
<td>4.2%</td>
<td>5.1%</td>
</tr>
<tr>
<td>EM sovereigns USD</td>
<td>3.6%</td>
<td>5.8%</td>
</tr>
<tr>
<td>EM corporates USD</td>
<td>3.6%</td>
<td>5.4%</td>
</tr>
</tbody>
</table>

Fixed income focus: Central bank asset purchases

Global fixed income spreads and returns

Fixed income spreads

\[ \text{%, option-adjusted spread} \]

- **Current**
- **Range since 2000**
- **Average**

Fixed income returns

<table>
<thead>
<tr>
<th>Year</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
<th>1Q20</th>
<th>Ann. return since '08</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM Debt</td>
<td>12.3%</td>
<td>15.8%</td>
<td>14.5%</td>
<td>15.8%</td>
<td>16.9%</td>
<td>17.0%</td>
<td>12.3%</td>
</tr>
<tr>
<td>US HY</td>
<td>12.0%</td>
<td>17.5%</td>
<td>12.0%</td>
<td>16.9%</td>
<td>14.5%</td>
<td>14.5%</td>
<td>12.0%</td>
</tr>
<tr>
<td>Euro HY</td>
<td>15.8%</td>
<td>14.5%</td>
<td>16.9%</td>
<td>14.5%</td>
<td>14.5%</td>
<td>14.5%</td>
<td>15.8%</td>
</tr>
<tr>
<td>US Treas.</td>
<td>6.1%</td>
<td>6.1%</td>
<td>0.9%</td>
<td>14.5%</td>
<td>14.5%</td>
<td>14.5%</td>
<td>6.1%</td>
</tr>
<tr>
<td>US IG</td>
<td>15.8%</td>
<td>14.5%</td>
<td>14.5%</td>
<td>14.5%</td>
<td>14.5%</td>
<td>14.5%</td>
<td>15.8%</td>
</tr>
<tr>
<td>Euro Gov</td>
<td>10.7%</td>
<td>14.5%</td>
<td>14.5%</td>
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<td>14.5%</td>
<td>14.5%</td>
<td>14.5%</td>
<td>15.8%</td>
</tr>
</tbody>
</table>

Commodities

WTI crude oil price and US rig count
USD/barrel (LHS); number of rigs (RHS)

Metal prices
Index level, rebased to 100 in Jan 2007

Gold vs. real US 10-year Treasury yield
$ per Troy ounce (LHS); %, inverted (RHS)

31 Mar 2020

Gold (LHS) $1.612
Real 10-year yield (RHS) -0.3%

Gold price
$ per Troy ounce

Inflation-adjusted gold price
Gold price

31 Mar 2020: $1.612

Stock-bond correlation and downside protection

Rolling six-month stock and bond correlations
Of weekly total return on US equities (S&P 500) and US Treasuries (10-yr)

Hedge fund returns in different market environments
% average total return in up and down months, 2001-present

Stock and bond returns moving in the same direction

**Global core infrastructure returns**  
% rolling 4-quarter returns from income and capital appreciation

**Macro hedge fund relative performance & volatility**  
Index level (LHS); % change year on year (RHS)

Source: (Left) MSCI, J.P. Morgan Asset Management. Infrastructure returns represented by the “low risk” category of the MSCI Global Quarterly Infrastructure Asset Index. Data show rolling one-year returns from income and capital appreciation. The chart shows the full index history, beginning in the first quarter of 2009. (Right) CBOE, Hedge Fund Research Indices (HFRI), Refinitiv Datastream, J.P. Morgan Asset Management. Macro hedge fund relative performance is calculated relative to the HFRI fund weighted hedge fund index. VIX is the implied volatility of S&P 500 Index based on options pricing. Past performance is not a reliable indicator of current and future results. *Guide to the Markets - Europe*. Data as of 31 March 2020.
Sustainable investment strategies

ESG INTEGRATION:
Consideration of material ESG information as part of the investment decision-making process

DEDICATED SUSTAINABLE STRATEGIES

EXCLUSIONS
The exclusion from a fund or portfolio of certain sectors, companies or practices based on specific ESG criteria

POSITIVE TILT
An investment style in which the portfolio will be tilted towards sectors, companies or projects with positive ESG characteristics, while also excluding companies based on ESG criteria

BEST-IN-CLASS
A comparative investment style that involves investing only in companies that lead their peer groups in ESG performance, while also excluding companies based on ESG criteria

THEMATIC
Top-down investment approach, investments in themes or assets specifically related to sustainability

IMPACT
Investments made with the primary goal of achieving specific, positive environmental/social benefits while also delivering a financial return

Sustainable investment policy interventions and market size

Global ESG-related policy measures
Cumulative number of policy interventions

Sustainable investment assets under management
USD trillions

2020 Long-Term Capital Market Assumptions expected returns in coming 10-15 years
%
annualised return in EUR

Source: 2020 Long-Term Capital Market Assumptions, J.P. Morgan Multi-Asset Solutions, J.P. Morgan Asset Management. Returns are nominal and in EUR. Past returns are calculated from the start of 2009 up to the end of 2019, or the most recent available data. The projections in the chart above are based on J.P. Morgan Asset Management’s proprietary long-term capital market assumptions (10-15 years) for returns of major asset classes. The resulting projections include only the benchmark return associated with the portfolio and do not include alpha from the underlying product strategies within each asset class. The assumptions are presented for illustrative purposes only. Past performance and forecasts are not a reliable indicator of current and future results. Guide to the Markets - Europe. Data as of 31 March 2020.
The cost of hedging

Hedging cost heatmap
Current annualised hedging cost based on 3-month FX forwards

Positive = yield pickup to hedge
Negative = cost to hedge

… and hedged into home currency

<table>
<thead>
<tr>
<th>USD</th>
<th>EUR</th>
<th>GBP</th>
<th>JPY</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-1,4%</td>
<td>-0,6%</td>
<td>-1,5%</td>
</tr>
<tr>
<td>+1,4%</td>
<td>-</td>
<td>+0,8%</td>
<td>-0,1%</td>
</tr>
<tr>
<td>+0,6%</td>
<td>-0,8%</td>
<td>-</td>
<td>-0,9%</td>
</tr>
<tr>
<td>+1,5%</td>
<td>+0,1%</td>
<td>+0,9%</td>
<td>-</td>
</tr>
</tbody>
</table>

Foreign asset in...

Rolling hedging costs
% annualised hedging cost based on 3-month FX forwards

Source: (All charts) Bloomberg, J.P. Morgan Asset Management. A positive number implies that an investor gains a yield pickup when hedging currency risk, and a negative number implies that an investor is charged to hedge currency risk, based on 3-month FX forward rates. Past performance is not a reliable indicator of current and future results. Guide to the Markets - Europe. Data as of 31 March 2020.
Life expectancy

Probability of reaching ages 80 and 90
% probability, persons aged 65, by gender and combined couple

<table>
<thead>
<tr>
<th></th>
<th>Men</th>
<th>Women</th>
<th>Couple – at least one lives to specified age</th>
</tr>
</thead>
<tbody>
<tr>
<td>80 years</td>
<td>67</td>
<td>76</td>
<td>92</td>
</tr>
<tr>
<td>90 years</td>
<td>24</td>
<td>35</td>
<td>51</td>
</tr>
</tbody>
</table>

The effect of compounding

€5,000 invested annually with 5% growth per year

EUR

Starting at age 25
Starting at age 35

€640,000
€354,000

Age

Investing principles

Starting at age 35
Starting at age 25

Without dividends reinvested
With dividends reinvested

€64,000
€23,000

€5,000 investment with/without income reinvested

EUR, MSCI Europe returns

With dividends reinvested
Without dividends reinvested

Source: (Left) J.P. Morgan Asset Management. For illustrative purposes only, assumes all income reinvested, actual investments may incur higher or lower growth rates and charges. (Right) Bloomberg, MSCI, J.P. Morgan Asset Management. Based on MSCI Europe Index and assumes no charges. Past performance is not a reliable indicator of current and future results. Guide to the Markets - Europe. Data as of 31 March 2020.
Income generated by €100,000 in a three-month bank deposit

EUR (LHS); % change year on year (RHS)

Effect of 2% inflation on purchasing power of €100,000

EUR, thousands

Source: (Left) Bloomberg, Eurostat, J.P. Morgan Asset Management. Inflation is the percentage change year on year for the eurozone harmonised index of consumer prices. Data shown are yearly averages. (Right) J.P. Morgan Asset Management. For illustrative purposes only, assumes no return on cash and an inflation rate of 2%. Past performance is not a reliable indicator of current and future results. Guide to the Markets - Europe. Data as of 31 March 2020.
Long-term asset returns

**Total return of $1 in real terms**

USD, log scale, total returns

<table>
<thead>
<tr>
<th>Annualised real returns</th>
<th>1900–2019</th>
<th>2000–2019</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Equities</strong></td>
<td>6.7%</td>
<td>3.9%</td>
</tr>
<tr>
<td><strong>Bonds</strong></td>
<td>2.2%</td>
<td>5.4%</td>
</tr>
<tr>
<td><strong>Cash</strong></td>
<td>0.6%</td>
<td>-0.4%</td>
</tr>
</tbody>
</table>

MSCI Europe intra-year declines vs. calendar-year returns

Despite average intra-year drops of 15.2% (median 12.0%), annual returns are positive in 31 of 40 years.

%  

Source: MSCI, Refinitiv Datastream, J.P Morgan Asset Management. Returns are local currency price returns. Intra-year decline refers to the largest market fall from peak to trough within a short time period during the calendar year. Returns shown are calendar years from 1980 to 2019. YTD is year to date. Past performance is not a reliable indicator of current and future results. Guide to the Markets - Europe. Data as of 31 March 2020.
Historic risk vs. return for selected asset classes

% annualised return 2004 – 2019 in EUR


US mutual fund and ETF flows and S&P 500
USD billions, three-month net flows (LHS); index level (RHS)

Avoid selling at the bottom

**Range of equity and bond total returns**

% annualised total returns, 1950-present

- **1-yr rolling**
  - Large cap equity: -43%
  - Bonds: -24%
  - 50/50 portfolio: 48%

- **5-yr rolling**
  - Large cap equity: -7%
  - Bonds: -3%
  - 50/50 portfolio: 24%

- **10-yr rolling**
  - Large cap equity: -3%
  - Bonds: 0%
  - 50/50 portfolio: 17%

- **20-yr rolling**
  - Large cap equity: 18%
  - Bonds: 13%
  - 50/50 portfolio: 15%

Source: Strategas/Ibbotson, J.P. Morgan Asset Management. Large cap equity represents the S&P 500 Composite and Bonds represents the Strategas/Ibbotson US Government Bond Index and US Long-term Corporate Bond Index. Returns shown are per annum and are calculated based on monthly returns from 1950 to latest available and include dividends. Past performance is not a reliable indicator of current and future results. *Guide to the Markets - Europe.*

Data as of 31 March 2020.
<table>
<thead>
<tr>
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<tbody>
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<td>EME</td>
<td>73.5%</td>
<td>RETs</td>
<td>36.4%</td>
<td>EMD</td>
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<td>DM Equities</td>
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<td>-5.5%</td>
<td>Govt bonds</td>
<td>13.0%</td>
<td>Portfolio</td>
</tr>
<tr>
<td>RETs</td>
<td>-34.1%</td>
<td>Hedge Funds</td>
<td>9.9%</td>
<td>IG bonds</td>
<td>13.2%</td>
<td>Hedge Funds</td>
<td>-5.8%</td>
<td>Cash</td>
<td>1.2%</td>
<td>Govt bonds</td>
<td>-8.4%</td>
<td>EME</td>
<td>11.8%</td>
<td>Cash</td>
</tr>
<tr>
<td>DM Equities</td>
<td>-37.2%</td>
<td>Cash</td>
<td>2.3%</td>
<td>Hedge Funds</td>
<td>12.5%</td>
<td>Cmty</td>
<td>-10.4%</td>
<td>Govt bonds</td>
<td>0.3%</td>
<td>Cash</td>
<td>-10.6%</td>
<td>Cash</td>
<td>0.3%</td>
<td>Cash</td>
</tr>
<tr>
<td>EME</td>
<td>-50.6%</td>
<td>Govt bonds</td>
<td>-0.6%</td>
<td>Cash</td>
<td>1.1%</td>
<td>EME</td>
<td>-15.4%</td>
<td>Cmty</td>
<td>-13.4%</td>
<td>Cmty</td>
<td>-5.5%</td>
<td>Cmty</td>
<td>-16.1%</td>
<td>Cash</td>
</tr>
</tbody>
</table>

Source: Bloomberg Barclays, FTSE, J.P. Morgan Economic Research, MSCI, Refinitiv Datastream, J.P. Morgan Asset Management. Annualised return covers the period from 2008 to 2019. Vol. is the standard deviation of annual returns. Govt bonds: Bloomberg Barclays Global Aggregate Government Treasuries; HY bonds: Bloomberg Barclays Global High Yield; EMD: J.P. Morgan EMBI Global; IG bonds: Bloomberg Barclays Global Aggregate – Corporates; Cmdty: Bloomberg Commodity; REITs: FTSE NAREIT All REITs; DM Equities: MSCI World; EME: MSCI EM; Hedge funds: HFR Global Hedge Fund Index; Cash: JP Morgan Cash Index EUR (3M). Hypothetical portfolio (for illustrative purposes only and should not be taken as a recommendation): 30% DM equities; 10% EM equities; 15% IG bonds; 12.5% government bonds; 7.5% HY bonds; 5% EMD; 5% commodities; 5% cash; 5% REITs and 5% hedge funds. All returns are total return, in EUR, and are unhedged. Past performance is not a reliable indicator of current and future results. Guide to the Markets - Europe. Data as of 31 March 2020.
J.P. Morgan Asset Management: Index definitions

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

The S&P 500® Index is widely regarded as the best single gauge of the U.S. equities market. This world-renowned index includes a representative sample of 500 leading companies in leading industries of the U.S. economy. Although the S&P 500® Index focuses on the large-cap segment of the market, with approximately 75% coverage of U.S. equities, it is also an ideal proxy for the total market. An investor cannot invest directly in an index.

The Russell 1000® Index® measures the performance of the 1,000 largest companies in the Russell 3000. The Russell 1000 Growth Index® measures the performance of those Russell 1000 companies with higher price-to-book ratios and higher forecasted growth values.

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

The 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. As of June 2007, the MSCI Emerging Markets Index consisted of the following 25 emerging market country indices: Argentina, Brazil, Chile, China, Colombia, Czech Republic, Egypt, Hungary, India, Indonesia, Israel, Jordan, Korea, Malaysia, Mexico, Morocco, Pakistan, Peru, Philippines, Poland, Russia, South Africa, Taiwan, Thailand, and Turkey.

The MSCI ACWI (All Country World Index) Index is a free float-adjusted market capitalization weighted index that is designed to measure the equity market performance of developed and emerging markets. As of June 2009 the MSCI ACWI consisted of 45 country indices comprising 23 developed and 22 emerging market country indices.

The Tokyo Price Index (TOPIX) is a capitalization-weighted index lists all firms that are considered to be under the 'first section' on the TSE, which groups all of the large firms on the exchange into one pool. The second section groups all of the remaining smaller firms.

The FTSE 100 Index is an index of the 100 largest companies (by market capitalization) in the United Kingdom.

The FTSE All Share Index is an index of the 630 largest companies (by market capitalization) in the United Kingdom.

The MSCI Value and Growth Indices℠ cover the full range of developed, emerging and All Country MSCI Equity indexes. As of the close of May 30, 2003, MSCI implemented an enhanced methodology for the MSCI Global Value and Growth Indices, adopting a two dimensional framework for style segmentation in which value and growth securities are categorized using different attributes - three for value and five for growth including forward-looking variables. The objective of the index design is to divide constituents of an underlying MSCI Standard Country Index into a value index and a growth index, each targeting 50% of the free float adjusted market capitalization of the underlying country index. Country Value/Growth indices are then aggregated into regional Value/Growth indices. Prior to May 30, 2003, the indices used Price/Book Value (PBV) ratios to divide the standard MSCI country indices into value and growth indices. All securities were classified as either "value" securities (low PBV/BV securities) or "growth" securities (high PBV/BV securities), relative to each MSCI country index.

The following MSCI Total Return Indices℠ are calculated with gross dividends:

This series approximates the maximum possible dividend reinvestment. The amount reinvested is the dividend distributed to individuals resident in the country of the company, but does not include tax credits.

The MSCI Europe Index℠ is a free float-adjusted market capitalization index that is designed to measure developed market equity performance in Europe. As of June 2007, the MSCI Europe Index consisted of the following 16 developed market country indices: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

The Bloomberg Barclays Global Aggregate Corporate Index consists of corporate issues in Europe, the US and Asia-Pacific regions.

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

The JPMorgan Corporate Emerging Markets Bond Index (CEMBI) The CEMBI tracks total returns of US dollar-denominated debt instruments issued by corporate entities in Emerging Markets countries, and consists of an investable universe of corporate bonds. Both indices are also available in Diversified version.

The MSCI World High Dividend Yield Index is composed of those securities that have higher-than-average dividend yield within its parent index, a track record of consistent dividend payments and the capacity to sustain future dividend payments.

The MSCI Europe Index℠ is a free float-adjusted market capitalization index that is designed to measure equity market performance in Europe. As of June 2007, the MSCI Europe Index consisted of the following 16 developed market country indices: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

The Bloomberg Barclays U.S. Aggregate Index represents securities that are SEC-registered, taxable, and dollar denominated. The index covers the U.S. investment grade fixed rate bond market, with index components for government and corporate securities, mortgage pass-through securities, and asset-backed securities.

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

The Bloomberg Barclays High Yield Index covers the universe of fixed rate, non-investment grade debt, Pay-in-kind (PIK) bonds, Eurobonds, and debt issues from countries designated as emerging markets (e.g., Argentina, Brazil, Venezuela, etc.) are excluded, but Canadian and global bonds (SEC registered) of issuers in non-EMG countries are included.

The Bloomberg Barclays Euro-Aggregate Index is a comprehensive global local emerging markets index, and consists of liquid, fixed-rate, domestic currency government bonds.
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Unless otherwise stated, all data as of 31 March 2020 or most recently available.

Guide to the Markets - Europe

JP-LITTLEBOOK

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