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4. Global growth
5. Global Purchasing Managers’ Index (PMI) for manufacturing
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32. Eurozone debt
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36. UK inflation
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40. China economic activity by sector
41. China debt and credit dynamics
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Global growth

Real GDP growth
Index level, rebased to 100 at 1Q 2006

4Q 2021 real GDP forecasts relative to pre-pandemic trend*
% difference

Index level

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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 31 December 2021.
## Global Inflation

### Headline Inflation

% change year on year

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<thead>
<tr>
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<th>2019</th>
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### Eurozone

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<td>0.4</td>
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### Developed

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<tr>
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<tr>
<td>Russia</td>
<td>3.0</td>
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Global inflation expectations

Headline inflation
% change year on year

Forecast

Headline inflation target

Market-based inflation expectations
% 5y5y inflation swap

Source: (Left) Bank of Japan, Bloomberg, BLS, Eurostat, ONS, Refinitiv Datastream, J.P. Morgan Asset Management. Headline inflation is measured using Consumer Price Index (CPI). Japan CPI has been adjusted down by two percentage points from April 2014 to March 2015 to remove the estimated impact of the consumption tax hike over this period. Forecasts are from Bloomberg contributor composite. (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. UK 5y5y inflation uses RPI rather than CPI as the reference point, which partly explains why the UK line is significantly above other regions. Strong demand for index-linked Gilts from defined benefit UK pension funds is another factor driving UK inflation expectations higher. Past performance is not a reliable indicator of current and future results. Guide to the Markets - Europe. Data as of 31 December 2021.
Global government debt

Government gross debt-to-GDP ratios by country
% of nominal GDP

Global consumer

Estimates of excess household savings from the pandemic
% of nominal GDP, 1Q 2020 – 4Q 2021

Job vacancies
Indexed to 100 at pre-pandemic peak

Source: (Left) BEA, Bloomberg, Eurostat, ONS, Refinitiv Datastream, J.P. Morgan Asset Management. Excess household savings are defined as the aggregate amount that the consumer saved in 2020 and 2021, in excess of typical savings for a given economy. Estimates are from J.P. Morgan Asset Management. (Right) BLS, Deutsche Bundesbank, ONS, Refinitiv Datastream, J.P. Morgan Asset Management. UK vacancy data is a three-month average as published. Past performance is not a reliable indicator of current and future results. Guide to the Markets - Europe. Data as of 31 December 2021.
Global currencies

USD real effective exchange rate and interest rate differential
Index level (LHS); % point (RHS)

Global real effective exchange rate valuations
% premium / discount relative to its average since 1999

Global trade

Exports of goods
% of nominal GDP, 2020

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

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

Global supply chains

Manufacturing PMI: Supplier delivery times

Index level

World Container Index

USD per 40ft container

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. Past performance is not a reliable indicator of current and future results. Guide to the Markets - Europe. Data as of 31 December 2021.
US Economic Monitor

US economic indicators
Percentile rank relative to historic data since 1990

Source: BLS, Conference Board, ISM, Refinitiv Datamstream, 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 three recessions prior to the Covid-19 recession. 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.

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 three recessions prior to the Covid-19 recession. Past performance is not a reliable indicator of current and future results. Guide to the Markets - Europe. Data as of 31 December 2021.
US business investment

US real business investment and future capex intentions
% change year on year (LHS); index level (RHS)

US real business investment
Index level, rebased to 100 at start of US recession


**US labour market**

**US non-farm payroll employment**

Millions of people


**US unemployment rate and wage growth**

% (wage growth is year on year)

- Source: Refinitiv Datastream, J.P. Morgan Asset Management.
US Conference Board indicators

US Leading Economic Index
% change year on year

US Leading Credit Index
Index level

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 three recessions prior to the Covid-19 recession. Past performance is not a reliable indicator of current and future results. Guide to the Markets - Europe. Data as of 31 December 2021.
US debt

US headline and core inflation
% change year on year

Selected components of US headline inflation
% change year on year (with 2021 CPI weights in parentheses)

Source: (All charts) BLS, Refinitiv Datastream, J.P. Morgan Asset Management. CPI is the Consumer Price Index. Core inflation is defined as CPI excluding food and energy. Core goods CPI is defined as goods CPI excluding food and energy. For the CPI weights, the remaining 17% weight not shown in the right chart is allocated to food and energy within the goods sector. Past performance is not a reliable indicator of current and future results. Guide to the Markets - Europe. Data as of 31 December 2021.
#### Federal funds policy rate expectations

% Fed funds rate and market expectations

- **Federal funds rate**
- **Market expectations on 31 December 2021 (mean)**
- **Federal Reserve median expectations**

#### Headline personal consumption expenditure inflation

% change year on year

- **Fed’s 2% target**
- **Last 3-year avg.: 2.1%**
- **Hypothetical 3-year avg.: 1.9%**

Source: (Left) Bloomberg, US Federal Reserve, J.P. Morgan Asset Management. Market expectations are calculated using OIS forwards. The longer-run projection represents the committee’s median assessment of where the Fed funds rate would be expected to converge to under the appropriate monetary policy and in the absence of further shocks to the economy. (Right) BEA, Refinitiv Datastream, J.P. Morgan Asset Management. Following the Federal Reserve’s (Fed’s) shift to an average inflation targeting framework, a period of above-target inflation will be tolerated to compensate for a period of below-target inflation. We illustrate this by showing the hypothetical required rate in the coming three years to achieve a 2% inflation rate on average given inflation over the past three years. Past performance is not a reliable indicator of current and future results.

US focus: Labour shortages and inflation uncertainty

Source: (Left) BLS, JOLTS, J.P. Morgan Asset Management. Labour force participation recovery assumes the participation rate goes back to the level from February 2020 and that they are recorded as unemployed. (Right) Bloomberg, BLS, J.P. Morgan Asset Management. CPI is consumer price index. Past performance is not a reliable indicator of current and future results. Guide to the Markets - Europe. Data as of 31 December 2021.
Source: (All charts) 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 December 2021.
Eurozone business investment

Eurozone real investment and investment confidence

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

Eurozone real non-residential investment

Index level, rebased to 100 at start of eurozone recession

Source: (All charts) Eurostat, Refinitiv Datastream, J.P. Morgan Asset Management. Dotted line represents forecasts from Bloomberg contributor composite. Both non-residential measures shown are in real terms and include both public and private investment. GFC is Global Financial Crisis. Past performance is not a reliable indicator of current and future results. Guide to the Markets - Europe. Data as of 31 December 2021.
Eurozone consumer confidence

Index level

Recession

Eurozone retail sales volumes

Real index level, rebased to 100 at Jan 2010


Data as of 31 December 2021.
Eurozone labour market

Eurozone unemployment rate and wage growth
% wage growth is year on year

Eurozone business surveys: Labour limiting production
% of respondents


Data as of 31 December 2021.
The chart shows the unemployment rates for Germany, France, Italy, and Spain from the year 2000 to 2022. The unemployment rate for Spain, Italy, France, and Germany is represented by green, purple, blue, and black lines, respectively. The data is sourced from Eurostat, Refinitiv Datastream, and J.P. Morgan Asset Management. Past performance is not a reliable indicator of current and future results. Data as of 31 December 2021.
Eurozone headline and core inflation

% change year on year

Core inflation  Headline inflation

Eurozone core goods and services inflation

% change year on year

Core goods inflation  Services inflation

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.

European Central Bank policy

European Central Bank policy rate expectations

% deposit rate and market expectations

European 10-year government bond spreads over Germany

% point spread

Europzone debt to GDP ratios
% of nominal GDP

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


Data as of 31 December 2021.
### Eurozone focus: Recovery fund

**EU recovery fund grants to selected EU countries**
EUR billions, labels are % of EU27 prior 4Q annualised nominal GDP

<table>
<thead>
<tr>
<th>Country</th>
<th>Grants</th>
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</thead>
<tbody>
<tr>
<td>Italy</td>
<td>5%</td>
</tr>
<tr>
<td>Spain</td>
<td>7%</td>
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<tr>
<td>France</td>
<td>2%</td>
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<tr>
<td>Germany</td>
<td>1%</td>
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<tr>
<td>Poland</td>
<td>1%</td>
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<tr>
<td>Greece</td>
<td>12%</td>
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<tr>
<td>Portugal</td>
<td>8%</td>
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<tr>
<td>Netherlands</td>
<td>1%</td>
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<tr>
<td>Belgium</td>
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<tr>
<td>Austria</td>
<td>1%</td>
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**EU recovery fund distribution over time**
% of EU27 prior 4Q annualised nominal GDP

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<td>'26</td>
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</table>

Source: (All charts) European Commission, J.P. Morgan Asset Management. Distribution over time is based on currently approved national plans and J.P. Morgan Asset Management estimates for countries where approvals have not been completed. Past performance is not a reliable indicator of current and future results. 

UK GDP

Contribution to UK real GDP growth
% change year on year

UK real GDP and composite PMI
% change year on year (LHS); index level (RHS)

Source: (All charts) 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 December 2021.
UK consumer

UK consumer confidence
Index level, three-month moving average

UK housing market
Index level (LHS); % change year on year (RHS)


UK inflation

UK headline and core inflation
% change year on year

UK core goods and services inflation
% change year on year

Source: (All charts) ONS, Refinitiv Datasync, 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.

UK focus: Labour shortages

**Bank of England Agents’ survey: Recruitment difficulties**
Survey score

**UK CBI survey: Factors limiting production**
% of respondents

Japan GDP

Contribution to Japan real GDP growth
% change year on year

Japan real GDP and manufacturing PMI
% change year on year (LHS); index level (RHS)

Source: (All charts) 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 December 2021.
China GDP

**Contribution to China real GDP growth**
% change year on year

![Graph showing contributions to real GDP growth]

**China industrial production and retail sales**
% change year on year

![Graph showing industrial production and retail sales]

China economic activity by sector

China economic sector weights
% of nominal GDP

China manufacturing and services PMIs
Index level

China debt and credit dynamics

China debt to GDP ratios
% of nominal GDP

China credit growth
% of nominal GDP

China inflation and policy rates

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 December 2021.
Emerging market structural dynamics

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

Urbanisation rates over time
% of population

Emerging market growth

Share of global real GDP

Estimated change in the ‘consumer class’ by 2030

Source: (Left) Refinitiv Datastream, World Bank, J.P. Morgan Asset Management. (Right) Brookings Institute, J.P. Morgan Asset Management. Change in ‘consumer class’ is the change in the number of people from 2020 to 2030 living in a household and spending at least USD 11 per day per person. Other Asia includes Bangladesh, Indonesia, Pakistan, Philippines and Vietnam. Eurozone big 4 includes France, Germany, Italy and Spain. Past performance is not a reliable indicator of current and future results.

Emerging market focus: China’s focus on ‘common prosperity’

‘Common prosperity’ mentions by President Xi Jinping
Number of mentions in speeches

Average annual income
CNY thousands

Global earnings expectations and equity valuations

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

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, EM and China. UK is FTSE All-Share, US is S&P 500 and Japan is TOPIX. (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. Range and average for China is 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 31 December 2021.
Global equity market correlations with Treasury yields

Correlation of MSCI ACWI sectors to US 10y Treasury yield
10y correlation of sector rel. performance with US 10y Treasury yield

- Financials
- Energy
- Industrials
- Materials
- Cons. Discr.
- IT
- Health Care
- Comm. Services
- Real Estate
- Utilities
- Cons. Staples

Sectors tending to outperform MSCI ACWI when yields are rising

Sectors tending to underperform MSCI ACWI when yields are rising

Correlation of regions and styles to US 10y Treasury yield
10y correlation of rel. performance with US 10y Treasury yield

- Small cap
- Value
- Japan
- Eurozone
- UK
- China
- EM
- US
- Large cap
- Growth

Regions/styles tending to outperform MSCI ACWI when yields are rising

Regions/styles tending to underperform MSCI ACWI when yields are rising

Source: (All charts) MSCI, Refinitiv Datastream, J.P. Morgan Asset Management. Correlation of sectors is calculated between the six-month change in US 10-year Treasury yields and the six-month relative performance of each sector to MSCI All-Country World Index. Correlation of regions and styles is calculated between the six-month change in US 10-year Treasury yields and the six-month relative performance of each region and style to MSCI All-Country World Index. All indices used are MSCI. Value and growth as well as size indices used are for the MSCI All-Country World universe. Past performance is not a reliable indicator of current and future results. Guide to the Markets - Europe. Data as of 31 December 2021.
Global equity sector weights

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 December 2021.
Global income

Income from equities in a 60:40 global stock/bond portfolio
% of total portfolio income

Global dividend yields
% yield

Equity net issuance and dividend revision ratios

US and Europe net equity issuance
USD billions, 12-month rolling

US and Europe dividend revision ratios
% net upgrades as a proportion of total dividend estimate revisions

Equity market factors

S&P 500 Quality/S&P 500 relative performance
Relative total return index level, rebased to 100 in 1990

MSCI World Growth and Value forward P/E ratios
x, multiple


US earnings

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

<table>
<thead>
<tr>
<th>Country/Region</th>
<th>% of revenues</th>
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<tr>
<td>US</td>
<td>59%</td>
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<tr>
<td>Asia/Pacific</td>
<td>18%</td>
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<td>Europe</td>
<td>15%</td>
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US inflation and earnings growth
% change year on year

**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>
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<tbody>
<tr>
<td>Shiller CAPE ratio</td>
<td>26.2x</td>
<td>40.9x</td>
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<tr>
<td>P/B ratio</td>
<td>3.0x</td>
<td>4.8x</td>
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31 Dec 2021: 21.6x

Average: 16.2x

**S&P 500 forward P/E ratio sector breakdown**

% premium / discount of the P/E ratio relative to average since 1995

- Cons. Discr.
- Utilities
- IT
- S&P 500
- Comm. Serv.
- Industrials
- Cons. Staples
- Financials
- Materials
- Health Care
- Energy

US valuations and subsequent returns

S&P 500 forward P/E ratios and subsequent 1-year returns
% annualised total return*

S&P 500 forward P/E ratios and subsequent 10-year returns
% annualised total return*

US bull and bear markets

S&P 500 bull markets, %

Duration: 21 months
Price return: 113%

S&P 500 bear markets, %

Duration: 1 month
Price return: -34%

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; a bull market represents a 20% increase from a market trough. Charts and labels refer to price return. Past performance is not a reliable indicator of current and future results. *Guide to the Markets - Europe*. Data as of 31 December 2021.
### MSCI Europe earnings and performance

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

#### Country/Region | % of revenues
--- | ---
Europe | 47%
US | 21%
Asia/Pacific | 20%

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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<tbody>
<tr>
<td>CAPE ratio</td>
<td>19.3x</td>
<td>21.4x</td>
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<tr>
<td>P/B ratio</td>
<td>2.1x</td>
<td>2.2x</td>
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</table>

31 Dec 2021: 15.7x

Average: 14.4x

MSCI Europe forward P/E ratio sector breakdown

% premium / discount of the P/E ratio relative to average since 1995


Data as of 31 December 2021.
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

Source: (All charts) MSCI, Refinitiv Datastream, J.P. Morgan Asset Management. Past performance is not a reliable indicator of current and future results.

UK earnings

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

Country/Region | % of revenues
---|---
UK | 26%
US | 23%
Asia/Pacific | 20%
Europe ex-UK | 16%

European stocks and currencies

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

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

Japan equity market and currency

**TOPIX earnings and performance**
Next 12 months’ earnings per share estimates, JPY (LHS); index level (RHS)

**Country/Region % of revenues**
- Japan 57%
- Asia/Pacific 18%
- US 12%
- Europe 9%

**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); % point, next 12 months’ growth estimates (RHS)

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

Source: (Left) Consensus Economics, Refinitiv Datastream, J.P. Morgan Asset Management. “EM minus DM GDP growth” is consensus estimates for emerging markets growth in the next 12 months minus consensus estimates for developed markets growth in the next 12 months, provided by Consensus Economics. (Right) J.P. Morgan Securities Research, MSCI, Refinitiv Datastream, J.P. Morgan Asset Management. For all charts, EM equity is MSCI Emerging Markets and DM equity is MSCI World. Relative equity performance is calculated from price indices in USD, and is rebased to 100 in 1997. Past performance is not a reliable indicator of current and future results.

Emerging market equity valuations and subsequent returns

Equity focus: Profit margins

US NFIB survey: Most important problem?
% of respondents, three-month moving average

US NFIB survey: Prices and wages
% of respondents, three-month moving average

# World stock market returns

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<td>29.5%</td>
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<td>US S&amp;P 500</td>
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<td>16.2%</td>
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</table>

Fixed income yields

- Developed market government bonds
- Investment-grade bonds
- Convertible bonds
- High yield bonds
- Emerging market bonds

Return correlation to MSCI ACWI

Duration (years)

Global government bond yields

Nominal 10-year government bond yields

% yield

US 10-year Treasury yield breakdown

% yield

Source: (All charts) Bloomberg, J.P. Morgan Asset Management. 10-year breakeven represents the difference in yield between nominal and inflation-protected government bonds, and is a market-based measure of average inflation expectations over the next 10 years. Past performance is not a reliable indicator of current and future results. Guide to the Markets - Europe. Data as of 31 December 2021.
**Investment-grade bonds**

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

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


Data as of 31 December 2021.
US high yield spread and defaults
% default rate (LHS); % option-adjusted spread (RHS)

Euro high yield spread and defaults
% default rate (LHS); % option-adjusted spread (RHS)

Emerging market bonds

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

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<td>0.4</td>
<td>0.3</td>
<td>0.2</td>
<td>0.1</td>
<td>0.0</td>
</tr>
</tbody>
</table>

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

Fixed income diversifiers and yield cushion

Yields and correlations of fixed income returns to equities
% yield and 10-year correlation of monthly returns with MSCI ACWI

- US Treasury
- UK Gilt
- US HY
- EU HY
- China Gov.
- China IG (USD)
- Asia Gov. (USD)
- Asia IG (USD)
- Asia HY (USD)
- Euro Gov.
- $ EMD
- EMD

Fixed income yield cushion
Basis points, how far yields can rise before a year’s worth of income is wiped out

- Larger income cushion to absorb loss from rising yields

Fixed income focus: Government bond supply dynamics

**Net US government bond supply**
USD billions

<table>
<thead>
<tr>
<th>Year</th>
<th>Net issuance</th>
<th>Fed purchases</th>
<th>Net supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>'15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>'16</td>
<td></td>
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<tr>
<td>'17</td>
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<td>'19</td>
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<td>'20</td>
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<tr>
<td>'21</td>
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<td></td>
</tr>
<tr>
<td>'22</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

**Net eurozone government bond supply**
EUR billions

<table>
<thead>
<tr>
<th>Year</th>
<th>Net issuance</th>
<th>ECB purchases</th>
<th>Net supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>'15</td>
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<td>'16</td>
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<td>'21</td>
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<tr>
<td>'22</td>
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</tbody>
</table>

Global fixed income spreads and returns

Fixed income spreads

% option-adjusted spread

<table>
<thead>
<tr>
<th>Spread Type</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
<th>4Q '21</th>
</tr>
</thead>
<tbody>
<tr>
<td>Euro HY</td>
<td>6.3%</td>
<td>5.9%</td>
<td>17.2%</td>
<td>5.0%</td>
<td>13.4%</td>
<td>2.6%</td>
</tr>
<tr>
<td>US Treas.</td>
<td>0.9%</td>
<td></td>
<td></td>
<td>5.0%</td>
<td>5.3%</td>
<td>0.6%</td>
</tr>
<tr>
<td>EM Debt</td>
<td></td>
<td></td>
<td>6.5%</td>
<td></td>
<td>2.1%</td>
<td>6.7%</td>
</tr>
<tr>
<td>Euro Gov</td>
<td>5.0%</td>
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<td></td>
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<tr>
<td>US HY</td>
<td></td>
<td></td>
<td>1.4%</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Euro IG</td>
<td>1.4%</td>
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<tr>
<td>Infl Linked</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6.4%</td>
<td>0.2%</td>
</tr>
<tr>
<td>Portfolio</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.7%</td>
<td>4.7%</td>
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<tr>
<td>EM Debt</td>
<td>-2.5%</td>
<td>-2.5%</td>
<td>16.5%</td>
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<tr>
<td>US IG</td>
<td>4.3%</td>
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<tr>
<td>Portfolio</td>
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<td>1.0%</td>
<td>4.3%</td>
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<td>US HY</td>
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<tr>
<td>Euro Gov</td>
<td>-3.2%</td>
<td>-3.2%</td>
<td>8.8%</td>
<td></td>
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<tr>
<td>EM Debt</td>
<td>-4.3%</td>
<td>-4.3%</td>
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<td>US Treas.</td>
<td>10.1%</td>
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<td>Euro Gov</td>
<td>-1.3%</td>
<td>-1.3%</td>
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<td>US IG</td>
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<td>6.8%</td>
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<td>Portfolio</td>
<td>10.9%</td>
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<tr>
<td>US Treas.</td>
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<td>8.0%</td>
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<td>EM Debt</td>
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<td>US IG</td>
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<td>Portfolio</td>
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</table>

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

Crude oil production by country
Million barrels per day

Commodities

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

Commodity prices
- Index level, rebased to 100 in Jan 2007

Alternative sources of diversification

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

Hedge fund style returns during bear markets
% total return

Alternative investments: Real assets

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

Expected returns and volatility in coming 10-15 years
% annual compound return in EUR

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) 2022 Long-Term Capital Market Assumptions, J.P. Morgan Multi-Asset Solutions, J.P. Morgan Asset Management. 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. Macro hedge fund return expectations are currency hedged. The assumptions are presented for illustrative purposes only. Past performance and forecasts are not reliable indicators of current and future results.

2022 Long-Term Capital Market Assumptions expected returns in coming 10-15 years
%
Source: 2022 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 October 2021, 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 reliable indicators of current and future results. Guide to the Markets - Europe.
Data as of 31 December 2021.
Impact of climate concerns on consumer choices

Willingness to pay more for environmentally friendly products
% of survey respondents

Seats held by green parties in EU Parliament
% of total EU Parliament seats

Emissions targets and labour share of income

Greenhouse gas emission targets
Billion tonnes/year, CO₂ equivalent

Labour share of income
% of nominal GDP

Source: (Left) Climate Action Tracker, J.P. Morgan Asset Management. Current policy forecast is the September 2021 forecast provided by Climate Action Tracker. CO₂ equivalent tonnes standardise emissions to allow for comparison between gases. One equivalent tonne has the same warming effect as one tonne of CO₂ over 100 years. (Right) BEA, Deutsche Bundesbank, German Federal Statistics Office, ONS, 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 December 2021.
Carbon pricing

Global emissions covered by carbon pricing initiatives
% of global greenhouse gas emissions

Emissions trading system prices
USD per tonnes of CO$_2$ equivalent

Source: (Left) World Bank, J.P. Morgan Asset Management. ETS is emissions trading system. (Right) International Carbon Action Partnership, J.P. Morgan Asset Management. China ETS price is based on the average of Beijing, Chongqing, Guangdong, Hubei, Shanghai, Shenzhen and Tianjin ETS prices. CO$_2$ equivalent tonnes standardise emissions to allow for comparison between gases. One equivalent tonne has the same warming effect as one tonne of CO$_2$ over 100 years. Past performance is not a reliable indicator of current and future results. Guide to the Markets - Europe. Data as of 31 December 2021.
**Global CO₂ emissions by country**

**Share of global CO₂ emissions by country**

- **China**: 31%
- **US**: 14%
- **UK & EU**: 8%
- **India**: 7%
- **Russia**: 5%
- **Japan**: 3%
- **Other**: 33%

**Global CO₂ emissions per capita**

- **US**: 14.2 Tonnes
- **Russia**: 10.8 Tonnes
- **Japan**: 8.2 Tonnes
- **China**: 7.4 Tonnes
- **UK & EU**: 5.7 Tonnes
- **India**: 1.8 Tonnes

Source: (All charts) Gapminder, Global Carbon Project, Our World in Data, United Nations, J.P. Morgan Asset Management. CO₂ emissions are from the burning of fossil fuels for energy and cement production. Emission impact from land use change (such as deforestation) is not included. Past performance is not a reliable indicator of current and future results. *Guide to the Markets - Europe*, Data as of 31 December 2021.
Source: (Left) Climate Watch, Our World in Data, World Resource Institute, J.P. Morgan Asset Management. Greenhouse gas emissions include CO₂, methane, nitrous oxide and fluorinated greenhouse gases. CO₂ equivalent tonnes standardise emissions to allow for comparison between gases. One equivalent tonne has the same warming effect as one tonne of CO₂ over 100 years. (Right) Lazard, J.P. Morgan Asset Management. *LCOE is levelised cost of energy, the net present value of the unit-cost of electricity over the lifetime of a generating asset. It is often taken as a proxy for the average price that the generating asset must receive in a market to break even over its lifetime. Past performance is not a reliable indicator of current and future results. Guide to the Markets - Europe. Data as of 31 December 2021.
Global energy mix and energy transition investment

Importance of governance and social issues

Average ROE of global stocks by governance score
%

Corporate mentions of ‘diversity’/‘inclusion’ in earnings calls
Number of mentions for MSCI ACWI companies, four-quarter moving average

ESG and capital markets

Global sustainable, social and green bond issuance
USD billions

- Green bonds
- Social bonds
- Sustainable bonds

Spread between green and traditional corporate bonds
Basis points, spread difference between green and traditional bonds

Source: (Left) Climate Bonds Initiative, J.P. Morgan Asset Management. Green bonds are those where 100% of the net bond proceeds are allocated to green projects. Social bonds are those where the bond proceeds have a focus on delivering positive social outcomes. Sustainable bonds are those where the bond proceeds are directed to a mix of both green and social projects or if the bond coupon/characteristics can vary based on achieving predefined sustainability targets. (Right) Barclays Research, J.P. Morgan Asset Management. Data shown is for a Barclays Research custom universe of green and non-green investment-grade credits, matched by issuer, currency, seniority and maturity. The universe consists of 138 pairs, 81 euro-denominated, 55 dollar-denominated, and 2 sterling-denominated and 71 financials and 67 non-financials. Spread difference is measured using the option-adjusted spread. Past performance is not a reliable indicator of current and future results. Guide to the Markets - Europe. Data as of 31 December 2021.
**Sustainable investment flows and assets under management**

**Net industry flows into mutual funds and ETFs**

% , proportion of annual net flows for European-domiciled funds

<table>
<thead>
<tr>
<th>Year</th>
<th>Classified as sustainable</th>
<th>Not classified as sustainable</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2018</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2019</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2020</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2021</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Industry mutual fund and ETF assets under management**

% , proportion of mutual fund and ETF AUM for European-domiciled funds

<table>
<thead>
<tr>
<th>Year</th>
<th>Classified as sustainable</th>
<th>Not classified as sustainable</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2018</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2019</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2020</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2021</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: (All charts) Morningstar, J.P. Morgan Asset Management. “Classified as sustainable” refers to funds that have the “Sustainable Investment – Overall” tag in the Morningstar database. Morningstar classifies “sustainable investment” as a fund that explicitly indicates any kind of sustainability, impact or ESG strategy in its prospectus or offering documents. Universe for flows and assets under management (AUM) covers all European-domiciled mutual funds and ETFs in the Morningstar database excluding money market funds and fund of funds. “ETF” refers to exchange-traded fund. 2021 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 December 2021.
Life expectancy

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

The effect of compounding

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

EUR

0 100,000 200,000 300,000 400,000 500,000 600,000 700,000

25 30 35 40 45 50 55 60 65

Starting at age 25  Starting at age 35

€354,000  €639,000

€5,000 investment with/without income reinvested

EUR, MSCI Europe returns

0 10,000 20,000 30,000 40,000 50,000 60,000 70,000 80,000 90,000 100,000

'86 '90 '94 '98 '02 '06 '10 '14 '18

With dividends reinvested  Without dividends reinvested

€33,000  €99,000

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 December 2021.
Cash investments

Income generated by €100,000 in a three-month bank deposit

<table>
<thead>
<tr>
<th>Year</th>
<th>Bank deposit income</th>
<th>Income required to beat inflation</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>4,300</td>
<td>2,400</td>
</tr>
<tr>
<td>2021</td>
<td>4,300</td>
<td>2,400</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Years</th>
<th>Purchasing Power of €100,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>€100,000</td>
</tr>
<tr>
<td>10</td>
<td>€68,500</td>
</tr>
<tr>
<td>20</td>
<td>€45,000</td>
</tr>
</tbody>
</table>

Source: (Left) Eurostat, Refinitiv Datastream, J.P. Morgan Asset Management. Data shown are averages over the course of the calendar year.
Long-term asset returns

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

<table>
<thead>
<tr>
<th>Year</th>
<th>Equities</th>
<th>Bonds</th>
<th>Cash</th>
</tr>
</thead>
<tbody>
<tr>
<td>1900-21</td>
<td>6.9%</td>
<td>2.2%</td>
<td>0.5%</td>
</tr>
<tr>
<td>2000-21</td>
<td>5.2%</td>
<td>5.0%</td>
<td>-0.7%</td>
</tr>
</tbody>
</table>

Equities: $3,500
Bonds: $15
Cash: $2

MSCI Europe intra-year declines vs. calendar-year returns
%
% Despite average intra-year drops of 15.4% (median 12.0%), annual returns are positive in 32 of 42 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 the calendar year. Returns shown are calendar years from 1980 to 2021. Past performance is not a reliable indicator of current and future results.
Asset class risk-return trade-off

Historic risk vs. return for selected asset classes
% annualised return 2004 – 2021 in EUR


Data as of 31 December 2021.
S&P 500 and fund flows

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

US asset returns by holding period

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

-50 -25 0 25 50 75
-43% -24% -18% 48% 49% 61%

1-yr rolling

5-yr rolling

10-yr rolling

20-yr rolling

Large cap equity
Bonds
50/50 portfolio

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 December 2021.
## Asset class returns (EUR)

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</thead>
<tbody>
<tr>
<td>REITs</td>
<td>18.3%</td>
<td>DM equities</td>
<td>21.9%</td>
<td>REITs</td>
<td>13.9%</td>
<td>HY bonds</td>
<td>18.2%</td>
<td>EM equities</td>
<td>21.0%</td>
<td>Govt bonds</td>
<td>4.6%</td>
<td>DM equities</td>
</tr>
<tr>
<td>HY bonds</td>
<td>17.5%</td>
<td>Portfolio</td>
<td>3.4%</td>
<td>EM equities</td>
<td>12.7%</td>
<td>Cndty</td>
<td>15.1%</td>
<td>DM equities</td>
<td>8.1%</td>
<td>HY bonds</td>
<td>1.5%</td>
<td>REITs</td>
</tr>
<tr>
<td>EM equities</td>
<td>16.8%</td>
<td>HY bonds</td>
<td>3.3%</td>
<td>DM equities</td>
<td>20.1%</td>
<td>DM equities</td>
<td>11.0%</td>
<td>EM equities</td>
<td>14.9%</td>
<td>Portfolio</td>
<td>1.7%</td>
<td>IG bonds</td>
</tr>
<tr>
<td>EMD</td>
<td>15.6%</td>
<td>Hedge funds</td>
<td>2.1%</td>
<td>IG bonds</td>
<td>7.7%</td>
<td>Govt bonds</td>
<td>13.5%</td>
<td>Cash</td>
<td>-0.3%</td>
<td>REITs</td>
<td>0.7%</td>
<td>Portfolio</td>
</tr>
<tr>
<td>DM equities</td>
<td>14.7%</td>
<td>Cash</td>
<td>0.2%</td>
<td>Portfolio</td>
<td>16.3%</td>
<td>IG bonds</td>
<td>7.4%</td>
<td>REITs</td>
<td>12.6%</td>
<td>EMD</td>
<td>-3.2%</td>
<td>EMD</td>
</tr>
<tr>
<td>Portfolio</td>
<td>10.6%</td>
<td>REITs</td>
<td>-1.3%</td>
<td>HY bonds</td>
<td>13.8%</td>
<td>Hedge funds</td>
<td>7.3%</td>
<td>DM equities</td>
<td>11.4%</td>
<td>DM equities</td>
<td>-3.2%</td>
<td>Cash</td>
</tr>
<tr>
<td>IG bonds</td>
<td>9.5%</td>
<td>IG bonds</td>
<td>-4.0%</td>
<td>Hedge funds</td>
<td>15.2%</td>
<td>HY bonds</td>
<td>6.7%</td>
<td>Portfolio</td>
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<td>REITs</td>
<td>-4.0%</td>
<td>Portfolio</td>
</tr>
<tr>
<td>Hedge funds</td>
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<td>EM equities</td>
<td>-6.9%</td>
<td>Govt bonds</td>
<td>15.0%</td>
<td>Portfolio</td>
<td>6.3%</td>
<td>IG bonds</td>
<td>7.4%</td>
<td>IG bonds</td>
<td>-4.2%</td>
<td>Hedge funds</td>
</tr>
<tr>
<td>Cash</td>
<td>1.2%</td>
<td>Govt bonds</td>
<td>-8.4%</td>
<td>EM equities</td>
<td>11.8%</td>
<td>Cash</td>
<td>0.1%</td>
<td>Hedge funds</td>
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<td>Govt bonds</td>
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<td>DM equities</td>
</tr>
<tr>
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<td>EMD</td>
<td>-9.3%</td>
<td>Cash</td>
<td>0.3%</td>
<td>EM equities</td>
<td>-4.9%</td>
<td>Govt bonds</td>
<td>4.7%</td>
<td>Hedge funds</td>
<td>-6.9%</td>
<td>Cndty</td>
</tr>
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<td>Cash</td>
<td>-0.2%</td>
<td>Cndty</td>
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<td>Cash</td>
</tr>
<tr>
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<td>Cndty</td>
<td>-13.4%</td>
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<td>-0.2%</td>
<td>Cndty</td>
<td>-10.7%</td>
<td>Cash</td>
</tr>
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Source: Bloomberg Barclays, FTSE, J.P. Morgan Economic Research, MSCI, Refinitiv Datastream, J.P. Morgan Asset Management. Annualised return and volatility covers the period from 2012 to 2021. Vol. is the standard deviation of annual returns. Govt bonds: Bloomberg Barclays Global Aggregate Government Treasuries; HY bonds: ICE BofA Global High Yield; EMD: J.P. Morgan EMBI Global Diversified; IG bonds: Bloomberg Barclays Global Aggregate – Corporates; Cndty: Bloomberg Commodity; REITs: FTSE NAREIT All REITS; DM equities: MSCI World; EM equities: 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 31 December 2021.
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Unless otherwise stated, all data as of 31 December 2021 or most recently available.

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