Global growth

Real GDP growth
% change year on year

2019 consensus forecast

- US 2.3%
- UK 1.2%
- Eurozone 1.1%
- Japan 0.9%

Source: Markit, J.P. Morgan Asset Management. 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 30 September 2019.
Unemployment rates

- Eurozone
- UK
- US
- Japan

Global inflation

<table>
<thead>
<tr>
<th>Country</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Developed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emerging</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eurozone</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Germany</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Italy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spain</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Greece</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ireland</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sweden</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Switzerland</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UK</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>US</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Japan</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>China</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indonesia</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Korea</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Taiwan</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>India</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brazil</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mexico</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Russia</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Global core inflation

Core inflation
% change year on year

Headline inflation target

<table>
<thead>
<tr>
<th></th>
<th>Average since 2000</th>
<th>Latest</th>
</tr>
</thead>
<tbody>
<tr>
<td>US</td>
<td>2,0%</td>
<td>2,4%</td>
</tr>
<tr>
<td>UK</td>
<td>1,7%</td>
<td>1,5%</td>
</tr>
<tr>
<td>Eurozone</td>
<td>1,4%</td>
<td>1,0%</td>
</tr>
<tr>
<td>Japan</td>
<td>-0,2%</td>
<td>0,6%</td>
</tr>
</tbody>
</table>

Source: 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. Past performance is not a reliable indicator of current and future results. Guide to the Markets - Europe. Data as of 30 September 2019.
Global central bank policy

Market expectations for policy rate

Central bank balance sheets

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. *Balance sheet forecast assumptions: BoE to have zero net asset purchases over the forecast period; BoJ to have an annualised net asset purchase pace of 20 trillion yen over the forecast period; ECB to have net asset purchases of 20 billion euros per month over the forecast period beginning in November 2019; SNB to have zero net asset purchases over the forecast period; Fed to increase assets in line with currency in circulation. Past performance is not a reliable indicator of current and future results.

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

Exports of goods
% of nominal GDP, 2018

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


Data as of 30 September 2019.
Productivity and population growth

Drivers of US GDP growth
Annualised % change

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.

Global working-age population growth
Annualised % change

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 30 September 2019.
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 30 September 2019.
US business surveys

US ISM manufacturing: New orders
Index level

US ISM non-manufacturing
Index level

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 30 September 2019.
US future capex intentions and business investment
% change year on year (LHS); index level (RHS)

Future capex intentions
Duke CFO future capex intentions

US consumer confidence: Present situation
% change year on year

Recession

Elevated recession risk

US house prices relative to income
Index level

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 30 September 2019.
US Conference Board indicators

**US Leading Economic Index**

% change year on year

Recession

Elevated recession risk

**US Leading Credit Index**

Index level

Lending conditions tightening

Elevated recession risk

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 and corporate finances

**US household debt and net saving**

- % of nominal GDP
- *Recession*
- *Household net saving*

**US non-financial corporate debt and net saving**

- % of nominal GDP
- *Non-financial corporate debt*
- *Non-financial corporate net saving*

US inflation

**US headline and core inflation**

% change year on year

<table>
<thead>
<tr>
<th>Average since 2000</th>
<th>August 2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Headline CPI</td>
<td>2,2%</td>
</tr>
<tr>
<td>Core CPI</td>
<td>2,0%</td>
</tr>
</tbody>
</table>

**US core goods and services inflation**

% change year on year

<table>
<thead>
<tr>
<th>Average since 2000</th>
<th>August 2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Services CPI</td>
<td>2,8%</td>
</tr>
<tr>
<td>Core goods CPI</td>
<td>0,0%</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.

Federal funds policy rate expectations
% Fed funds rate, FOMC and market expectations

**FOMC September 2019 forecasts** (%)

<table>
<thead>
<tr>
<th></th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
<th>2022</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change in real GDP, 4Q to 4Q</td>
<td>2.2</td>
<td>2.0</td>
<td>1.9</td>
<td>1.8</td>
</tr>
<tr>
<td>Unemployment rate, 4Q</td>
<td>3.7</td>
<td>3.7</td>
<td>3.8</td>
<td>3.9</td>
</tr>
<tr>
<td>PCE inflation, 4Q to 4Q</td>
<td>1.5</td>
<td>1.9</td>
<td>2.0</td>
<td>2.0</td>
</tr>
</tbody>
</table>

US focus: Economic impact of trade conflict

US voters who have an unfavourable opinion of China

Republican / Lean Republican

Democrat / Lean Democrat


Trade is defined as the sum of exports and imports, and is shown as a percentage of GDP in each country/region. Data for the eurozone, UK and China is up to 2018, and the US is shown up to 2017 due to data availability. Past performance is not a reliable indicator of current and future results. Guide to the Markets - Europe.

Data as of 30 September 2019.
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 30 September 2019.
Eurozone business investment

Eurozone future capex intentions and business investment
% change year on year (LHS); index level, four-quarter moving average (RHS)


Eurozone consumer confidence

Eurozone house prices relative to income


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

Eurozone labour market

Eurozone unemployment rate and wage growth

%, wage growth is year on year

Eurozone 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>September (flash) 2019</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Headline CPI</strong></td>
<td>1.7%</td>
<td>0.9%</td>
</tr>
<tr>
<td><strong>Core CPI</strong></td>
<td>1.4%</td>
<td>1.0%</td>
</tr>
</tbody>
</table>

Eurozone core goods and services inflation

% change year on year

<table>
<thead>
<tr>
<th></th>
<th>Average since 2000</th>
<th>September (flash) 2019</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Services CPI</strong></td>
<td>1.9%</td>
<td>1.5%</td>
</tr>
<tr>
<td><strong>Core goods CPI</strong></td>
<td>0.6%</td>
<td>0.3%</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 30 September 2019.
European Central Bank policy rate expectations
% deposit rate, market expectations

<table>
<thead>
<tr>
<th>ECB staff September 2019 forecasts* (%)</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real GDP growth (y/y)</td>
<td>1,1</td>
<td>1,2</td>
<td>1,4</td>
</tr>
<tr>
<td>Unemployment rate</td>
<td>7,7</td>
<td>7,5</td>
<td>7,3</td>
</tr>
<tr>
<td>HICP inflation (y/y)</td>
<td>1,2</td>
<td>1,0</td>
<td>1,5</td>
</tr>
</tbody>
</table>

Global economy

Eurozone debt to GDP ratios

% of nominal GDP

Households

Non-financial corporates

Government

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 30 September 2019.
Eurozone government debt and bond spreads

France, Germany, Italy and Spain government debt to GDP
% of nominal GDP

European 10-year government bond spreads over Germany
% spread


European parliament seat breakdown

% of seats

- Pro-Europe
- Moderately Eurosceptic
- Eurosceptic
- Other

2004
2009
2014
2019

Survey results: Do you support the euro?

% answering “yes”

- Nov ’13
- Nov ’18
- Jun ’19

Italy
France
Spain
Germany

Eurozone focus: Negative rates and government spending

Swiss policy rates and deposit rates

Household deposit rate

Corporate deposit rate

SNB policy rate

Government interest expense

% of nominal GDP

Source: (Left) Refinitiv Datastream, Swiss National Bank (SNB), J.P. Morgan Asset Management. Prior to June 2019, the SNB policy rate refers to the midpoint of the SNB’s target range for three-month LIBOR. Household deposit rate is represented by the savings account deposit rate and corporate deposit rate is represented by the one-month term deposit rate. (Right) IMF, 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 30 September 2019.
Contribution to UK real GDP growth and composite PMI

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

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 30 September 2019.
UK consumer confidence
Index level, three-month moving average

UK house prices relative to income
Index level

UK inflation

UK headline and core inflation
% change year on year

<table>
<thead>
<tr>
<th></th>
<th>Average since 2000</th>
<th>August 2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Headline CPI</td>
<td>2.1%</td>
<td>1.7%</td>
</tr>
<tr>
<td>Core CPI</td>
<td>1.7%</td>
<td>1.5%</td>
</tr>
</tbody>
</table>

Headline inflation target

UK core goods and services inflation
% change year on year

<table>
<thead>
<tr>
<th></th>
<th>Average since 2000</th>
<th>August 2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Services CPI</td>
<td>3.3%</td>
<td>2.2%</td>
</tr>
<tr>
<td>Core goods CPI</td>
<td>-0.7%</td>
<td>0.4%</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 30 September 2019.
UK focus: Sterling and stocks

Sterling
Exchange rate, GBPUSD: US dollars per pound; GBPEUR: euros per pound

- Sterling depreciating
- Brexit referendum

Valuation gap between FTSE 100 and MSCI World
x, difference in 12-month forward P/E ratios

- Brexit referendum
- UK stocks cheapening relative to DM stocks

Source: (Left) Refinitiv Datastream, J.P. Morgan Asset Management. (Right) MSCI, Refinitiv Datastream, J.P. Morgan Asset Management. The P/E gap is the 12-month forward price-to-earnings ratio of the FTSE 100 minus the 12-month forward price-to-earnings ratio of MSCI World. A zero level represents both indices trading at the same valuation level, a negative level represents the FTSE 100 trading on a cheaper valuation than MSCI World. Past performance is not a reliable indicator of current and future results. Guide to the Markets - Europe. Data as of 30 September 2019.
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 30 September 2019.
China GDP

China debt to GDP ratios

% of nominal GDP

Non-financial corporates

Government

Households

China credit growth

% change year on year

Total social financing

Broad credit

RMB bank lending

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 three measures of credit ranging from the narrowest – RMB bank lending – to the more extensive broad credit. Specifically, RMB bank lending is the sum of all loans made by the commercial banking system to domestic borrowers. Total social financing (TSF) is all funding to domestic borrowers that is not explicitly backed by the sovereign and thus includes bank lending, trust loans, entrusted loans, bankers’ acceptances, corporate bonds and equity financing by non-financial enterprises, asset-backed securities, loan write-offs and local government “special” bonds. Broad credit is total social financing plus all finance provided by local and central governments. Past performance is not a reliable indicator of current and future results.

## China inflation and policy rates

### China inflation

<table>
<thead>
<tr>
<th>% change year on year</th>
<th>Average since 2007</th>
<th>August 2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Headline CPI</td>
<td>2.7%</td>
<td>2.8%</td>
</tr>
<tr>
<td>Core CPI</td>
<td>1.3%</td>
<td>1.5%</td>
</tr>
<tr>
<td>Headline PPI</td>
<td>1.1%</td>
<td>-0.8%</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>% rate</th>
<th>SHIBOR</th>
<th>RRR</th>
</tr>
</thead>
</table>

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 30 September 2019.
Emerging markets currencies and current account balance

**EM currencies vs. US dollar**

- % from fair value, relative to US dollar

**EM current account balance**

- % of nominal GDP

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 30 September 2019.
Emerging markets structural dynamics

Urbanisation, real GDP per capita and population size

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

Emerging markets focus: China stimulus and the EM cycle

**China stimulus**

<table>
<thead>
<tr>
<th>Year</th>
<th>Central government</th>
<th>Local government</th>
<th>Tax cuts</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008-2009</td>
<td>3.4%</td>
<td>4.7%</td>
<td>4.9%</td>
</tr>
<tr>
<td>2015-2016</td>
<td>4.8%</td>
<td>5.6%</td>
<td>5.4%</td>
</tr>
<tr>
<td>2018-2019</td>
<td>6.1%</td>
<td>7.2%</td>
<td>6.5%</td>
</tr>
</tbody>
</table>

Source: (Left) Ministry of Finance of China, J.P. Morgan Securities Research, J.P. Morgan Asset Management. Central government spending is the incremental expenditure by the central government on infrastructure construction and subsidies to certain economic sectors. The spending is financed by tax revenue and issuance of treasury bonds. Local government spending is mostly composed of infrastructure investment conducted by local governments and their financing vehicles. These investments are mainly financed by bank loans, issuance of special local government bonds, policy bank loans and Private Public Partnership (PPP) projects. Tax cuts include cuts to VAT, personal income tax, corporate taxes and tariffs. (Right) Markit, MSCI, Refinitiv Datastream, J.P. Morgan Asset Management. EM is MSCI Emerging Markets, DM is MSCI World. Relative performance figures are calculated from total return indices in USD. Past performance is not a reliable indicator of current and future results. Guide to the Markets - Europe. Data as of 30 September 2019.
Global equity earnings and valuations

Global earnings per share
NTM EUR earnings per share estimates, rebased to 100 in Jan 2009

Source: (All charts) IBES, MSCI, Refinitiv Datastream, Standard & Poor's, J.P. Morgan Asset Management. NTM is next 12 months. In both charts, MSCI indices are used for all regions/countries, except for the US, which is represented by the S&P 500. EM is emerging markets. Past performance is not a reliable indicator of current and future results. Guide to the Markets - Europe. Data as of 30 September 2019.
The graph illustrates the performance of the S&P 500 Index from 1900 to 2019, highlighting key events such as World War I (1914-1918), World War II (1939-1945), the Great Depression (1929-1939), Oil shocks (1973 & 1979), Black Monday (1987), Global financial crisis (2008), and the Tech bust (2000). The log scale emphasizes the magnitude of changes in the index over time.


Data as of 30 September 2019.
**S&P 500 earnings and performance**

Next 12 months’ earnings per share estimates (LHS); index level (RHS)

**S&P 500 earnings per share growth**

% change year on year

---

**Source:** (All charts) IBES, Refinitiv Datastream, Standard & Poor’s, J.P. Morgan Asset Management. EPS is earnings per share. Expected earnings growth and delivered earnings growth are calculated using IBES consensus estimates for next 12 months’ EPS and last 12 months’ EPS, respectively. Year on year growth rates are calculated using year-end data. Past performance is not a reliable indicator of current and future results. *Guide to the Markets - Europe.*

Data as of 30 September 2019.
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 cyclically-adjusted P/E ratio</td>
<td>25.8x</td>
<td>29.0x</td>
</tr>
<tr>
<td>P/B ratio</td>
<td>2.9x</td>
<td>3.3x</td>
</tr>
</tbody>
</table>

US valuations and subsequent returns

Forward P/E ratios and subsequent 1-year returns
%

Current level

Forward P/E ratios and subsequent 10-year returns
%

Current level

US Fed funds rate and equities/government bonds relative performance

% (LHS); relative total return index level, rebased to 100 in 1997 (RHS)

US Fed funds rate

DM equities / DM government bonds

DM equities outperforming DM government bonds

Characteristics of past bear and bull markets*

<table>
<thead>
<tr>
<th>Market corrections</th>
<th>Bear markets</th>
<th>Macro environment</th>
<th>Bull markets</th>
<th>Return before peak</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Market peak</td>
<td>Bear return</td>
<td>Duration (months)</td>
<td>Bull start date</td>
</tr>
<tr>
<td>Crash of 1929 – excessive leverage, irrational exuberance</td>
<td>Sep 1929</td>
<td>-86%</td>
<td>33</td>
<td>June 1932</td>
</tr>
<tr>
<td>1937 Fed Tightening – premature policy tightening</td>
<td>Mar 1937</td>
<td>-60%</td>
<td>63</td>
<td>Apr 1942</td>
</tr>
<tr>
<td>Post WWII crash – post-war demobilisation, recession fears</td>
<td>May 1946</td>
<td>-30%</td>
<td>37</td>
<td>Jun 1949</td>
</tr>
<tr>
<td>Flash crash of 1962 – flash crash, Cuban Missile Crisis</td>
<td>Dec 1961</td>
<td>-28%</td>
<td>7</td>
<td>Jun 1962</td>
</tr>
<tr>
<td>Tech crash of 1970 – economic overheating, civil unrest</td>
<td>Nov 1968</td>
<td>-36%</td>
<td>18</td>
<td>May 1970</td>
</tr>
<tr>
<td>Stagflation – OPEC oil embargo</td>
<td>Jan 1973</td>
<td>-48%</td>
<td>21</td>
<td>Oct 1974</td>
</tr>
<tr>
<td>Volcker Tightening – campaign against inflation</td>
<td>Nov 1980</td>
<td>-27%</td>
<td>21</td>
<td>Aug 1982</td>
</tr>
<tr>
<td>1987 crash – programme trading, overheating markets</td>
<td>Aug 1987</td>
<td>-34%</td>
<td>3</td>
<td>Dec 1987</td>
</tr>
<tr>
<td>Tech bubble – extreme valuations, “dot com” boom/bust</td>
<td>Mar 2000</td>
<td>-49%</td>
<td>31</td>
<td>Oct 2002</td>
</tr>
<tr>
<td>Global Financial Crisis – leverage/housing, Lehman collapse</td>
<td>Oct 2007</td>
<td>-57%</td>
<td>17</td>
<td>Mar 2009</td>
</tr>
<tr>
<td>Current cycle</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>MEDIAN</td>
<td>–</td>
<td>-42%</td>
<td>21</td>
<td>–</td>
</tr>
</tbody>
</table>

Source: Bloomberg, NBER, Robert Shiller, 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. Periods of “recession” are defined using US National Bureau of Economic Research (NBER) business cycle dates. Chart and table show 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 30 September 2019.
S&P 500 total return index: Dividends and capital appreciation

% average annualised returns

Sources of income

% yield

Europe average inflation: 1.7% (12 months to August 2019)

-0.6

0.0

0.4

2.9

3.6

4.1

4.1

4.8

5.2

5.8

9.4

-10

-5.3%

0.0

4.7%

5.4%

6.0%

5.1%

4.4%

4.2%

4.4%

2.5%

1.8%

9.4%

5.9%

10

13.9%

3.0%

13.6%

4.4%

1.6%

12.6%

15.3%

-2.7%

2.1%

4.0%

1926-1929

1930s

1940s

1950s

1960s

1970s

1980s

1990s

2000s

2010-2018

1926-2018

-2

0

2

4

6

8

10

Equity

Fixed income

Alternatives

German Bunds

Cash

Euro IG

EM equity

MSCI Europe

Global REITs

Global convertibles

Global infrastructure

EM debt

DM high yield

Global transport

-0.6

0.0

0.4

2.9

3.6

4.1

4.1

4.8

5.2

5.8

9.4

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>S&amp;P 500 weight</td>
<td>2.7%</td>
<td>9.3%</td>
<td>4.5%</td>
<td>12.9%</td>
<td>10.1%</td>
<td>21.9%</td>
<td>10.4%</td>
<td>3.2%</td>
<td>13.7%</td>
<td>7.6%</td>
<td>3.6%</td>
<td>100%</td>
</tr>
<tr>
<td>Russell Growth weight</td>
<td>1.4%</td>
<td>10.0%</td>
<td>0.3%</td>
<td>3.2%</td>
<td>14.4%</td>
<td>37.6%</td>
<td>11.4%</td>
<td>2.6%</td>
<td>14.2%</td>
<td>4.9%</td>
<td>0.0%</td>
<td>100%</td>
</tr>
<tr>
<td>Russell Value weight</td>
<td>4.3%</td>
<td>9.4%</td>
<td>8.4%</td>
<td>23.6%</td>
<td>6.1%</td>
<td>6.0%</td>
<td>8.2%</td>
<td>5.5%</td>
<td>12.4%</td>
<td>9.2%</td>
<td>7.0%</td>
<td>100%</td>
</tr>
<tr>
<td>3Q 2019</td>
<td>-0.1</td>
<td>1.0</td>
<td>-6.3</td>
<td>2.0</td>
<td>0.5</td>
<td>3.3</td>
<td>2.2</td>
<td>7.7</td>
<td>-2.2</td>
<td>6.1</td>
<td>9.3</td>
<td>1.7</td>
</tr>
<tr>
<td>YTD</td>
<td>17.1</td>
<td>22.6</td>
<td>6.0</td>
<td>19.6</td>
<td>22.5</td>
<td>31.4</td>
<td>21.7</td>
<td>29.7</td>
<td>5.6</td>
<td>23.3</td>
<td>25.4</td>
<td>20.6</td>
</tr>
<tr>
<td>Since market peak**</td>
<td>76.5</td>
<td>127.1</td>
<td>0.9</td>
<td>23.5</td>
<td>282.5</td>
<td>291.7</td>
<td>64.4</td>
<td>112.3</td>
<td>212.3</td>
<td>205.6</td>
<td>149.3</td>
<td>145.5</td>
</tr>
<tr>
<td>Since market low***</td>
<td>320.5</td>
<td>524.3</td>
<td>84.9</td>
<td>574.2</td>
<td>785.5</td>
<td>720.7</td>
<td>214.1</td>
<td>687.2</td>
<td>403.5</td>
<td>328.6</td>
<td>336.4</td>
<td>448.7</td>
</tr>
</tbody>
</table>

Source: FactSet, Russell Investment Group, Standard & Poor’s, J.P. Morgan Asset Management. All calculations are cumulative total return in USD, not annualised, including dividends for the stated period. *Communication Services (formerly Telecom) averages are based on five years of backtested data by JPMAM. **Since market peak** represents period 9 October 2007 to end of last quarter. ***Since market low*** represents period 9 March 2009 to end of last quarter. 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. Averages are since 1996 due to data availability. Past performance is not a reliable indicator of current and future results. Guide to the Markets - Europe. Data as of 30 September 2019.
MSCI Europe earnings and performance
Next 12 months’ earnings per share estimates (LHS); index level (RHS)

MSCI Europe earnings per share growth
% change year on year

Source: (All charts) IBES, MSCI, Refinitiv Datastream, J.P. Morgan Asset Management. EPS is earnings per share. Expected earnings growth and delivered earnings growth are calculated using IBES consensus estimates for next 12 months’ EPS and last 12 months’ EPS, respectively. Year on year growth rates are calculated using year-end data. Past performance is not a reliable indicator of current and future results. Guide to the Markets - Europe. Data as of 30 September 2019.
MSCI Europe and composite PMI

Index level

1.800
1.600
1.400
1.200
1.000
0.800
0.600
0.400
0.200
0.000

MSCI Europe

Europe composite PMI

Recession

Europe equity market and currency

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

Europe equity valuations

MSCI Europe forward P/E ratio

<table>
<thead>
<tr>
<th>Valuation measure</th>
<th>Average since 1990</th>
<th>Latest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cyclically-adjusted P/E ratio</td>
<td>19,4x</td>
<td>18,7x</td>
</tr>
<tr>
<td>P/B ratio</td>
<td>2,1x</td>
<td>1,8x</td>
</tr>
</tbody>
</table>

30 September 2019: 13,7x

MSCI Europe large, mid and small cap performance
Index level, rebased to 100 in 2000

# Europe sector returns and valuations

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>MSCI Europe weight</td>
<td>17,6%</td>
<td>13,5%</td>
<td>14,9%</td>
<td>9,8%</td>
<td>13,4%</td>
<td>7,1%</td>
<td>7,2%</td>
<td>4,7%</td>
<td>4,5%</td>
<td>5,8%</td>
<td>100%</td>
</tr>
<tr>
<td>Growth weight</td>
<td>4,6%</td>
<td>17,8%</td>
<td>24,7%</td>
<td>12,6%</td>
<td>19,0%</td>
<td>6,6%</td>
<td>1,0%</td>
<td>1,9%</td>
<td>1,2%</td>
<td>10,1%</td>
<td>100%</td>
</tr>
<tr>
<td>Value weight</td>
<td>32,6%</td>
<td>8,6%</td>
<td>3,6%</td>
<td>6,6%</td>
<td>7,0%</td>
<td>7,8%</td>
<td>14,3%</td>
<td>7,9%</td>
<td>8,2%</td>
<td>0,8%</td>
<td>100%</td>
</tr>
</tbody>
</table>

| 3Q 2019 | 0,7 | 5,1 | 5,1 | 0,8 | 1,6 | -2,8 | -3,1 | 5,7 | 8,8 | 0,0 | 2,1 |
| YTD | 13,5 | 21,6 | 25,5 | 23,0 | 24,5 | 15,8 | 8,5 | 4,7 | 25,9 | 26,7 | 19,2 |

| Since market peak*** | -25,8 | 157,2 | 184,9 | 107,8 | 68,1 | 36,6 | 57,3 | 48,3 | 41,9 | 70,9 | 52,6 |
| Since market low**** | 227,6 | 275,1 | 309,3 | 366,4 | 318,0 | 220,4 | 128,4 | 113,7 | 139,4 | 332,1 | 232,7 |

| Beta to Europe | 1,29 | 0,74 | 0,66 | 1,07 | 1,09 | 1,22 | 0,98 | 0,84 | 0,84 | 1,00 | 1,00 |
| Forward P/E ratio | 9,6x | 16,2x | 18,7x | 12,9x | 16,1x | 13,1x | 10,4x | 13,6x | 15,1x | 19,8x | 13,7x |
| Average since 1995 | 12,0x | 17,5x | 17,1x | 14,8x | 14,9x | 12,9x | 13,2x | 13,8x | 13,9x | 17,3x | 14,6x |
| Trailing P/E ratio | 10,0x | 17,3x | 20,3x | 14,2x | 17,9x | 13,8x | 11,8x | 14,8x | 16,2x | 23,6x | 14,8x |
| Average since 1995 | 13,6x | 19,2x | 18,6x | 17,5x | 17,2x | 14,4x | 14,2x | 14,2x | 14,5x | 20,2x | 16,4x |
| Dividend yield | 5,3% | 2,8% | 2,7% | 3,0% | 2,5% | 2,5% | 3,9% | 5,9% | 4,8% | 4,5% | 1,4% | 3,6% |
| Average since 1995 | 3,6% | 2,5% | 2,6% | 2,7% | 2,7% | 3,0% | 4,0% | 4,0% | 4,5% | 1,6% | 3,1% |

Source: MSCI, Refinitiv Datastream, J.P Morgan Asset Management. All calculations are total return in local currency, not annualised. Technology and Communication Services have forward and trailing P/E averages since 2005 due to data availability. *Financials no longer includes real estate, which is now a separate section making up 2,5% of the MSCI Europe Value Index and 0,4% of the MSCI Europe growth Index. It is not included in the chart due to a lack of historical data for the sector. **Telecommunication Services was renamed as Communication Services in December 2018 and reconstituted along with Technology and Consumer Discretionary sectors. *** “Since market peak” represents period 9 October 2007 to end of latest quarter. **** “Since market low” represents period 9 March 2009 to end of latest quarter. Past performance is not a reliable indicator of current and future results. Guide to the Markets - Europe. Data as of 30 September 2019.
UK earnings

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

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

Source: (All charts) FTSE, IBES, Refinitiv Datastream, J.P. Morgan Asset Management. EPS is earnings per share. Expected earnings growth and delivered earnings growth are calculated using IBES consensus estimates for next 12 months’ EPS and last 12 months’ EPS, respectively. Year on year growth rates are calculated using year-end data. Past performance is not a reliable indicator of current and future results. Guide to the Markets - Europe. Data as of 30 September 2019.
TOPIX earnings and performance
Index level, next 12 months’ earnings estimates (LHS); index level (RHS)

TOPIX earnings per share growth
% change year on year

Source: (All charts) IBES, Refinitiv Datastream, TOPIX, J.P. Morgan Asset Management. EPS is earnings per share. Expected earnings growth and delivered earnings growth are calculated using IBES consensus estimates for next 12 months’ EPS and last 12 months’ EPS, respectively. Year on year growth rates are calculated using year-end data, which is on 31 March for Japan, with the calendar year continuing until 31 March of the following year. Past performance is not a reliable indicator of current and future results. Guide to the Markets - Europe. Data as of 30 September 2019.
Japan equity market and currency

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

Japan corporate profits and return on equity

% of GDP (LHS); % (RHS)

Emerging markets equity drivers

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

**EM / DM relative equity performance and USD REER**
Relative index level (LHS); index level (RHS)

Emerging markets equity valuations and subsequent returns

MSCI EM price-to-book ratio

\[ x, \text{ multiple} \]

MSCI EM price-to-book ratio and subsequent 10-year returns

\[ \% \text{, annualised total return}^* \]

Correlation and volatility

Cross country equity index correlation
% rolling six-month average pairwise correlations

VIX volatility index
Index level, implied volatility of S&P 500 Index based on options pricing

Increasing correlation between different countries’ equity markets

Data as of 30 September 2019.
Equity focus: Buybacks and income generation

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

Income generated by equities in an equity/bond portfolio
% of total income, equity/bond portfolio weighted 50:50

Source: (Left) Bernstein, Bloomberg, J.P. Morgan Asset Management. (Right) Bloomberg Barclays, FTSE, Markit, MSCI, Refinitiv Datastream, J.P. Morgan Asset Management. For GBP portfolio, indices used are FTSE All-Share and iBoxx United Kingdom Overall. For EUR portfolio, indices used are MSCI EMU (European Economic and Monetary Union) and Bloomberg Barclays Euro Aggregate. For USD portfolio, indices used are MSCI USA and Bloomberg Barclays US Aggregate Index. Equity income is based on dividend yields. Past performance is not a reliable indicator of current and future results. Guide to the Markets - Europe. Data as of 30 September 2019.
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>EUR</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Local</td>
<td>-23.0%</td>
<td>73.5%</td>
<td>35.4%</td>
<td>5.5%</td>
<td>20.8%</td>
<td>27.2%</td>
<td>29.5%</td>
<td>24.4%</td>
<td>16.6%</td>
<td>24.8%</td>
<td>0.4%</td>
<td>26.4%</td>
</tr>
<tr>
<td>US S&amp;P 500</td>
<td>-33.7%</td>
<td>67.2%</td>
<td>28.3%</td>
<td>3.5%</td>
<td>18.1%</td>
<td>26.7%</td>
<td>19.7%</td>
<td>12.9%</td>
<td>15.5%</td>
<td>21.0%</td>
<td>-1.5%</td>
<td>21.0%</td>
</tr>
<tr>
<td></td>
<td>-37.0%</td>
<td>Asia ex-Jp</td>
<td>15.6%</td>
<td>HDY Equity</td>
<td>Europe</td>
<td>US S&amp;P 500</td>
<td>Asia ex-Jp</td>
<td>Small Cap</td>
<td>US S&amp;P 500</td>
<td>MSCI EM</td>
<td>-3.9%</td>
<td>Small Cap</td>
</tr>
<tr>
<td>HDY Equity</td>
<td>-38.0%</td>
<td>40.2%</td>
<td>27.5%</td>
<td>16.8%</td>
<td>16.5%</td>
<td>11.5%</td>
<td>14.9%</td>
<td>12.4%</td>
<td>11.2%</td>
<td>12.0%</td>
<td>-9.1%</td>
<td>20.8%</td>
</tr>
<tr>
<td></td>
<td>-34.4%</td>
<td>Small Cap</td>
<td>14.4%</td>
<td>TOPIX</td>
<td>Small Cap</td>
<td>MSCI EM</td>
<td>Small Cap</td>
<td>MSCI EM</td>
<td>Small Cap</td>
<td>Small Cap</td>
<td>-9.1%</td>
<td>HDY Equity</td>
</tr>
<tr>
<td>Small Cap</td>
<td>-38.6%</td>
<td>37.6%</td>
<td>23.9%</td>
<td>20.5%</td>
<td>20%</td>
<td>15.3%</td>
<td>8.3%</td>
<td>10.1%</td>
<td>10%</td>
<td>9.9%</td>
<td>-9.4%</td>
<td>TOPIX</td>
</tr>
<tr>
<td>Portfolio</td>
<td>-40.4%</td>
<td>34.0%</td>
<td>23.1%</td>
<td>15.3%</td>
<td>15.3%</td>
<td>8.3%</td>
<td>14.3%</td>
<td>HDY Equity</td>
<td>11.2%</td>
<td>HDY Equity</td>
<td>13.1%</td>
<td>Europe</td>
</tr>
<tr>
<td></td>
<td>-40.1%</td>
<td>HDY Equity</td>
<td>30.2%</td>
<td>US S&amp;P 500</td>
<td>Europe</td>
<td>US S&amp;P 500</td>
<td>Europe</td>
<td>HDY Equity</td>
<td>Europe</td>
<td>HDY Equity</td>
<td>13%</td>
<td>Europe</td>
</tr>
<tr>
<td>Europe</td>
<td>-43.3%</td>
<td>32.6%</td>
<td>20.9%</td>
<td>-9.6%</td>
<td>13.9%</td>
<td>11.8%</td>
<td>6.3%</td>
<td>8.9%</td>
<td>8.2%</td>
<td>15.8%</td>
<td>Europe</td>
<td>0.9%</td>
</tr>
<tr>
<td></td>
<td>-38.5%</td>
<td>Europe</td>
<td>28.6%</td>
<td>TOPIX</td>
<td>HDY Equity</td>
<td>Small Cap</td>
<td>HDY Equity</td>
<td>US S&amp;P 500</td>
<td>HDY Equity</td>
<td>HDY Equity</td>
<td>Europe</td>
<td>5.1%</td>
</tr>
<tr>
<td>Asia ex-Jp</td>
<td>-49.8%</td>
<td>22.5%</td>
<td>16.2%</td>
<td>-14.3%</td>
<td>13.6%</td>
<td>-1.1%</td>
<td>10.1%</td>
<td>TOPIX</td>
<td>1.5%</td>
<td>6.6%</td>
<td>US S&amp;P 500</td>
<td>0.9%</td>
</tr>
<tr>
<td></td>
<td>-47.7%</td>
<td>US S&amp;P 500</td>
<td>26.5%</td>
<td>HDY Equity</td>
<td>Asia ex-Jp</td>
<td>Asia ex-Jp</td>
<td>HDY Equity</td>
<td>Small Cap</td>
<td>TOPIX</td>
<td>MSCI EM</td>
<td>MSCI EM</td>
<td>Europe</td>
</tr>
<tr>
<td>MSCI EM</td>
<td>-50.8%</td>
<td>1.5%</td>
<td>11.7%</td>
<td>-15.4%</td>
<td>5.9%</td>
<td>-6.5%</td>
<td>3.2%</td>
<td>5.3%</td>
<td>3.2%</td>
<td>11.1%</td>
<td>Asia ex-Jp</td>
<td>-0.1%</td>
</tr>
<tr>
<td></td>
<td>-45.7%</td>
<td>TOPIX</td>
<td>7.6%</td>
<td>MSCI EM</td>
<td>20.9%</td>
<td>MSCI EM</td>
<td>Europe</td>
<td>HDY Equity</td>
<td>Small Cap</td>
<td>HDY Equity</td>
<td>Asia ex-Jp</td>
<td>Europe</td>
</tr>
</tbody>
</table>

Source: MSCI, Refinitiv Datastream, Standard & Poor’s, TOPIX, J.P. Morgan Asset Management. Annualised return covers the period 2008 to 2018. HDY Equity: MSCI AC World High Dividend Yield Index; Small Cap: MSCI World Small Cap Index. Hypothetical portfolio (for illustrative purposes only and should not be taken as a recommendation): 30% Europe; 20% US S&P 500; 15% MSCI; 10% Asia ex-Japan; 10% TOPIX; 10% HDY equity and 5% small cap. All indices are total return. Past performance is not a reliable indicator of current and future results. Guide to the Markets - Europe. Data as of 30 September 2019.
Fixed income yields and interest rate risk

Current and historical yields for selected indices
% yield, since 2008*

How to interpret this chart
Max
Average
Current
Min

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

Source: (All charts) Refinitiv Datastream, J.P. Morgan Asset Management.

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

Fixed income sectors shown are Europe Gov. 1-3; Bloomberg Barclays Europe Government Agg. 1-3 Years; Europe Gov. 10+; Bloomberg Barclays Europe Government Agg. 10+ Years; US Treasury; Bloomberg Barclays US Agg. Treasury; Euro inv. grade: Bloomberg Barclays Euro Agg. – Corporates; US inv. grade: Bloomberg Barclays US Corporate Investment Grade; Euro high yield: BofA/Merrill Lynch Euro Non-Financial High Yield Constrained; US high yield: BofA/Merrill Lynch US High Yield Constrained; Global convertibles: Bloomberg Barclays Credit/Rate Sensitive; EMD USD Sov.: J.P. Morgan EMBI Global; EMD Local Sov.: JPM GBI-EM Composite.

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 30 September 2019.
Global government bond yields

Nominal 10-year government bond yields

% yield

Real 10-year government bond yields

% yield

The image contains a graph showing the US yield curve from 1978 to 2018. The yield curve is calculated as the difference between the 10-year Treasury yield and the 2-year Treasury yield. The graph highlights periods of yield curve inversion, which are indicated by shaded areas, and periods of recession, indicated by the label "Recession." The data is sourced from Bloomberg, Federal Reserve, Refinitiv Datastream, and J.P. Morgan Asset Management, with periods of recession defined by the US National Bureau of Economic Research (NBER) business cycle dates.

### Yield curve inversion and recession

<table>
<thead>
<tr>
<th>Year</th>
<th>Curve inversion to S&amp;P 500 peak before recession (months)</th>
<th>S&amp;P 500 peak to start of recession (months)</th>
<th>Curve inversion to recession (months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aug '78</td>
<td>18</td>
<td>0</td>
<td>18</td>
</tr>
<tr>
<td>Sep '80</td>
<td>3</td>
<td>8</td>
<td>11</td>
</tr>
<tr>
<td>Dec '88</td>
<td>19</td>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>May '98</td>
<td>22</td>
<td>12</td>
<td>34</td>
</tr>
<tr>
<td>Dec '05</td>
<td>22</td>
<td>3</td>
<td>25</td>
</tr>
<tr>
<td><strong>Median</strong></td>
<td><strong>19</strong></td>
<td><strong>3</strong></td>
<td><strong>20</strong></td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td><strong>17</strong></td>
<td><strong>5</strong></td>
<td><strong>22</strong></td>
</tr>
</tbody>
</table>

US investment-grade bonds

**US investment-grade spread**
% option-adjusted spread over US government bond yield

**US investment-grade leverage measures**
x, leverage (LHS); x, interest coverage ratio (RHS)


Data as of 30 September 2019.
US high yield bonds

**US high yield spread and defaults**

<table>
<thead>
<tr>
<th>LHS</th>
<th>RHS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Default rate*</td>
<td>Spread</td>
</tr>
<tr>
<td>2.5%</td>
<td>4.0%</td>
</tr>
</tbody>
</table>

Latest

Source: (Left) BofA/Merrill Lynch, J.P. Morgan Securities Research, J.P. Morgan Asset Management. HY spread is using the BofA/Merrill Lynch US High Yield Constrained Index. 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. *2019 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 30 September 2019.
Europe and UK investment-grade bonds

**Euro and UK investment-grade spreads**

% option-adjusted spread over local government bond yield

**Euro investment-grade leverage measures**

x, leverage (LHS); x, interest coverage ratio (RHS)

European high yield bonds

**European high yield spread and defaults**

<table>
<thead>
<tr>
<th>Year</th>
<th>Default rate* (LHS)</th>
<th>Spread (RHS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>'00</td>
<td>34%</td>
<td>1.8%</td>
</tr>
<tr>
<td>'02</td>
<td></td>
<td>3.7%</td>
</tr>
</tbody>
</table>

**European high yield leverage measures**

Net leverage and interest coverage ratio

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 GFI CC 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. *2019 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 30 September 2019.
Emerging markets 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>4.3%</td>
</tr>
<tr>
<td>EM sovereigns USD</td>
<td>3.6%</td>
<td>3.7%</td>
</tr>
<tr>
<td>EM corporates USD</td>
<td>3.6%</td>
<td>3.4%</td>
</tr>
</tbody>
</table>

Fixed income focus: Negative-yielding debt and US 10-year Treasury yield

Developed market negative-yielding debt and US 10-year Treasury yield

% yield (LHS); USD trillions (RHS)


Data as of 30 September 2019.
### Fixed income spreads

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>YTD</th>
<th>3Q19</th>
<th>Ann. return since '08</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM Debt</td>
<td>17.5</td>
<td>Euro HY</td>
<td>6.1</td>
<td>0.9</td>
<td>US IG</td>
<td>13.2</td>
</tr>
<tr>
<td>LCL:1.2</td>
<td>12.3</td>
<td>US HY</td>
<td>6.1</td>
<td>1.2</td>
<td>Euro HY</td>
<td>5.9</td>
</tr>
<tr>
<td>0.8</td>
<td>13.5</td>
<td>US Treas.</td>
<td>2.4</td>
<td>-2.3</td>
<td>US HY</td>
<td>2.7</td>
</tr>
<tr>
<td>1.2%</td>
<td>17.5</td>
<td>EM Debt</td>
<td>12.1</td>
<td>2.4</td>
<td>US HY</td>
<td>7.0</td>
</tr>
<tr>
<td>10,2</td>
<td>10,1</td>
<td>US IG</td>
<td>1.4</td>
<td>4.2</td>
<td>EM Debt</td>
<td>1.4</td>
</tr>
<tr>
<td>10,1</td>
<td>1.4</td>
<td>Portfolio</td>
<td>0.2</td>
<td>-1.4</td>
<td>Portfolio</td>
<td>1.3</td>
</tr>
<tr>
<td>1.3%</td>
<td>8.1</td>
<td>US Treas.</td>
<td>6.1</td>
<td>10.0</td>
<td>Portfolio</td>
<td>5.6</td>
</tr>
<tr>
<td>6,4%</td>
<td>9.3</td>
<td>US IG</td>
<td>0.2</td>
<td>-1.4</td>
<td>Portfolio</td>
<td>1.3</td>
</tr>
<tr>
<td>0.1%</td>
<td>13.2</td>
<td>EM Debt</td>
<td>9.3</td>
<td>-4.6</td>
<td>Portfolio</td>
<td>1.3</td>
</tr>
<tr>
<td>4,6%</td>
<td>9.3</td>
<td>US Treas.</td>
<td>4.2</td>
<td>-1.4</td>
<td>Portfolio</td>
<td>1.3</td>
</tr>
<tr>
<td>1.7%</td>
<td>4.7</td>
<td>US Treas.</td>
<td>1.0</td>
<td>4.7</td>
<td>US Treas.</td>
<td>4.7</td>
</tr>
<tr>
<td>1.7</td>
<td>4.7</td>
<td>EM Debt</td>
<td>9.3</td>
<td>-4.6</td>
<td>EM Debt</td>
<td>9.3</td>
</tr>
<tr>
<td>3.8%</td>
<td>8.1</td>
<td>US Treas.</td>
<td>3.8</td>
<td>-1.3</td>
<td>US Treas.</td>
<td>3.8</td>
</tr>
<tr>
<td>0.8%</td>
<td>1.0</td>
<td>US Treas.</td>
<td>1.0</td>
<td>4.7</td>
<td>US Treas.</td>
<td>4.7</td>
</tr>
<tr>
<td>0.8%</td>
<td>4.7</td>
<td>US Treas.</td>
<td>4.7</td>
<td>-1.3</td>
<td>US Treas.</td>
<td>4.7</td>
</tr>
<tr>
<td>3.8%</td>
<td>8.1</td>
<td>US Treas.</td>
<td>3.8</td>
<td>-1.3</td>
<td>US Treas.</td>
<td>3.8</td>
</tr>
<tr>
<td>0.5%</td>
<td>3.8</td>
<td>Infl Linked</td>
<td>3.8</td>
<td>-1.3</td>
<td>Infl Linked</td>
<td>3.8</td>
</tr>
<tr>
<td>0.5%</td>
<td>3.8</td>
<td>Euro HY</td>
<td>3.8</td>
<td>-1.3</td>
<td>Euro HY</td>
<td>3.8</td>
</tr>
<tr>
<td>-0.6%</td>
<td>3.2</td>
<td>Euro Gov</td>
<td>3.2</td>
<td>-1.3</td>
<td>Euro Gov</td>
<td>3.2</td>
</tr>
<tr>
<td>0.5%</td>
<td>3.8</td>
<td>US Treas.</td>
<td>3.8</td>
<td>-1.3</td>
<td>US Treas.</td>
<td>3.8</td>
</tr>
<tr>
<td>-0.6%</td>
<td>3.2</td>
<td>US Treas.</td>
<td>3.2</td>
<td>-1.3</td>
<td>US Treas.</td>
<td>3.2</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

Guide to the Markets - Europe.
Data as of 30 September 2019.

Gold

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

Gold price
$ per Troy ounce

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

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

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 30 September 2019.
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 market size

Value of assets considered to be managed sustainably

TOTAL MARKET AUM $78.9 trillion

ESG INTEGRATED/ TOTAL SUSTAINABLE INVESTMENT AUM $30.7 trillion

DEDICATED SUSTAINABLE STRATEGIES $8.0 trillion

Sustainable investment assets under management

USD trillions

<table>
<thead>
<tr>
<th>Region</th>
<th>2016</th>
<th>2018</th>
<th>Compound annual growth rate 2016-2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Europe</td>
<td>8%</td>
<td>17%</td>
<td>114%</td>
</tr>
<tr>
<td>US</td>
<td>12%</td>
<td>14%</td>
<td>25%</td>
</tr>
<tr>
<td>Japan</td>
<td>0%</td>
<td>19%</td>
<td></td>
</tr>
<tr>
<td>Canada</td>
<td>0%</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Australia/New Zealand</td>
<td>0%</td>
<td>0%</td>
<td></td>
</tr>
</tbody>
</table>

Source: (All charts) Global Sustainable Investment Alliance (GSIA), Investment & Pensions Europe (IPE), J.P. Morgan Asset Management. Total market assets under management (AUM) represents the AUM of the top 400 asset managers in 2018, and comes from IPE. ESG integrated/total sustainable investment AUM is the total sustainable investing assets in five major markets (Europe, US, Japan, Canada, Australia and New Zealand), and comes from GSIA. Dedicated sustainable strategies represent a part of the total sustainable investment AUM, and includes norms-based screening, positive/best-in-class screening, sustainability themed investing and impact/community investing as defined by GSIA. Past performance is not a reliable indicator of current and future results. Guide to the Markets - Europe.

Data as of 30 September 2019.
Past and expected returns

<table>
<thead>
<tr>
<th>Asset Class</th>
<th>Return since 2009</th>
<th>Expected return in coming 10-15 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM equity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>US private equity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eurozone large cap</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Japan equity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EM local currency debt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UK large cap</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Global infrastructure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>US core real estate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>US high yield bonds hedged</td>
<td></td>
<td></td>
</tr>
<tr>
<td>US large cap</td>
<td></td>
<td></td>
</tr>
<tr>
<td>European high yield bonds</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diversified hedge funds hedged</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Euro government bonds</td>
<td></td>
<td></td>
</tr>
<tr>
<td>World government bonds</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commodities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Euro cash</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: 2019 Long-Term Capital Market Assumptions, November 2018, J.P. Morgan Multi-Asset Solutions, J.P. Morgan Asset Management. Returns are nominal and in euros. Past returns are calculated from the start of 2009 up to 3Q 2018, 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 is not a reliable indicator of current and future results. Guide to the Markets - Europe. Data as of 30 September 2019.
Life expectancy

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

<table>
<thead>
<tr>
<th>Age</th>
<th>Men</th>
<th>Women</th>
<th>Couple – at least one lives to specified age</th>
</tr>
</thead>
<tbody>
<tr>
<td>80</td>
<td>67</td>
<td>76</td>
<td>92</td>
</tr>
<tr>
<td>90</td>
<td>24</td>
<td>35</td>
<td>50</td>
</tr>
</tbody>
</table>

Cash investments

Income generated by €100,000 in a three-month bank deposit
EUR (LHS); % change year on year (RHS)

Total return of $1 in real terms
USD, log scale, total returns

Annualised real returns
1899–2018 2000–2018
Equities 6,5% 3,6%
Bonds 2,1% 4,3%
Cash 0,6% -0,6%

The power of compounding

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

<table>
<thead>
<tr>
<th>Age</th>
<th>Starting at age 25</th>
<th>Starting at age 35</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>€353,803</td>
<td>€77,823</td>
</tr>
<tr>
<td>30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>€393,793</td>
<td>€28,012</td>
</tr>
<tr>
<td>40</td>
<td>€639,199</td>
<td></td>
</tr>
<tr>
<td>45</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>55</td>
<td></td>
<td></td>
</tr>
<tr>
<td>60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>65</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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 30 September 2019.
MSCI Europe Index intra-year declines vs. calendar-year returns

Despite average intra-year drops of 15.4% (median 12.1%), annual returns are positive in 30 of 39 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 2018. 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 30 September 2019.
Market timing is difficult

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

Avoid selling at the bottom

Range of equity and bond total returns
% annualised total returns, 1950–present

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 30 September 2019.
<table>
<thead>
<tr>
<th>Year</th>
<th>Govt bonds</th>
<th>EME</th>
<th>RBTS</th>
<th>EMD</th>
<th>REITS</th>
<th>DM Equities</th>
<th>HY bonds</th>
<th>EME</th>
<th>Govt bonds</th>
<th>RBTS</th>
<th>REITS</th>
<th>HY bonds</th>
<th>EME</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>15.9%</td>
<td>73.5%</td>
<td>36.4%</td>
<td>12.1%</td>
<td>18.3%</td>
<td>21.5%</td>
<td>13.9%</td>
<td>17.7%</td>
<td>21.0%</td>
<td>4.6%</td>
<td>33.5%</td>
<td>12.0%</td>
<td>9.3%</td>
</tr>
<tr>
<td>2009</td>
<td>95</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>5,7%</td>
<td>54.4%</td>
<td>27.5%</td>
<td>10.9%</td>
<td>17.8%</td>
<td>3.3%</td>
<td>20.2%</td>
<td>12.8%</td>
<td>15.1%</td>
<td>8.1%</td>
<td>1.3%</td>
<td>23.9%</td>
<td>6.1%</td>
</tr>
<tr>
<td>2011</td>
<td>12,1%</td>
<td>16.8%</td>
<td>2.7%</td>
<td>11.0%</td>
<td>14.9%</td>
<td>1.7%</td>
<td>0.8%</td>
<td></td>
<td>0.7%</td>
<td>16.5%</td>
<td>5.7%</td>
<td>6.7%</td>
<td>17.0%</td>
</tr>
<tr>
<td>2012</td>
<td>6.6%</td>
<td>19.8%</td>
<td>5.6%</td>
<td>14.7%</td>
<td>7.7%</td>
<td>16.2%</td>
<td>12.6%</td>
<td>3.0%</td>
<td>14.0%</td>
<td>5.1%</td>
<td>5.8%</td>
<td>5.1%</td>
<td>11.7%</td>
</tr>
<tr>
<td>2013</td>
<td>17.0%</td>
<td>20.1%</td>
<td>9.5%</td>
<td>4.0%</td>
<td>13.2%</td>
<td>7.3%</td>
<td>10.3%</td>
<td>-1.6%</td>
<td>11.4%</td>
<td>4.7%</td>
<td>11.4%</td>
<td>11.4%</td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>19.9%</td>
<td>15.5%</td>
<td>18.9%</td>
<td>1.2%</td>
<td>9.5%</td>
<td>6.4%</td>
<td>7.4%</td>
<td>-4.2%</td>
<td>3.8%</td>
<td>EMD</td>
<td>15.2%</td>
<td>13.3%</td>
<td>-32.3%</td>
</tr>
<tr>
<td>2015</td>
<td>20.1%</td>
<td>13.3%</td>
<td>9.4%</td>
<td>1.8%</td>
<td>13.0%</td>
<td>6.4%</td>
<td>7.4%</td>
<td>-4.2%</td>
<td>3.8%</td>
<td>EMD</td>
<td>15.2%</td>
<td>13.3%</td>
<td>-32.3%</td>
</tr>
<tr>
<td>2016</td>
<td>21.5%</td>
<td>12.5%</td>
<td>9.9%</td>
<td>-5.8%</td>
<td>1.9%</td>
<td>13.2%</td>
<td>7.3%</td>
<td>-3.6%</td>
<td>1.2%</td>
<td>Cm dty</td>
<td>2.5%</td>
<td>1.2%</td>
<td>7.6%</td>
</tr>
<tr>
<td>2017</td>
<td>21.0%</td>
<td>12.1%</td>
<td>10.4%</td>
<td>-10.6%</td>
<td>0.3%</td>
<td>0.3%</td>
<td>0.3%</td>
<td>-4.8%</td>
<td>4.7%</td>
<td>Hedge Funds</td>
<td>-6.8%</td>
<td>0.2%</td>
<td>1.1%</td>
</tr>
<tr>
<td>2018</td>
<td>21.0%</td>
<td>12.1%</td>
<td>15.4%</td>
<td>-2.6%</td>
<td>1.1%</td>
<td>-13.4%</td>
<td>-16.1%</td>
<td>-0.1%</td>
<td>-10.7%</td>
<td>Cm dty</td>
<td>-9.9%</td>
<td>0.0%</td>
<td>1.1%</td>
</tr>
<tr>
<td>2019</td>
<td>20.1%</td>
<td>15.3%</td>
<td>15.4%</td>
<td>-2.6%</td>
<td>1.1%</td>
<td>-13.4%</td>
<td>-16.1%</td>
<td>-0.1%</td>
<td>-10.7%</td>
<td>Cm dty</td>
<td>-9.9%</td>
<td>0.0%</td>
<td>1.1%</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 2018. Vol. is the standard deviation of annual returns. Govt bonds: Bloomberg Barclays Global Aggregate Government Securities Treasuries; HY bonds: Bloomberg Barclays Global High Yield; EMD: J.P. Morgan EMBI Global; IG bonds: Bloomberg Barclays Global Aggregate – Corporates; Cm dty: Bloomberg Commodity; REITS: FTSE NAREIT All REITS; DM Equities: MSCI World; EME: MSCI EM; Hedge funds: HFRI 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 30 September 2019.
The MSCI KOKUSAI Index is a free float-adjusted market capitalization index that is designed to measure the equity market performance of developed markets excluding Japan. The MSCI KOKUSAI Index consists of the following 23 developed market country indices: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Hong Kong, Ireland, Italy, Israel, Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, the United Kingdom, and the United States. The Nikkei 225 Index is a price-weighted average of the 225 top-rated Japanese companies listed in the first section of the Tokyo Stock Exchange. The Tokyo Price Index (TOPPIX) 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 indices. 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. Value/Growth indices are then aggregated into regional Value/Growth indices. Prior to May 30, 2003, the indices used Price/Book Value (P/BV) ratios to divide the standard MSCI country indices into value and growth indices. All securities were classified as either “value” securities (low P/BV securities) or “growth” securities (high P/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 MSCI Pacific Index is a free float-adjusted market capitalization index that is designed to measure equity market performance in the Pacific region. As of June 2007, the MSCI Pacific Index consisted of the following 5 Developed Market countries: Australia, Hong Kong, Japan, New Zealand, and Singapore.
- Credit Suisse/Tremont Hedge Fund Index is compiled by Credit Suisse Tremont Index, LLC. It is an asset-weighted hedge fund index and includes only funds, as opposed to separate accounts. The Index uses the Credit Suisse/Tremont database, which tracks over 4500 funds, and consists only of funds with a minimum of US$50 million under management, a 12-month track record, and audited financial statements. It is calculated and rebalanced on a monthly basis, and shown net of all performance fees and expenses. It is the exclusive property of Credit Suisse Tremont Index, LLC.
- The NCREIF Property Index is a quarterly time series composite total rate of return measure of investment performance of a very large pool of individual commercial real estate properties acquired in the private market for investment purposes only. All properties in the NPI have been acquired, at least in part, on behalf of tax-exempt institutional investors - the great majority being pension funds. As such, all properties are held in a fiduciary environment.
- 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 Dow Jones Industrial Average measures the stock performance of 30 leading blue-chip U.S. companies. The Dow Jones-UBS Commodity Index is 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. West Texas Intermediate (WTI) is underlying commodity in the New York Mercantile Exchange’s oil futures contracts. The S&P GSCI Index is a composite index of commodity sector returns representing an unleveraged, long-only investment in commodity futures that is broadly diversified across the spectrum of commodities. The returns are calculated on a fully collateralized basis with full reinvestment. 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. This 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-EMI countries are included. 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. The Bloomberg Barclays Euro-Aggregate Index consists of bond issued in the euro or the legacy currencies of the sovereign countries participating the European Monetary Union (EMU). The Global Bond Index Emerging Market Broad Diversified Index (GBI-EM) is a comprehensive global local emerging markets index, and consists of liquid, fixed-rate, domestic currency government bonds. The Bloomberg Barclays Global Aggregate Corporate Index consists of corporate issues in Europe, the US and Asia-Pacific regions. The Bloomberg Barclays Global High Yield Index is an unmanaged index considered representative of fixed rate, non-investment-grade debt of companies in the U.S., developed markets and emerging markets. The Bloomberg Barclays Emerging Markets Index includes USD-denominated debt from emerging markets in the following regions: Americas, Europe, Middle East, Africa, and Asia. As with other fixed income benchmarks provided by Barclays Capital, the index is rules-based, which allows for an unbiased view of the marketplace and easy replicability. The Bloomberg Barclays MBS Index covers the mortgage-backed pass-through securities of Ginnie Mae, Fannie Mae, and Freddie Mac. Aggregate components must have a weighted average maturity of at least one year, must have $250 million per amount outstanding, and must be fixed rate mortgages. The Bloomberg Barclays Corporate Bond Index is the Corporate component of the U.S. Credit index. The Bloomberg Barclays TIPS Index consists of Inflation-Protection securities issued by the U.S. Treasury. 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 Li Keqiang Index is a composite measure composed of China’s electricity production, financial institution loans and railway freight. The Euro Stoxx 600 Index represents large, mid and small capitalisation companies across 18 European countries. The JPMorgan GBI-EM Global Diversified consists of regularly traded, liquid fixed-rate, domestic currency government bonds to which international investors can gain exposure. The weightings among the countries are more evenly distributed within this index. 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 JPMorgan CEMBI Index is a USD denominated external debt index tracking bond issued by sovereigns and quasi-sovereigns in the developing nations. 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 CS/Tremont Equity Market Neutral Index takes both long and short positions in stocks with the aim of minimizing exposure to the systematic risk of the market (i.e. a beta of zero). The CS/Tremont Multi-Strategy Index consists of funds that allocate capital based on perceived opportunities among several hedge fund strategies. Strategies adopted in a multi-strategy fund may include, but are not limited to, convertible bond arbitrage, equity long/short, statistical arbitrage and merger arbitrage. The Bloomberg Barclays U.S. Dollar Floating Rate Note (FRN) Index provides a measure of the U.S. dollar denominated floating rate note market.

*Market Neutral returns for November 2008 are estimates by J.P. Morgan Funds Market Strategy, and are based on a December 8, 2008 published estimate for November returns by CS/Tremont in which the Market Neutral returns were estimated to be +0.85% (with 69% of all CS/Tremont constituents having reported return data). Presumed to be excluded from the November return are three funds, which were later marked to $0 by CS/Tremont in connection with the Bernard Madoff scandal. J.P. Morgan Funds believes this distortion is not an accurate representation of returns in the category. CS/Tremont later published a finalized November return of -40.56% for the month, reflecting this mark-down. CS/Tremont assumes no responsibility for these estimates.

The Office of National Statistics (ONS) index is a mix-adjusted average housing price index. The index is calculated monthly using mortgage financed transactions from the Regulated Mortgage Survey by the Council of Mortgage Lenders. The Nationwide House Price Index is a mix adjusted index constructed from Nationwide lending data across the UK. The Halifax House Price Index is constructed from mortgage data derived from Halifax lending data across the UK. The MSCI AC 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 Market Insights program provides comprehensive data and commentary on global markets without reference to products. Designed as a tool to help clients understand the markets and support investment decision-making, the program explores the implications of current economic data and changing market conditions. For the purposes of MiFID II, the JPM Market Insights and Portfolio Insights programs are marketing communications and are not in scope for any MiFID II / MiFIR requirements specifically related to investment research. Furthermore, the J.P. Morgan Asset Management Market Insights and Portfolio Insights programs, as non-independent research, have not been prepared in accordance with legal requirements designed to promote the independence of investment research, nor are they subject to any prohibition on dealing ahead of the dissemination of investment research.

This document is a general communication being provided for informational purposes only. It is educational in nature and not designed to be taken as advice or a recommendation for any specific investment product, strategy, plan feature or other purpose in any jurisdiction, nor is it a commitment from J.P. Morgan Asset Management or any of its subsidiaries to participate in any of the transactions mentioned herein. Any examples used are generic, hypothetical and for illustration purposes only. This material does not contain sufficient information to support an investment decision and it should not be relied upon by you in evaluating the merits of investing in any securities or products. In addition, users should make an independent assessment of the legal, regulatory, tax, credit, and accounting implications and determine, together with their own professional advisers, if any investment mentioned herein is believed to be suitable to their personal goals. Investors should ensure that they obtain all available relevant information before making any investment. Any forecasts, figures, opinions or investment techniques and strategies set out are for information purposes only, based on certain assumptions and current market conditions and are subject to change without prior notice. All information presented herein is considered to be accurate at the time of production, but no warranty of accuracy is given and no liability in respect of any error or omission is accepted. It should be noted that investment involves risks, the value of investments and the income from them may fluctuate in accordance with market conditions and taxation agreements and investors may not get back the full amount invested. Both past performance and yields are not a reliable indicator of current and future results. J.P. Morgan Asset Management is the brand for the asset management business of JPMorgan Chase & Co. and its affiliates worldwide. To the extent permitted by applicable law, we may record telephone calls and monitor electronic communications to comply with our legal and regulatory obligations and internal policies. Personal data will be collected, stored and processed by J.P. Morgan Asset Management in accordance with our Company's Privacy Policy (www.jpmorgan.com/global/privacy). For further information regarding our local privacy policies, please follow the respective links: Australia (www.jpmorganam.com.au/wps/portal/auec/PrivacyPolicy), EMEA (www.jpmorgan.com/emea-privacy-policy), Japan (www.jpmorganasset.co.jp/wps/portal/Policy/Privacy), Hong Kong (https://am.jpmorgan.com/hk/en/asset-management/per/privacy-statement/), Singapore (www.jpmorganam.com.sg/privacy) and Taiwan (www.jpmorgan.com/country/GB/en/privacy/taiwan).

This communication is issued by the following entities: in the United Kingdom by JPMorgan Asset Management (UK) Limited, which is authorized and regulated by the Financial Conduct Authority; in other European jurisdictions by JPMorgan Asset Management (Europe) S.à r.l.; in Hong Kong by JPMorgan Asset Management (Asia Pacific) Limited, or JPMorgan Funds (Asia) Limited, or JPMorgan Asset Management Real Assets (Asia) Limited; in Singapore by JPMorgan Asset Management (Singapore) Limited (Co. Reg. No. 197601586K), or JPMorgan Asset Management Real Assets (Singapore) Pte Ltd (Co. Reg. No. 201120355E), this advertisement or publication has not been reviewed by the Monetary Authority of Singapore; in Taiwan by JPMorgan Asset Management (Taiwan) Limited; in Japan by JPMorgan Asset Management (Japan) Limited which is a member of the Investment Trusts Association, Japan, the Japan Investment Advisers Association, Type II Financial Instruments Firms Association and the Japan Securities Dealers Association and is regulated by the Financial Services Agency (registration number "Kanto Local Finance Bureau (Financial Instruments Firm) No. 330"); in Brazil by Banco J.P. Morgan S.A.; in Canada for institutional clients’ use only by JPMorgan Asset Management (Canada) Inc., and in the United States by J.P. Morgan Institutional Investments, Inc., member of FINRA; J.P. Morgan Investment Management Inc. or J.P. Morgan Alternative Asset Management, Inc.

In APAC, distribution is for Hong Kong, Taiwan, Japan and Singapore. For all other countries in APAC, to intended recipients only.

Copyright 2019 JPMorgan Chase & Co. All rights reserved.

Prepared by: Karen Ward, Tilmann Galler, Vincent Juvyns, Maria Paola Toschi, Michael Bell, Hugh Gimber, Jai Malhi and Ambrose Crofton.

Unless otherwise stated, all data as of 30 September 2019 or most recently available.

Guide to the Markets - Europe
JP-LITTLEBOOK

0903c02a81fb9230