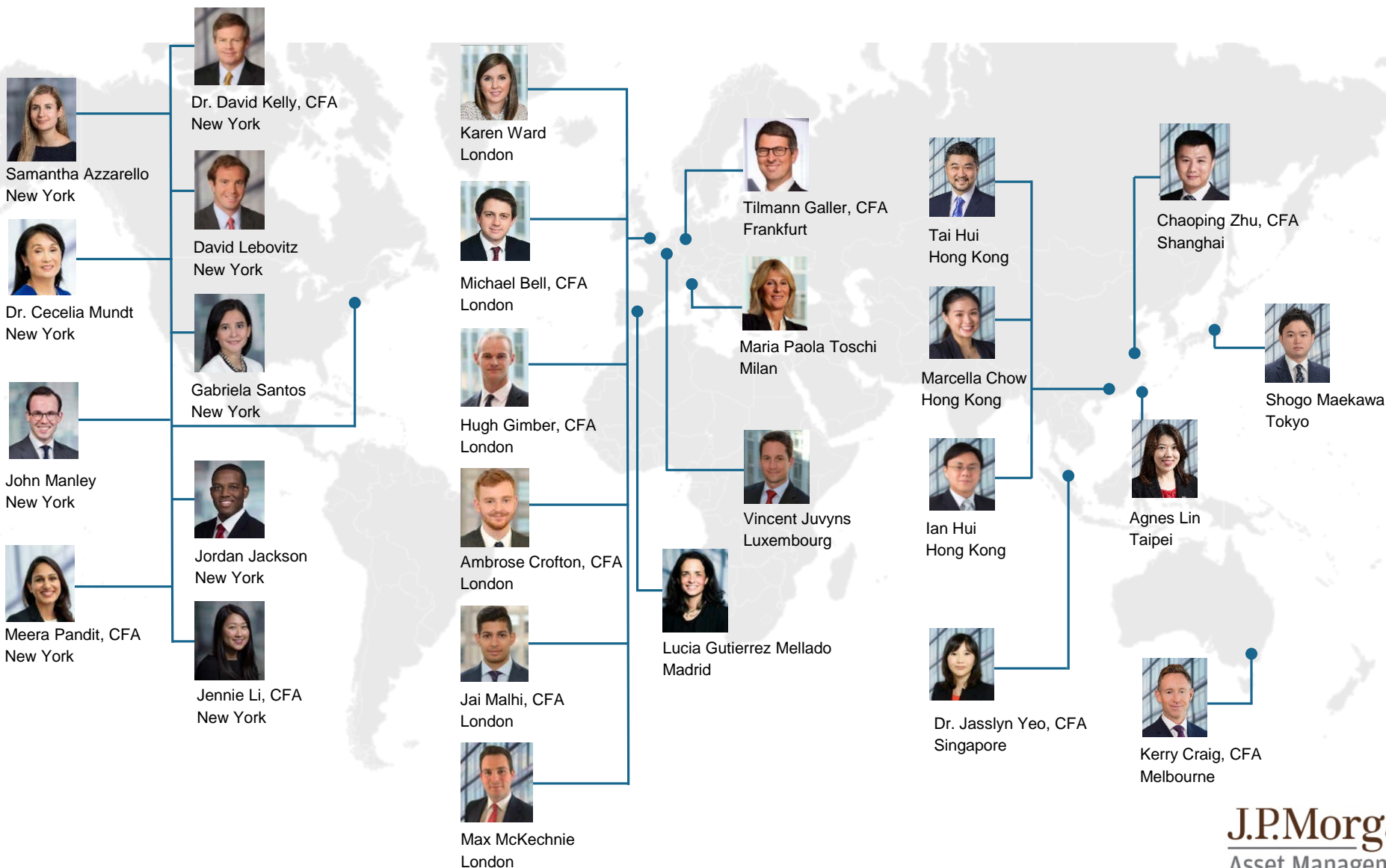


Guide to the Markets

Europe | 1Q 2021 | As of 31 December 2020

J.P. Morgan

Global Market Insights Strategy Team



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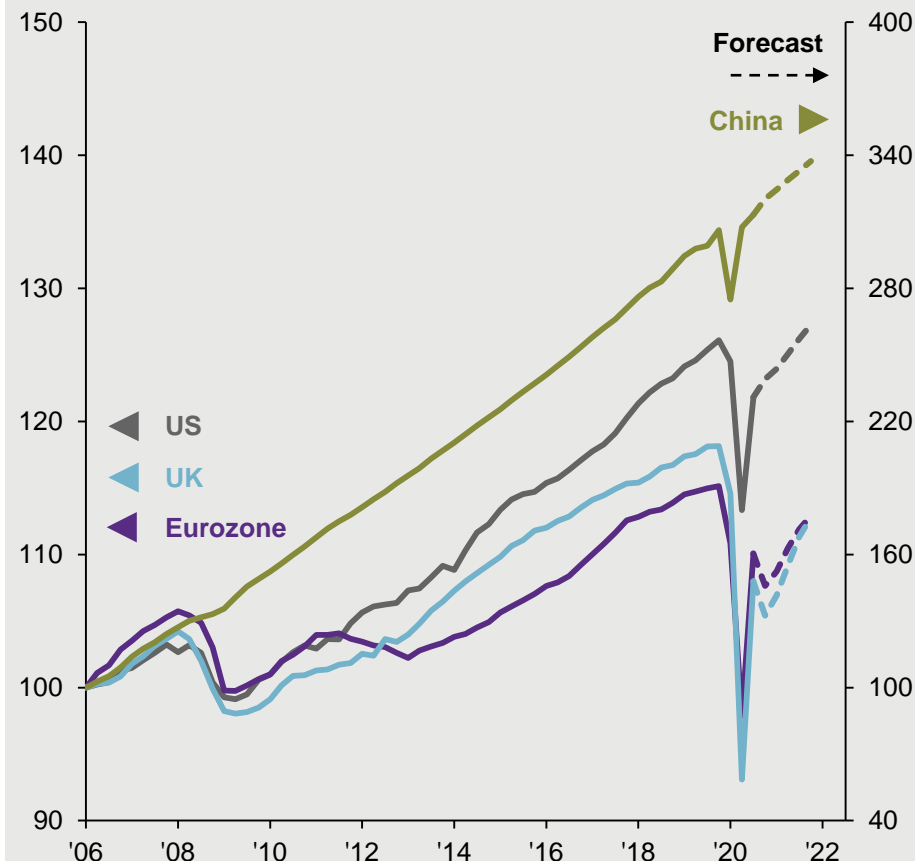
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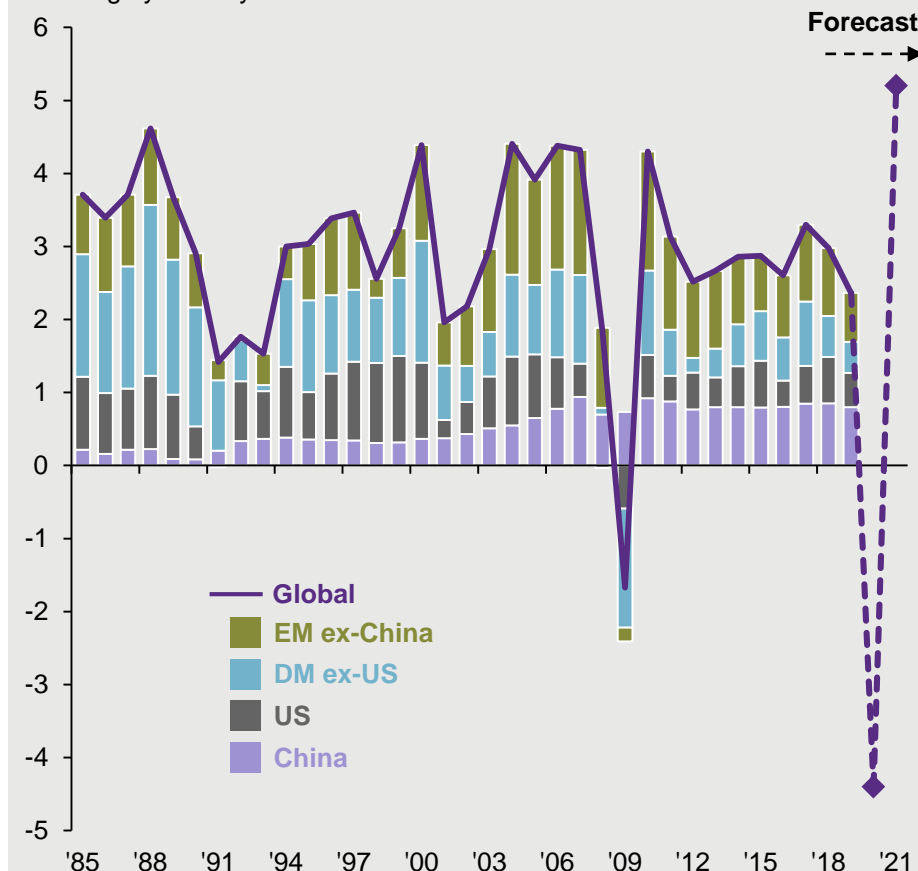
Real GDP growth

Index level, rebased to 100 at 1Q 2006



Contribution to global real GDP growth

% change year on year

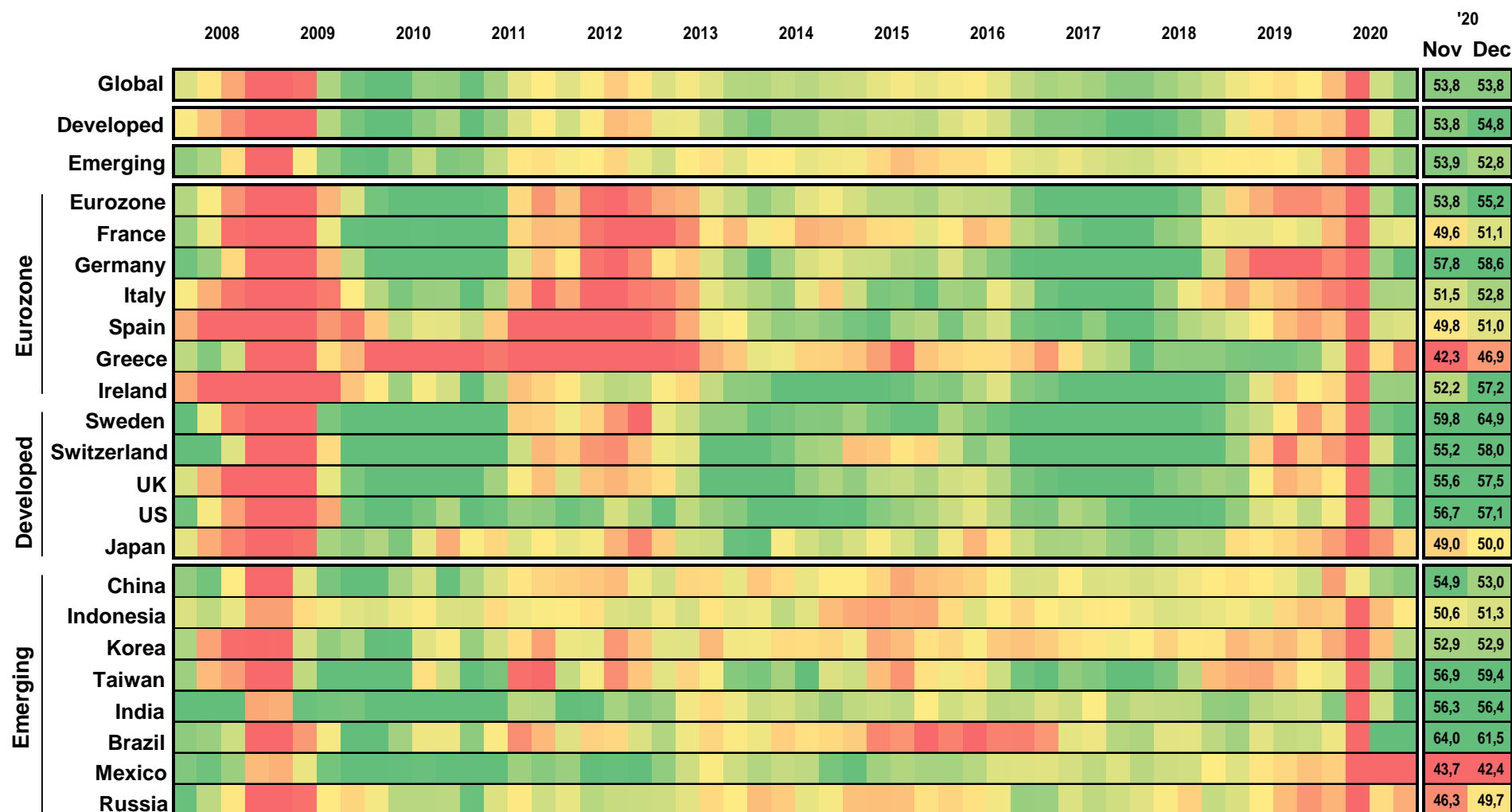


Source: (Left) BEA, Bloomberg, Eurostat, National Bureau of Statistics of China, ONS, J.P. Morgan Asset Management. Forecasts are from Bloomberg contributor composite. (Right) Refinitiv Datastream, World Bank, J.P. Morgan Asset Management. EM is emerging markets. DM is developed markets. Dotted line represents forecasts from Bloomberg contributor composite. Past performance is not a reliable indicator of current and future results. *Guide to the Markets - Europe*. Data as of 31 December 2020.

Global Purchasing Managers' Index (PMI) for manufacturing

GTM - Europe | 5

Global economy



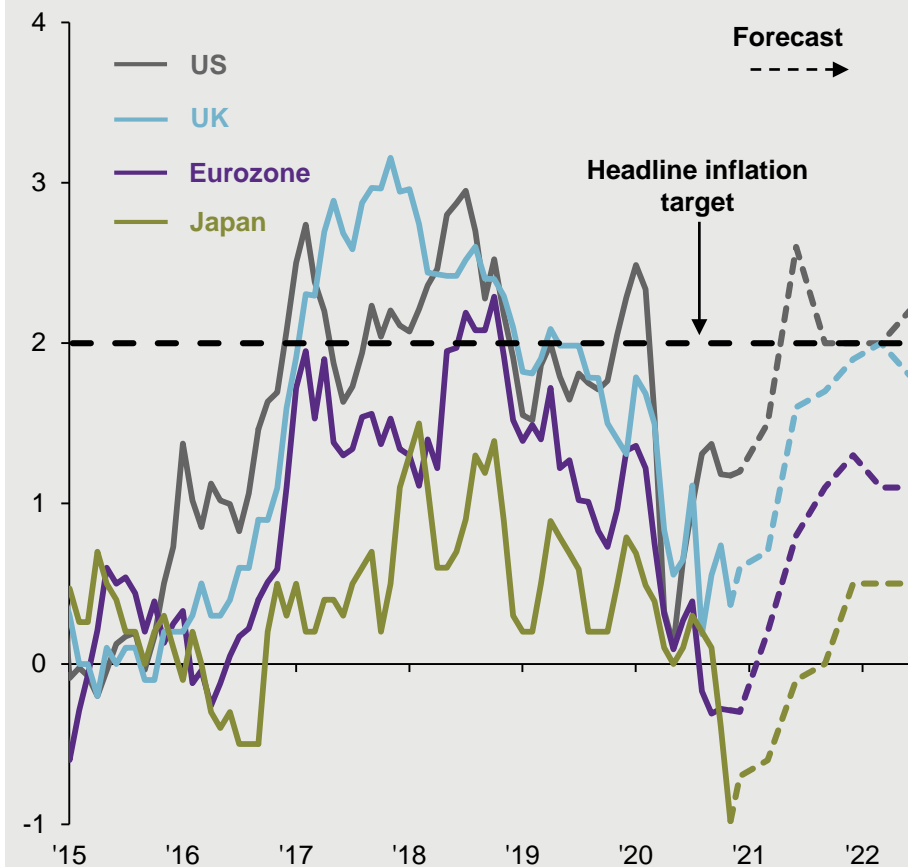
Source: Markit, J.P. Morgan Asset Management. The Global Purchasing Managers' Index (PMI) for manufacturing assesses the economic health of the sector by surveying manufacturing businesses regarding output, new orders, stocks of purchases, supplier delivery times and employment. A score of 50 indicates 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 2020.

		2018		2019											2020										
		Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
	Global	2,1	1,9	1,8	2,1	2,3	2,2	2,1	2,1	2,0	1,9	2,1	2,4	2,7	3,0	2,8	2,2	1,4	1,1	1,4	1,6	1,5	1,4	1,2	0,9
	Developed	1,6	1,4	1,4	1,6	1,8	1,6	1,5	1,5	1,4	1,3	1,2	1,5	1,7	1,9	1,7	1,1	0,3	0,1	0,5	0,7	0,6	0,6	0,5	0,4
	Emerging	2,7	2,6	2,5	3,0	3,2	3,3	3,1	3,1	3,0	2,9	3,3	3,8	4,1	4,7	4,4	3,8	3,2	2,6	2,7	2,9	2,8	2,6	2,1	1,7
Eurozone	Eurozone	1,5	1,4	1,5	1,4	1,7	1,2	1,3	1,0	1,0	0,8	0,7	1,0	1,3	1,4	1,2	0,7	0,3	0,1	0,3	0,4	-0,2	-0,3	-0,3	-0,3
	France	1,9	1,4	1,6	1,3	1,5	1,1	1,4	1,3	1,3	1,1	0,9	1,2	1,6	1,7	1,6	0,8	0,4	0,4	0,2	0,9	0,2	0,0	0,1	0,2
	Germany	1,6	1,4	1,5	1,3	2,0	1,4	1,6	1,7	1,4	1,2	1,1	1,1	1,5	1,7	1,7	1,4	0,9	0,6	0,9	-0,1	0,0	-0,2	-0,2	-0,3
	Italy	1,2	0,9	1,1	1,1	1,1	0,9	0,8	0,3	0,5	0,2	0,2	0,2	0,5	0,4	0,2	0,1	0,1	-0,3	-0,4	0,8	-0,5	-1,0	-0,6	-0,3
	Spain	1,2	1,0	1,1	1,3	1,6	0,9	0,6	0,6	0,4	0,2	0,2	0,5	0,8	1,1	0,9	0,1	-0,7	-0,9	-0,3	-0,7	-0,6	-0,6	-0,9	-0,8
	Greece	0,6	0,5	0,8	1,0	1,1	0,6	0,2	0,4	0,1	0,2	-0,3	0,5	1,1	1,1	0,4	0,2	-0,9	-0,7	-1,9	-2,1	-2,3	-2,3	-2,0	-2,1
	Ireland	0,8	0,8	0,7	1,1	1,7	1,0	1,1	0,5	0,6	0,6	0,6	0,8	1,1	1,1	0,9	0,5	-0,3	-0,8	-0,6	-0,6	-1,1	-1,2	-1,5	-1,0
Developed	Sweden	2,2	2,0	1,9	1,8	2,1	2,1	1,6	1,5	1,3	1,3	1,6	1,8	1,7	1,5	1,3	0,8	-0,2	0,1	0,9	0,7	1,0	0,6	0,4	0,2
	Switzerland	0,8	0,7	0,7	0,7	1,1	0,5	0,7	0,4	0,5	0,1	-0,3	-0,3	-0,1	0,2	-0,2	-0,4	-1,0	-1,0	-1,3	-1,2	-1,4	-1,1	-0,9	-0,8
	UK	2,1	1,8	1,9	1,9	2,1	2,0	2,0	2,1	1,7	1,7	1,5	1,5	1,3	1,8	1,7	1,5	0,8	0,5	0,6	1,0	0,2	0,5	0,7	0,3
	US	1,9	1,6	1,5	1,9	2,0	1,8	1,6	1,8	1,7	1,7	1,8	2,1	2,3	2,5	2,3	1,5	0,3	0,1	0,6	1,0	1,3	1,4	1,2	1,2
	Japan	0,3	0,2	0,2	0,5	0,9	0,7	0,7	0,5	0,3	0,2	0,2	0,5	0,8	0,7	0,4	0,4	0,1	0,1	0,1	0,3	0,2	0,0	-0,4	-0,9
Emerging	China	1,9	1,7	1,5	2,3	2,5	2,7	2,7	2,8	2,8	3,0	3,8	4,5	4,5	5,4	5,2	4,3	3,3	2,4	2,5	2,7	2,4	1,7	0,5	-0,5
	Indonesia	3,2	2,8	2,7	2,5	2,8	3,1	2,8	2,8	3,1	3,1	2,9	2,7	2,6	2,7	3,0	3,0	2,7	2,2	2,0	1,5	1,3	1,4	1,4	1,6
	Korea	1,3	0,8	0,5	0,4	0,6	0,7	0,7	0,6	0,0	-0,4	0,0	0,2	0,7	1,5	1,1	1,0	0,1	-0,3	0,0	0,3	0,7	1,0	0,1	0,6
	Taiwan	-0,1	0,2	0,2	0,6	0,7	0,9	0,9	0,4	0,4	0,4	0,4	0,6	1,1	1,9	-0,2	0,0	-1,0	-1,2	-0,7	-0,5	-0,3	-0,6	-0,3	0,1
	India	2,1	2,0	2,6	2,9	3,0	3,0	3,2	3,1	3,3	4,0	4,6	5,5	7,4	7,6	6,6	5,8	7,2	6,3	6,2	6,7	6,7	7,3	7,6	6,9
	Brazil	3,7	3,8	3,9	4,6	4,9	4,7	3,4	3,2	3,4	2,9	2,5	3,3	4,3	4,2	4,0	3,3	2,4	1,9	2,1	2,3	2,4	3,1	3,9	4,3
	Mexico	4,8	4,4	3,9	4,0	4,4	4,3	4,0	3,8	3,2	3,0	3,0	3,0	2,8	3,2	3,7	3,3	2,2	2,8	3,3	3,6	4,1	4,0	4,1	3,3
	Russia	4,3	5,0	5,2	5,3	5,2	5,1	4,7	4,6	4,3	4,0	3,8	3,5	3,0	2,4	2,3	2,5	3,1	3,0	3,2	3,4	3,6	3,7	4,0	4,4

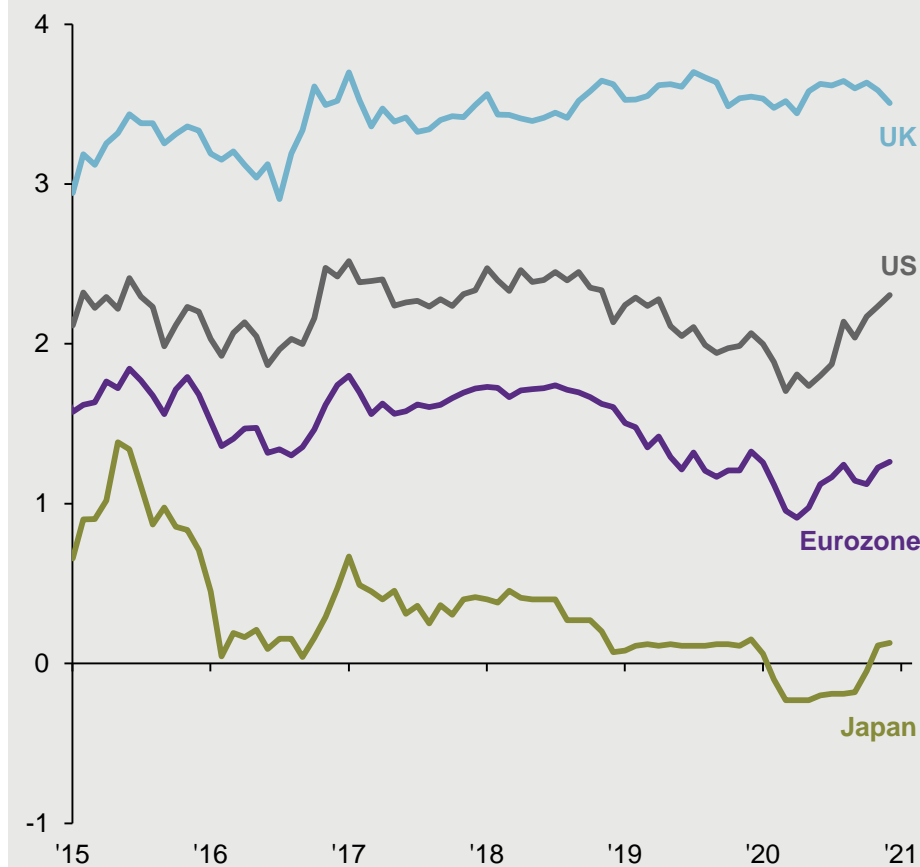
Source: Bank of Mexico, DGBAS, ECB, Goskomstat of Russia, IBGE, India Ministry of Statistics & Programme Implementation, Japan Ministry of Internal Affairs & Communication, Korean National Statistical Office, National Bureau of Statistics China, ONS, Refinitiv Datastream, Riksbank, Statistics Indonesia, Swiss National Bank, US Federal Reserve, J.P. Morgan Asset Management. Figures shown are for headline inflation and are % change year on year. Heatmap colours are based on the respective central bank target inflation rates. Blue is below target, white is at target and red is above target. Past performance is not a reliable indicator of current and future results. *Guide to the Markets - Europe*. Data as of 31 December 2020.

Headline inflation

% change year on year

**Market-based inflation expectations**

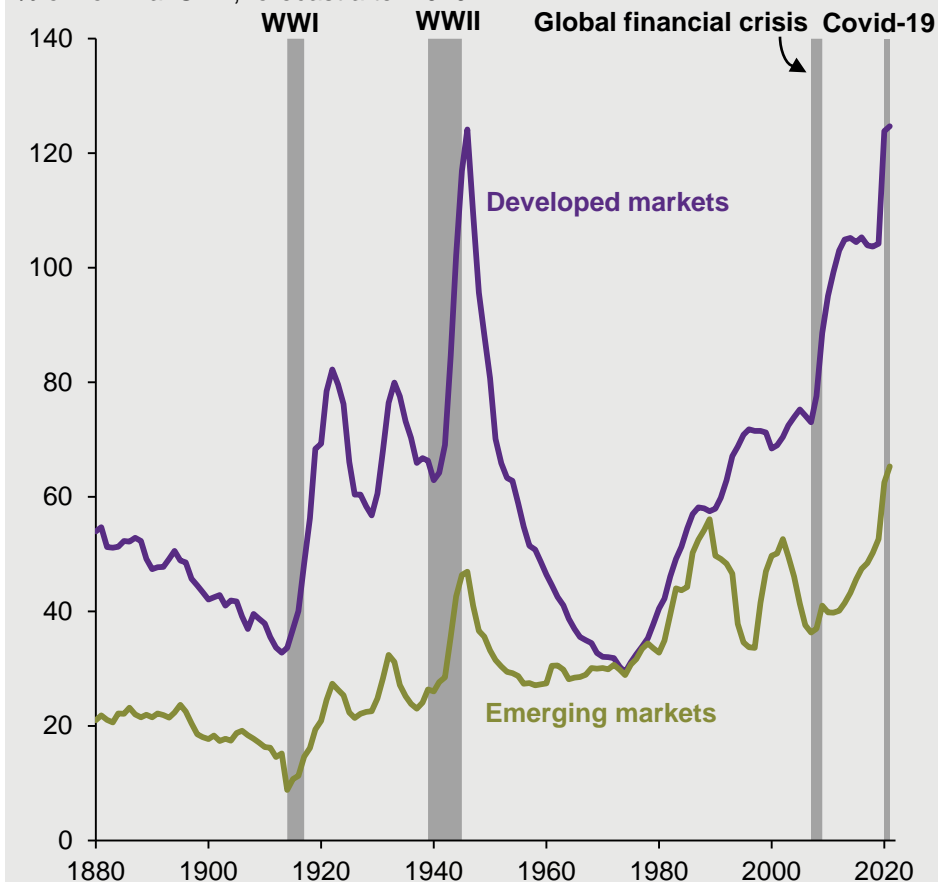
%, 5y5y inflation swap



Source: (Left) Bank of Japan, BLS, Eurostat, ONS, Refinitiv Datastream, J.P. Morgan Asset Management. 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. Past performance is not a reliable indicator of current and future results.
Guide to the Markets - Europe. Data as of 31 December 2020.

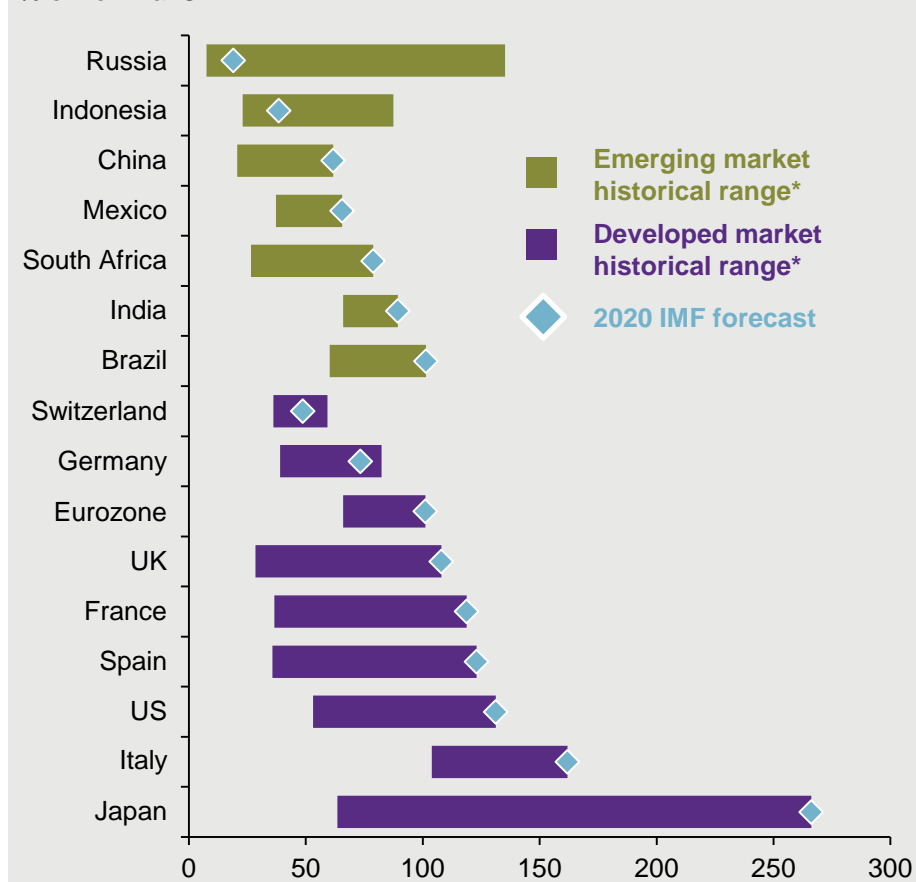
Global government debt-to-GDP ratios

% of nominal GDP, forecast after 2019



Government gross debt-to-GDP ratios by country

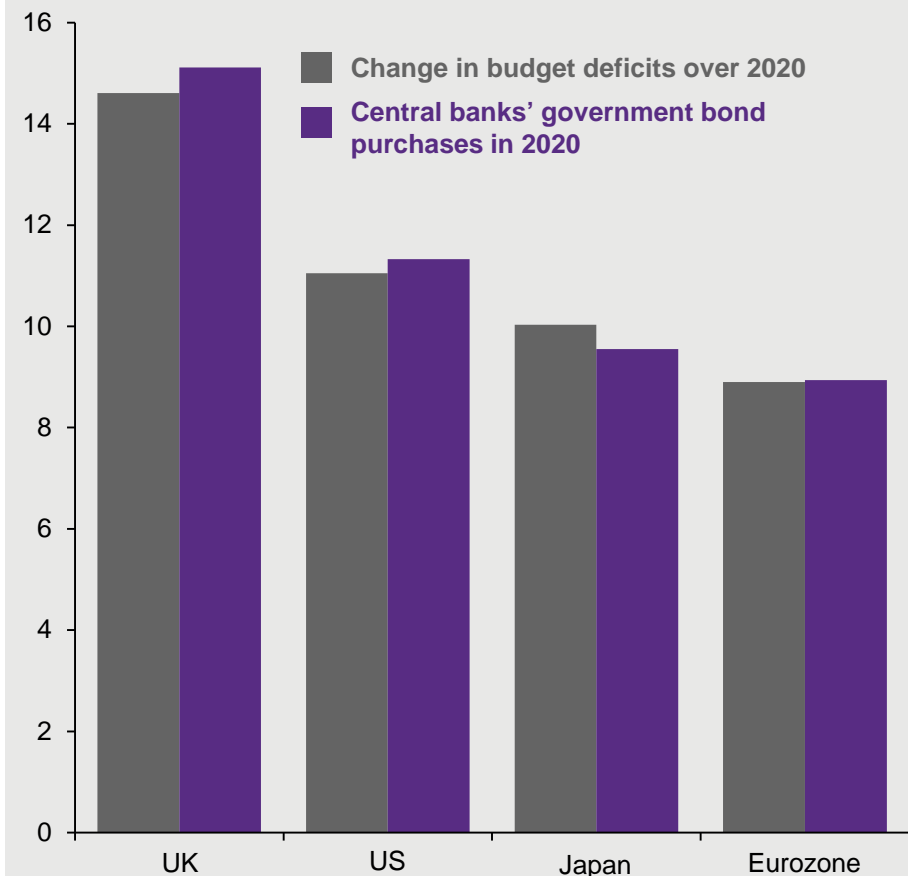
% of nominal GDP



Source: (Left) IMF Fiscal Monitor October 2020, J.P. Morgan Asset Management. (Right) IMF, Refinitiv Datastream, J.P. Morgan Asset Management. *Historical ranges are since 1990 or more recent, depending on data availability. Past performance is not a reliable indicator of current and future results.
Guide to the Markets - Europe. Data as of 31 December 2020.

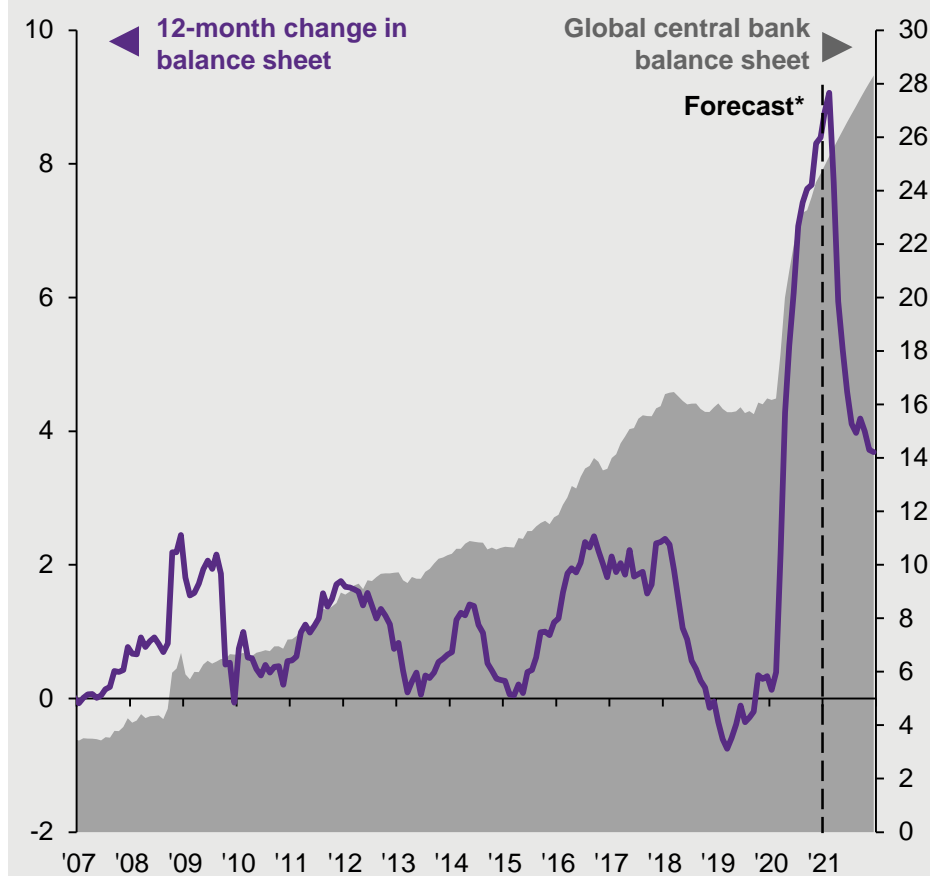
Government budget deficits and central bank purchases

% of nominal GDP, 2020 estimate



Central bank balance sheets

USD trillions



Source: (Left) Bank of England, Bank of Japan, Bloomberg, European Central Bank, IMF, US Federal Reserve, J.P. Morgan Asset Management. Budget deficits as % of GDP are forecasts for 2020 from Bloomberg contributor composite. 2020 GDP estimate is from IMF World Economic Outlook. (Right) BoE, BoJ, ECB, Fed, Refinitiv Datastream, Swiss National Bank (SNB), J.P. Morgan Asset Management. Global central bank balance sheet is the sum of the balance sheets of the BoE, BoJ, ECB, Fed and SNB. *Balance sheet forecast assumptions: BoE to have net asset purchases totalling GBP 150 bn over the forecast period; BoJ to have net asset purchases totalling JPY 50 tn over the forecast period; ECB to have net asset purchases totalling EUR 1,2 tn over the forecast period; Fed to have net asset purchases of USD 1,4 tn over the forecast period; SNB balance sheet to increase by CHF 120 bn over the forecast period. Past performance is not a reliable indicator of current and future results.

Guide to the Markets - Europe. Data as of 31 December 2020.

USD real effective exchange rate and interest rate differential

Index level (LHS); % (RHS)



Global real effective exchange rate valuations

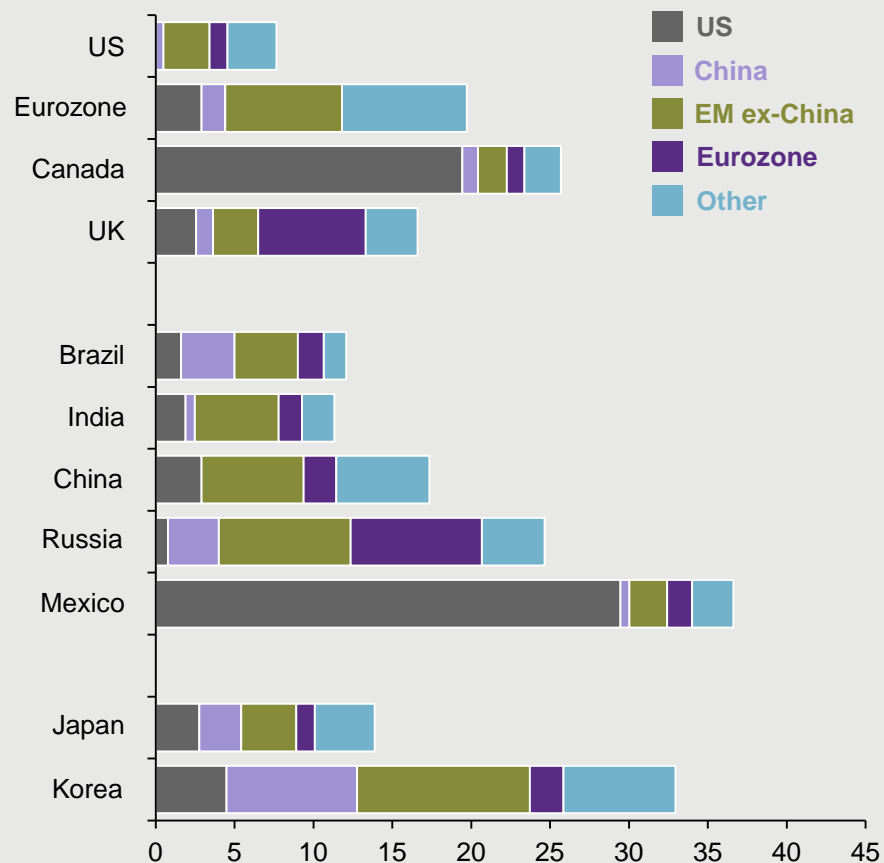
% premium / discount relative to its average since 1999



Source: (All charts) J.P. Morgan Securities Research, Refinitiv Datastream, J.P. Morgan Asset Management. DM is developed markets and the yield is calculated as a GDP-weighted average of the 10-year government bond yields of Australia, Canada, France, Germany, Italy, Japan, Switzerland and the UK. Past performance is not a reliable indicator of current and future results. *Guide to the Markets - Europe*. Data as of 31 December 2020.

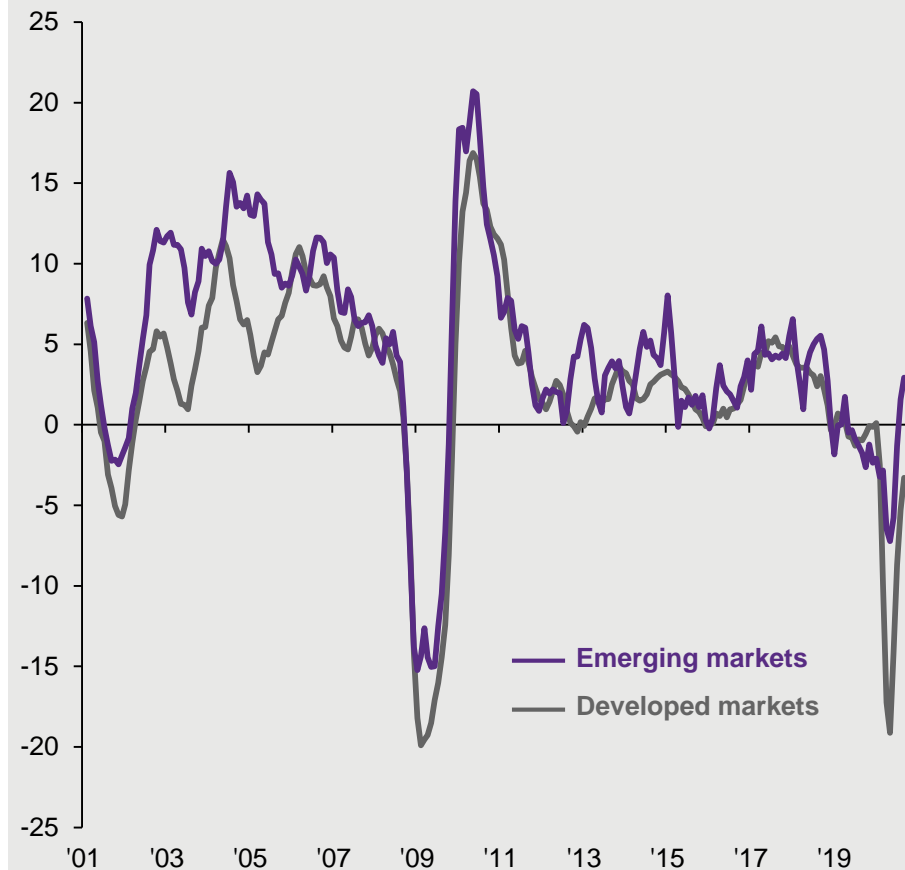
Exports of goods

% of nominal GDP, 2019



Global export volumes

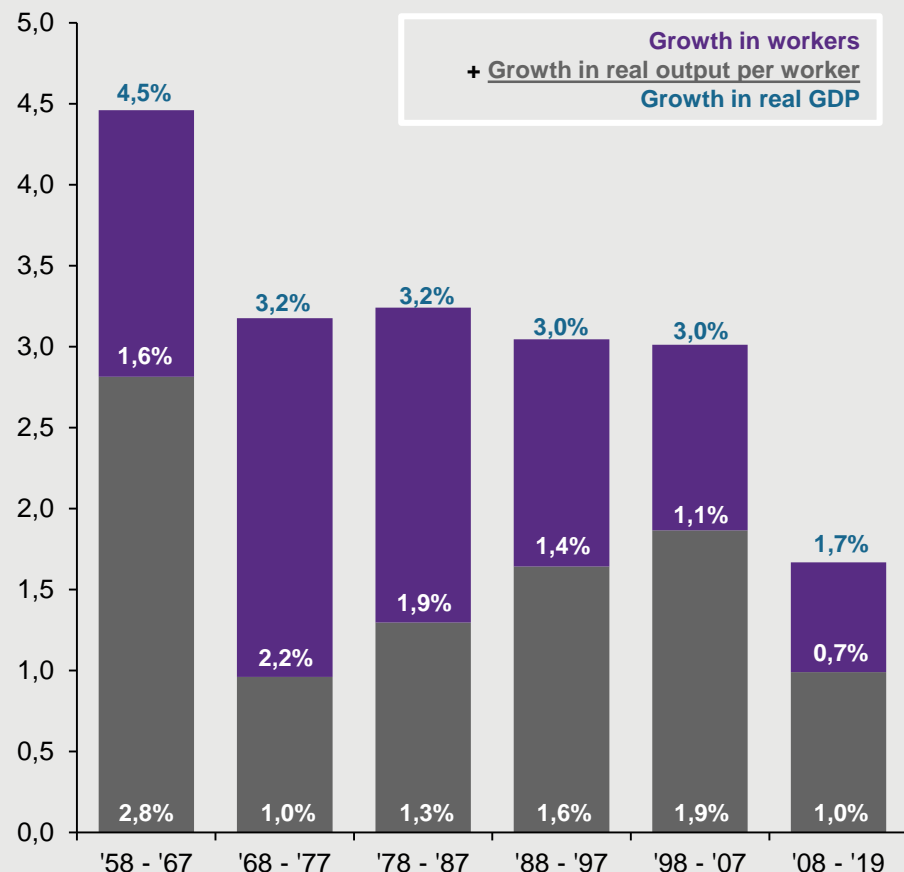
% change year on year, three-month moving average



Source: (Left) IMF Direction of Trade, IMF World Economic Outlook, J.P. Morgan Asset Management. (Right) CPB Netherlands, 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 2020.

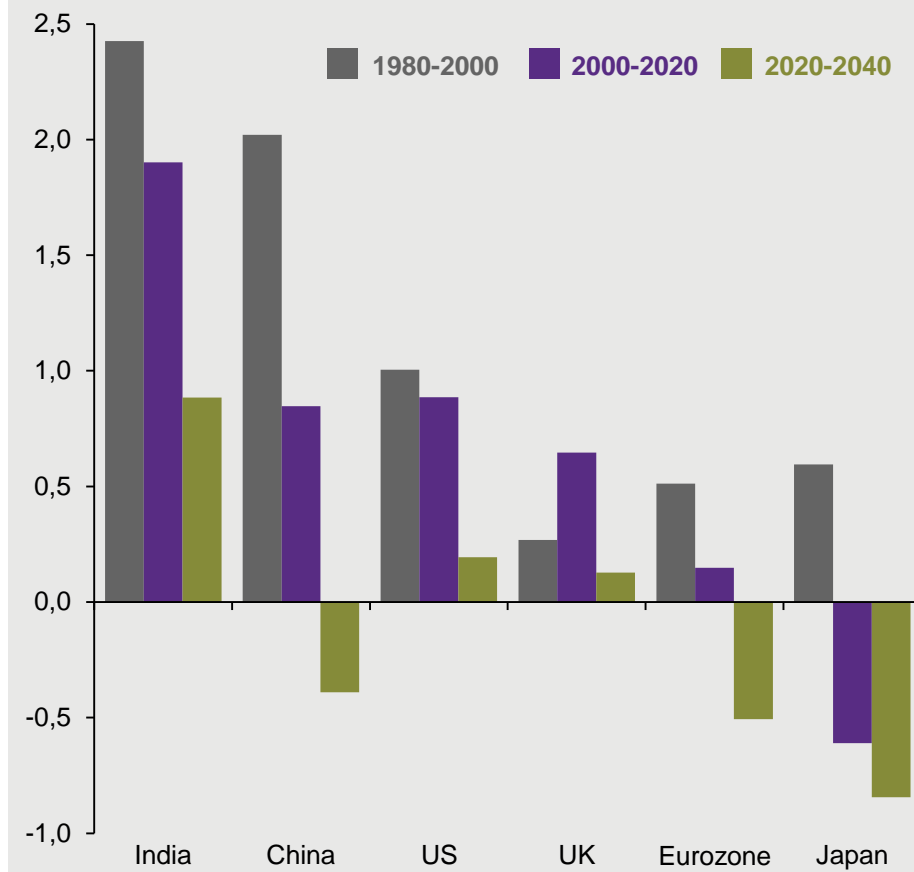
Drivers of US GDP growth

Annualised % change



Global working-age population growth

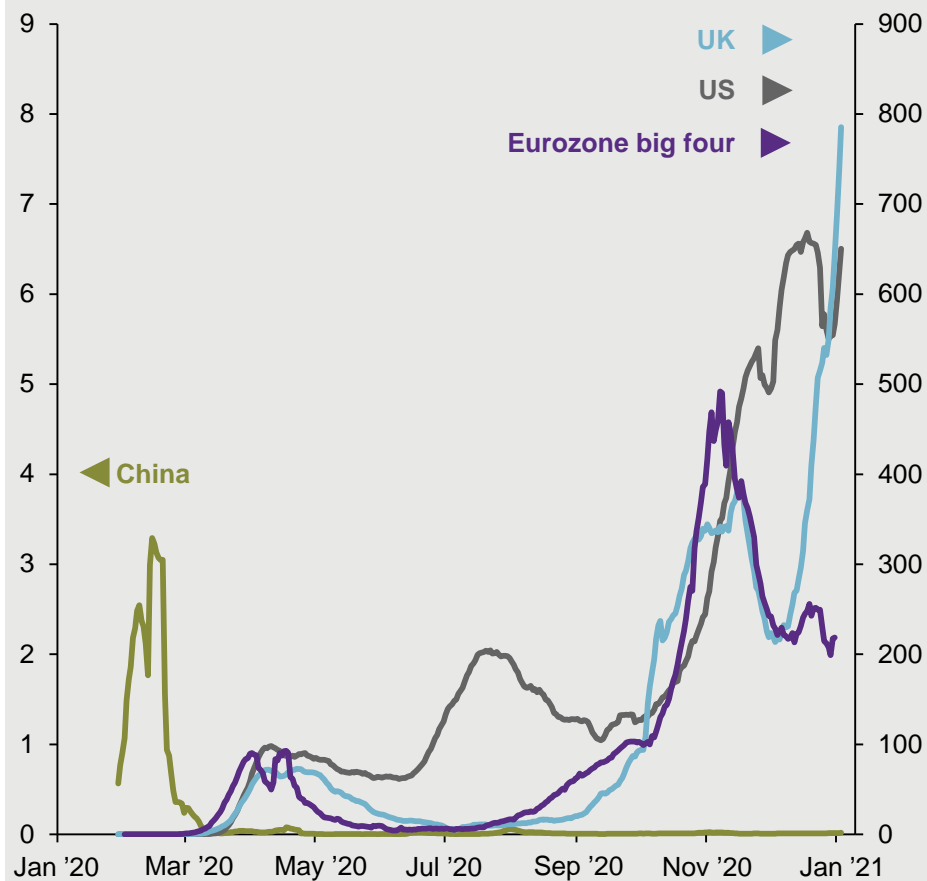
Annualised % change



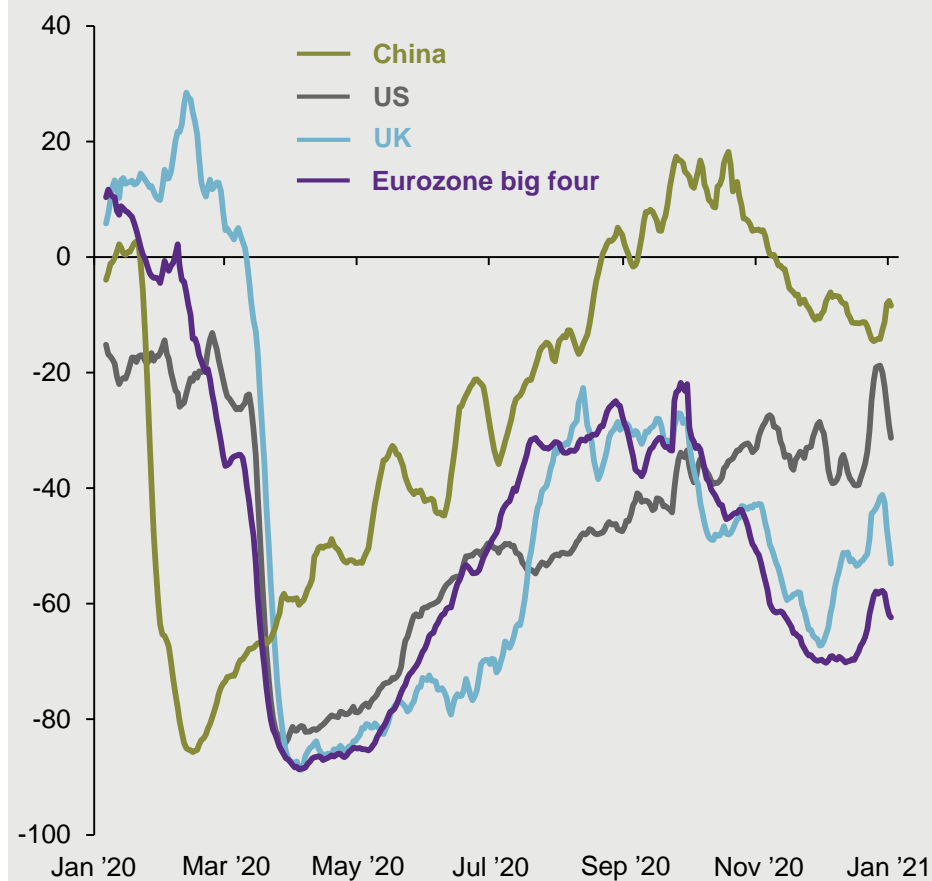
Source: (Left) BEA, BLS, J.P. Morgan Asset Management. GDP drivers are calculated as the average annualised growth between 4Q from the preceding year in the period and 4Q of the last year of the period. (Right) United Nations (UN) Department of Economic and Social Affairs, J.P. Morgan Asset Management. 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. *Guide to the Markets - Europe*. Data as of 31 December 2020.

Daily increase in Covid-19 cases

Seven-day moving average, per million people

**Travel and navigation app usage**

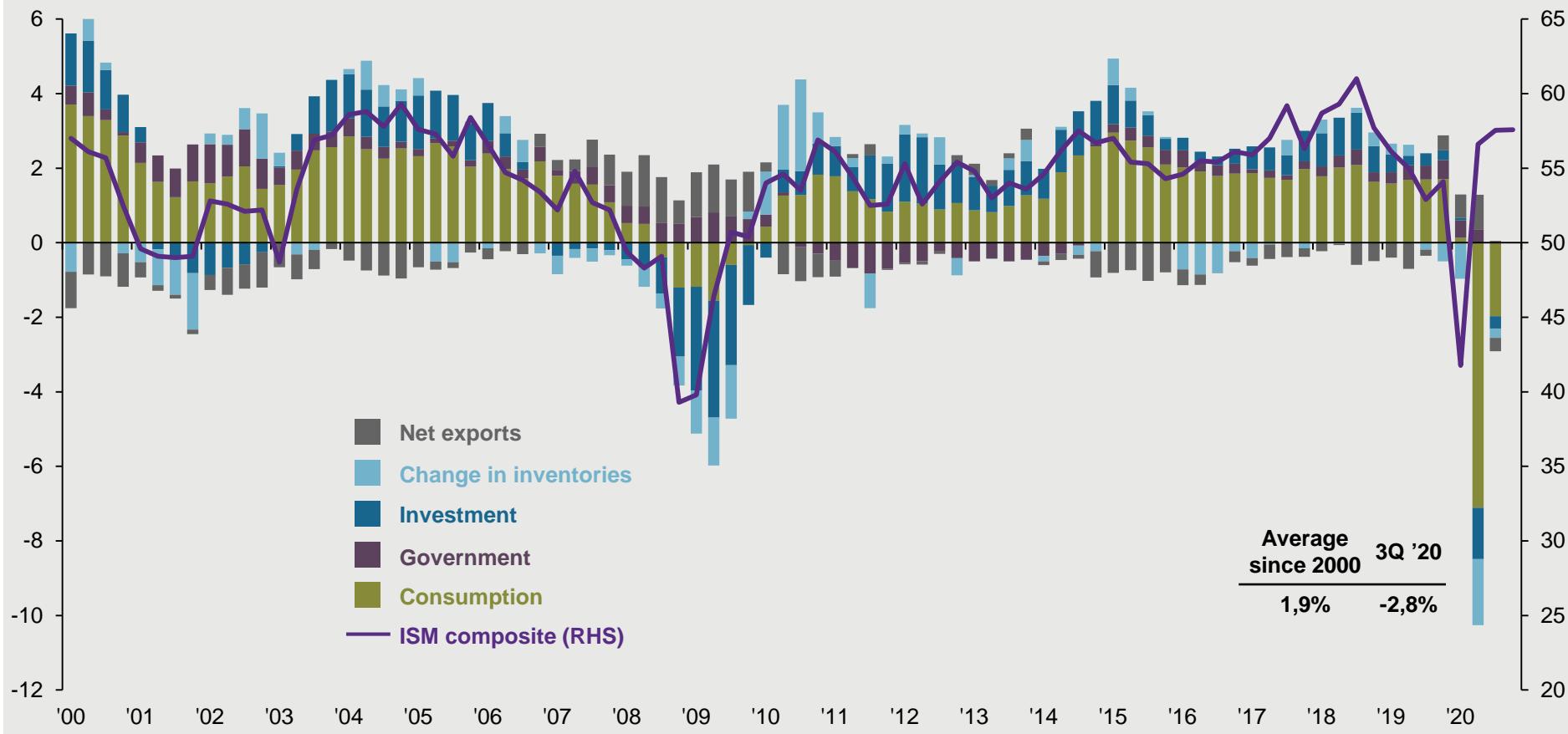
% change year on year



Source: (Left) Johns Hopkins CSSE, World Bank, J.P. Morgan Asset Management. Eurozone big four data includes Germany, France, Italy and Spain. (Right) App Annie, The World Bank, J.P. Morgan Asset Management. Data is sourced from App Annie with over 600 travel and navigation apps globally, including Google Maps, Uber, Airbnb and Booking.com. Eurozone big four data is the population-weighted average of Germany, France, Italy and Spain. *Guide to the Markets - Europe*. Data as of 31 December 2020.

Contribution to US real GDP growth and ISM composite

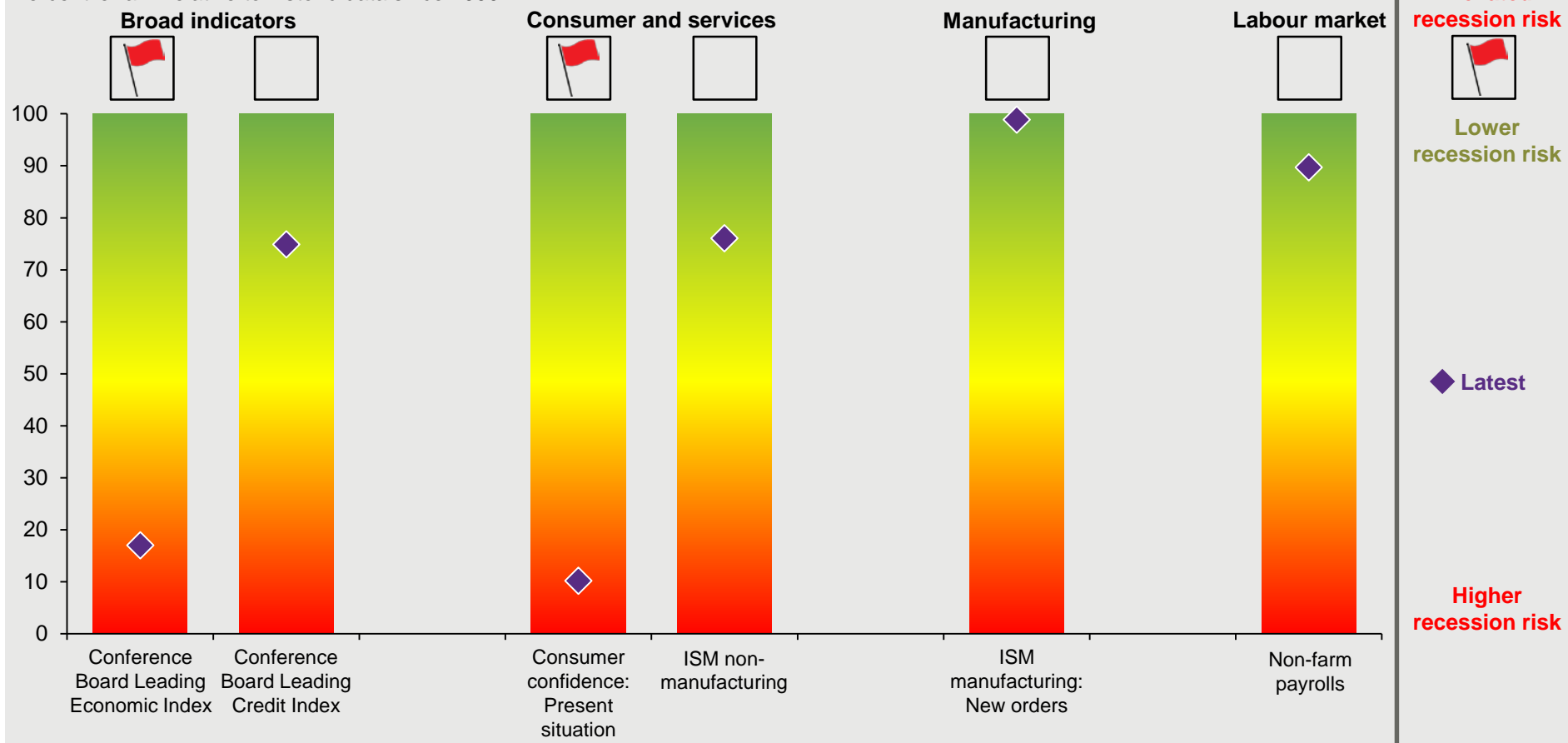
% change year on year (LHS); index level (RHS)



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

US economic indicators

Percentile rank relative to historic data since 1990



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 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. *Guide to the Markets - Europe*. Data as of 31 December 2020.

US ISM manufacturing: New orders



US ISM non-manufacturing



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.

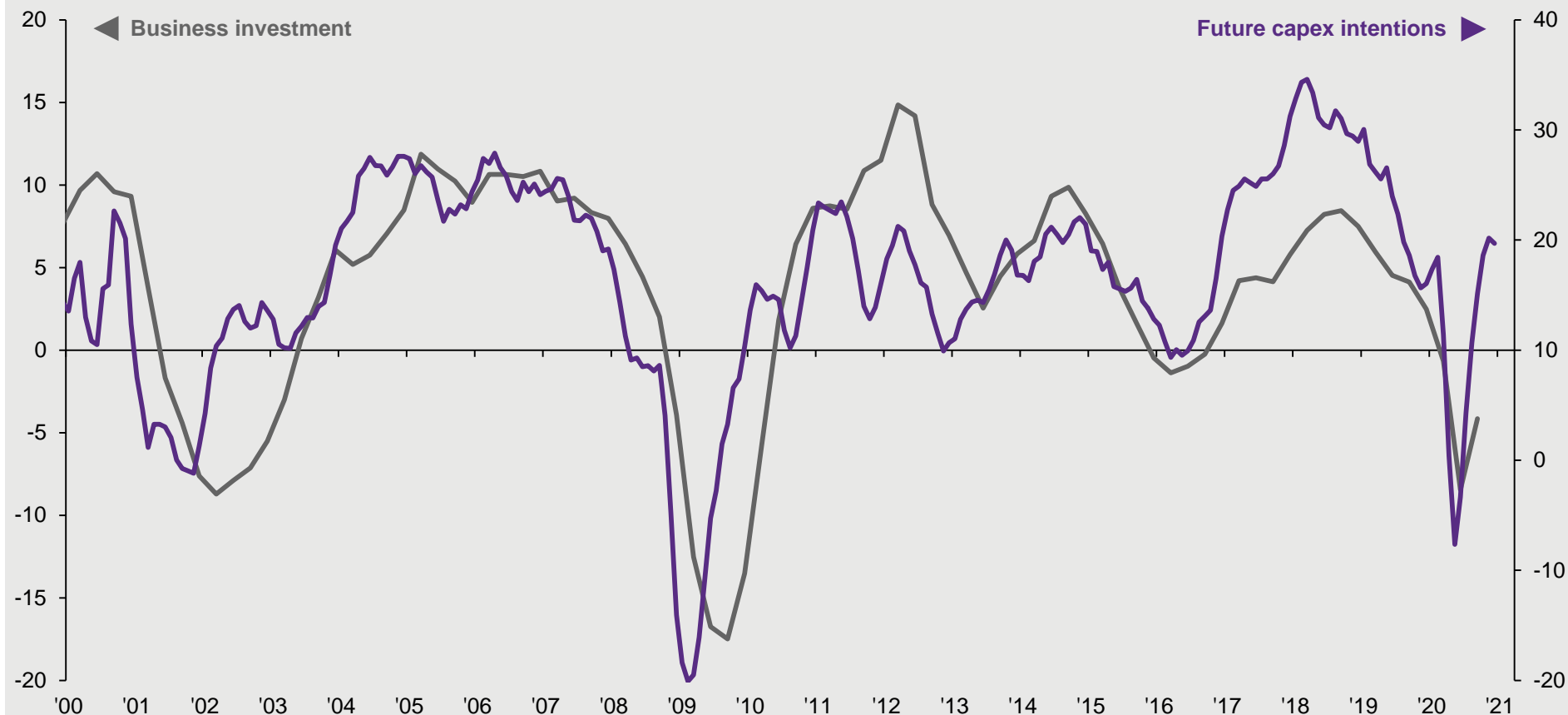
Elevated recession risk line is shown as the highest value of the underlying indicator observed at the start of the three recessions prior to the Covid-19 recession.

Past performance is not a reliable indicator of current and future results.

Guide to the Markets - Europe. Data as of 31 December 2020.

US future capex intentions and business investment

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



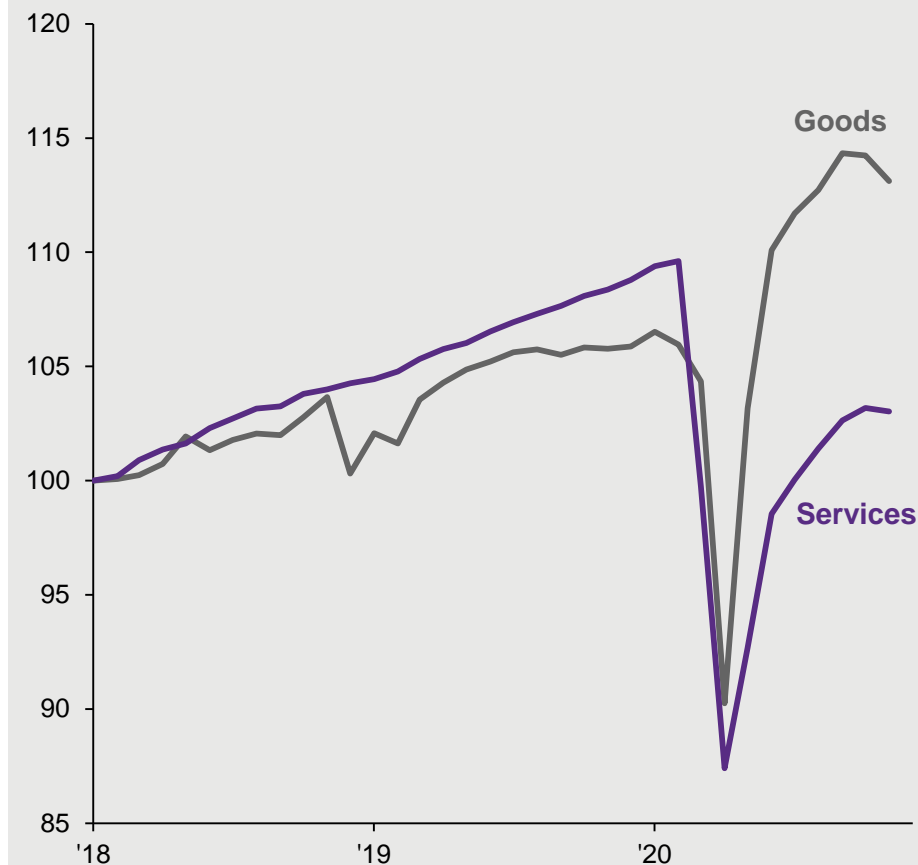
Source: BEA, Dallas Fed, Kansas City Fed, New York Fed, Philadelphia Fed, Refinitiv Datastream, Richmond Fed, J.P. Morgan Asset Management. Future capex intentions is an average index level of the five aforementioned Fed districts equally weighted, displayed using a three-month moving average. Past performance is not a reliable indicator of current and future results. *Guide to the Markets - Europe*. Data as of 31 December 2020.

US consumer confidence: Present situation

% change year on year

**US goods and services consumer spending**

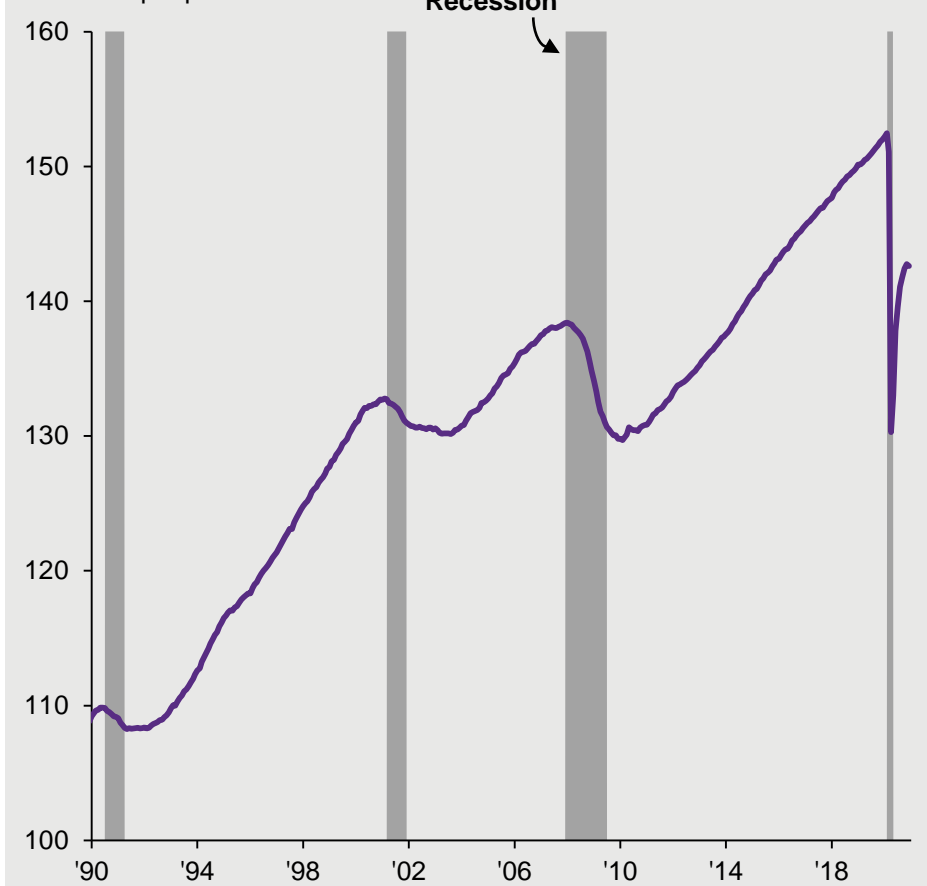
Index level, rebased to 100 in January 2018



Source: (Left) 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 of the underlying indicator observed at the start of the three recessions prior to the Covid-19 recession. (Right) BEA, 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 2020.

US non-farm payroll employment

Millions of people



US unemployment rate and wage growth

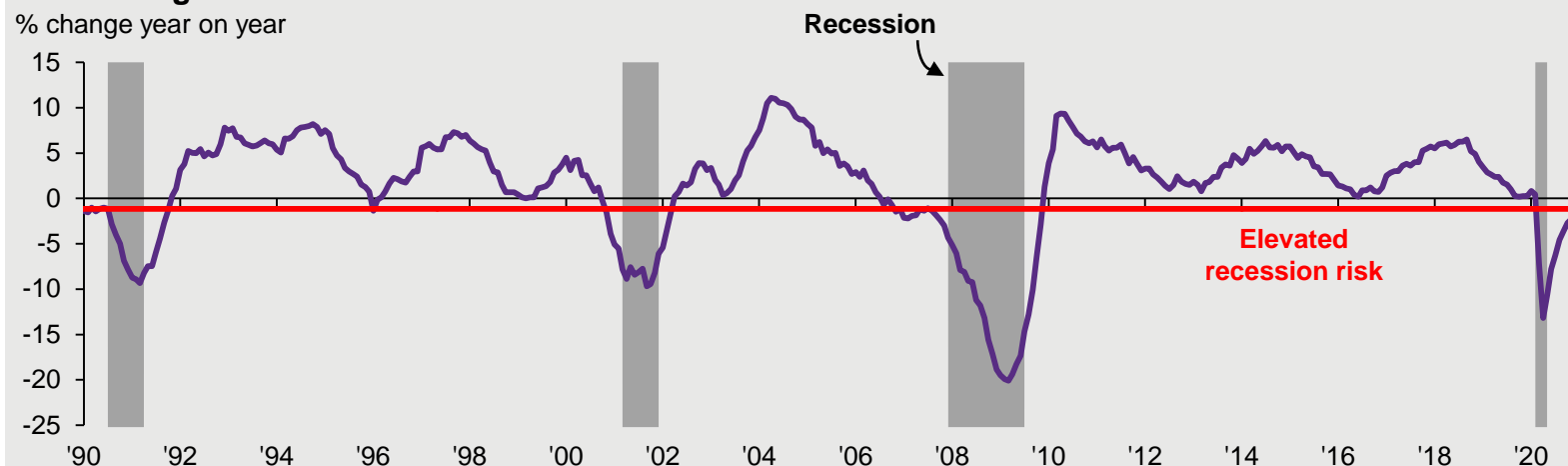
%, wage growth is year on year



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. Wage growth is average hourly earnings of total private production and non-supervisory employees. Past performance is not a reliable indicator of current and future results. *Guide to the Markets - Europe*. Data as of 31 December 2020.

US Leading Economic Index

% change year on year



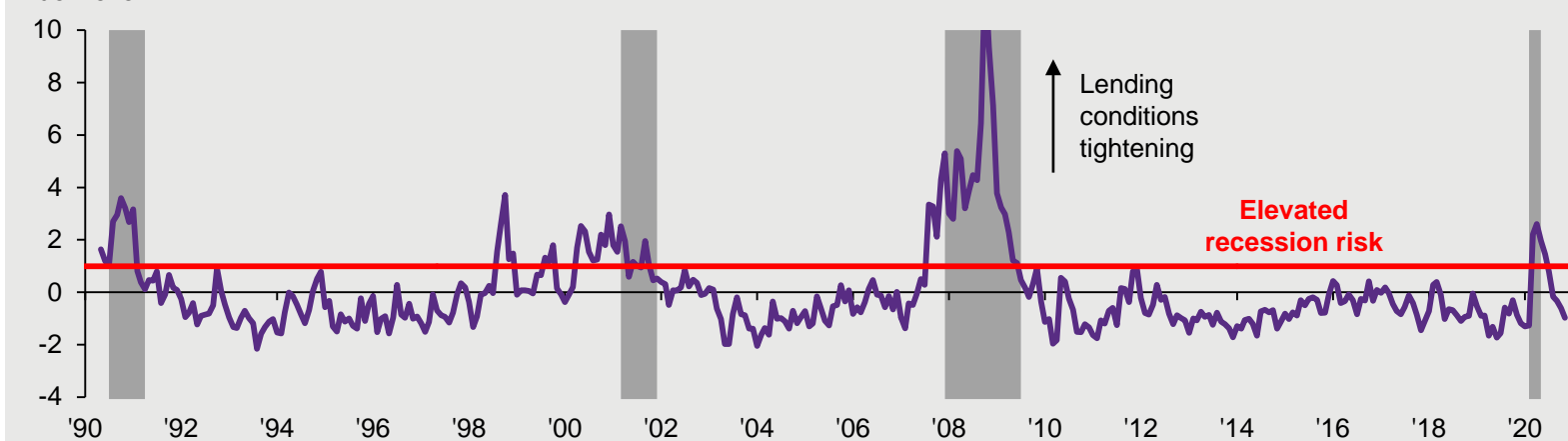
Source: (All charts)
Conference Board,
Refinitiv Datastream, J.P.
Morgan Asset
Management.

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.

US Leading Credit Index

Index level

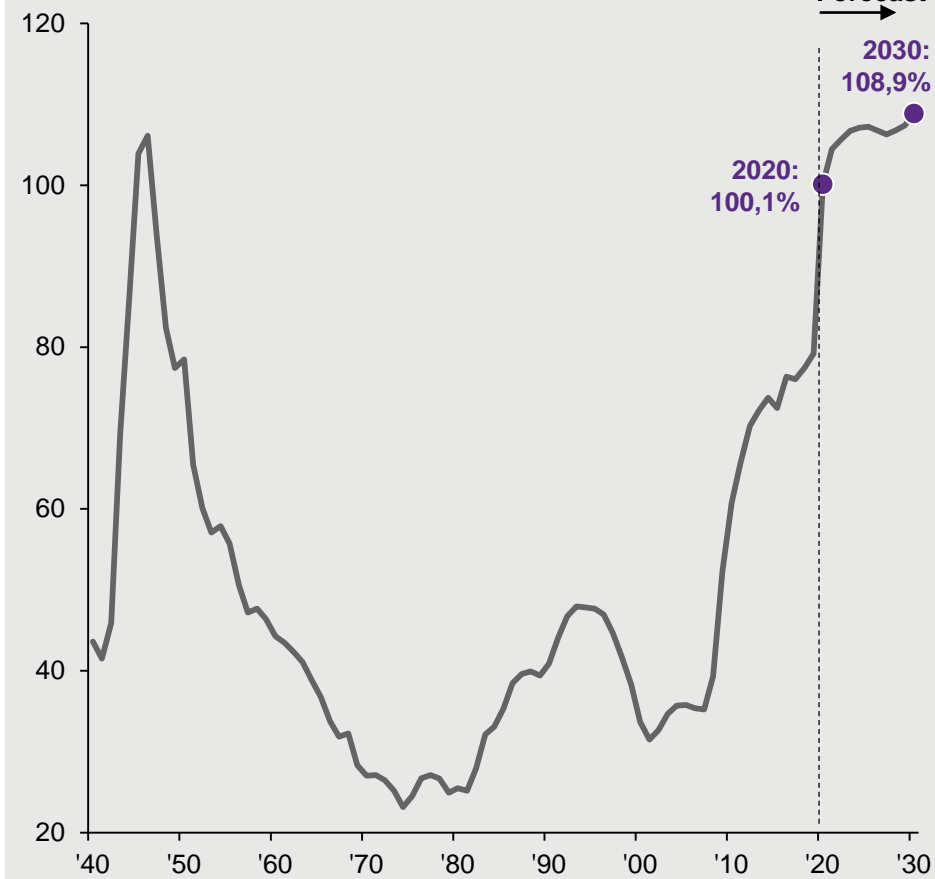


Past performance is not a
reliable indicator of current
and future results.

*Guide to the Markets -
Europe.* Data as of 31
December 2020.

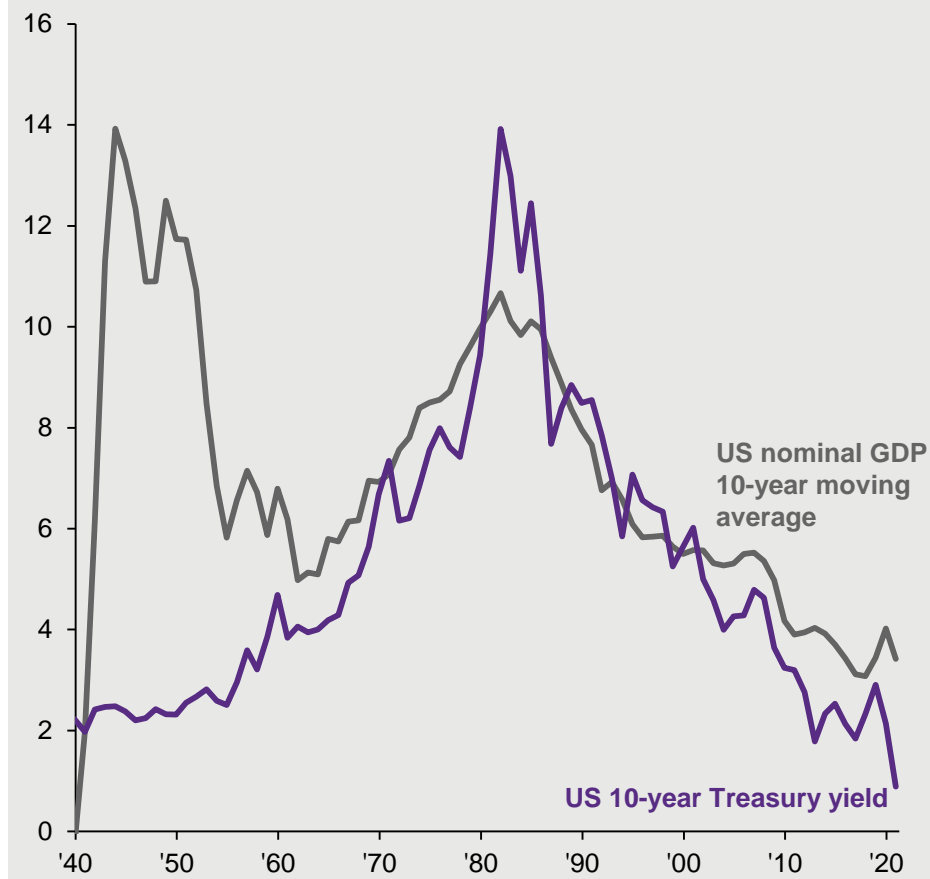
US federal net debt

% of nominal GDP, by end of fiscal year



US nominal GDP growth and 10-year Treasury yield

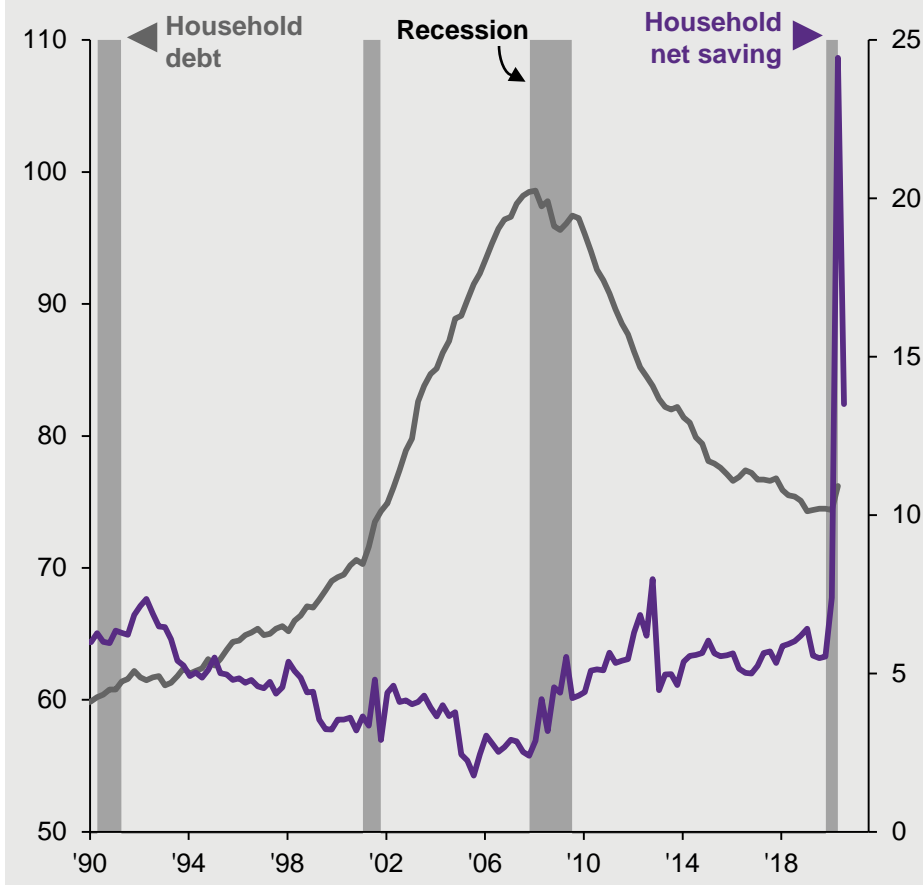
%, nominal GDP growth is % change year on year



Source: (Left) BEA, Congressional Budget Office (CBO), Treasury Department, J.P. Morgan Asset Management. CBO forecast is from its September 2020 Budget forecast. (Right) BEA, Haver Analytics, Robert Shiller, 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 2020.

US household debt and net saving

% of nominal GDP



US non-financial corporate debt and net saving

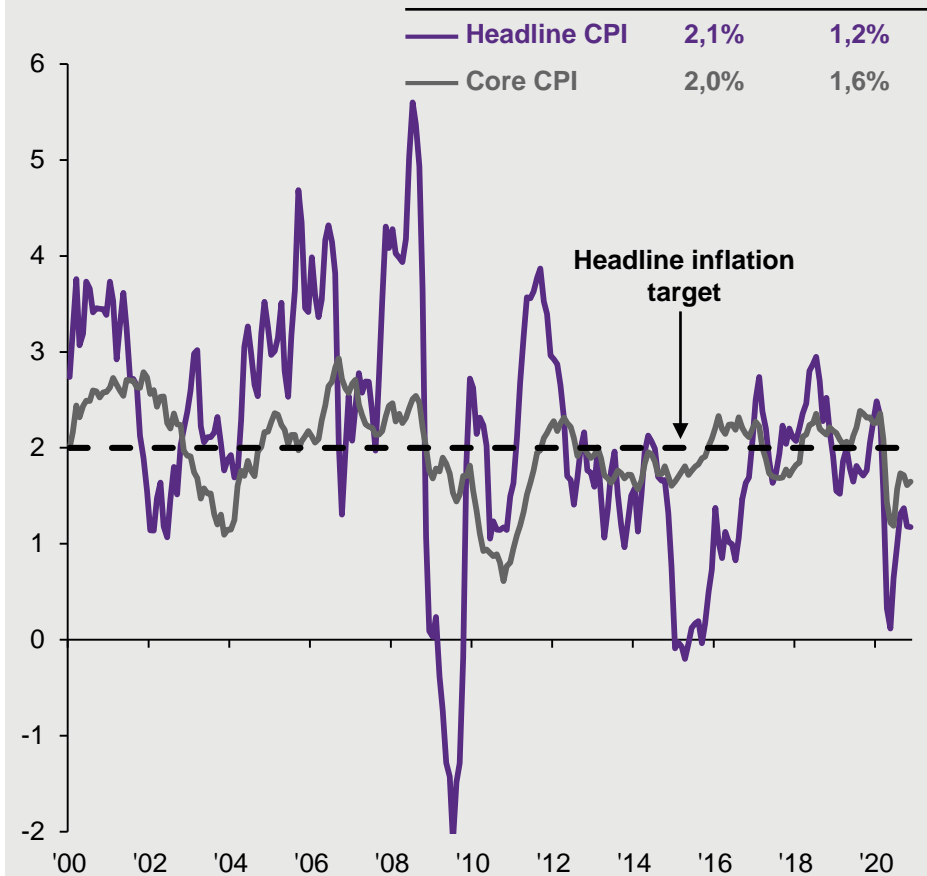
% of nominal GDP



Source: (All charts) BEA, Refinitiv Datastream, US Federal Reserve, J.P. Morgan Asset Management. Household net saving is defined as net disposable income minus final consumption expenditure. Non-financial corporate net saving is defined as the difference between gross savings (less net capital transfers paid and excluding foreign earnings retained abroad) and capital expenditures. Non-financial corporate net saving data has been smoothed in 2018 to account for the Tax Cuts and Jobs Act of 2017. Periods of "recession" are defined using US National Bureau of Economic Research (NBER) business cycle dates. Past performance is not a reliable indicator of current and future results. *Guide to the Markets - Europe*. Data as of 31 December 2020.

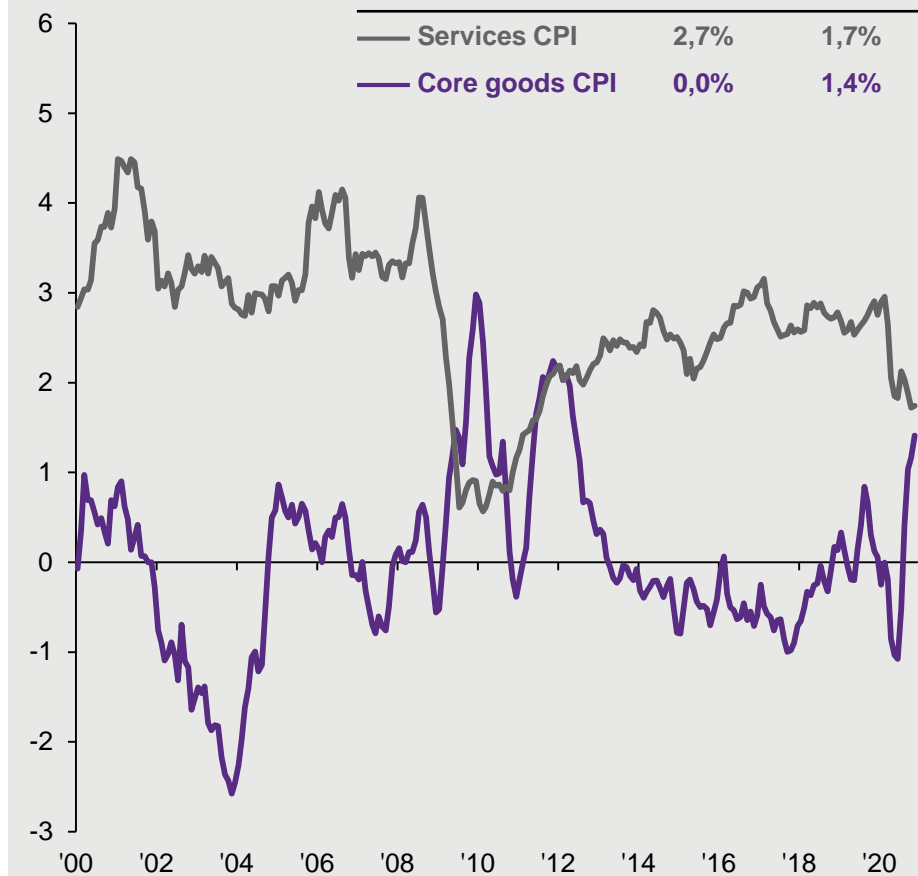
US headline and core inflation

% change year on year



US core goods and services inflation

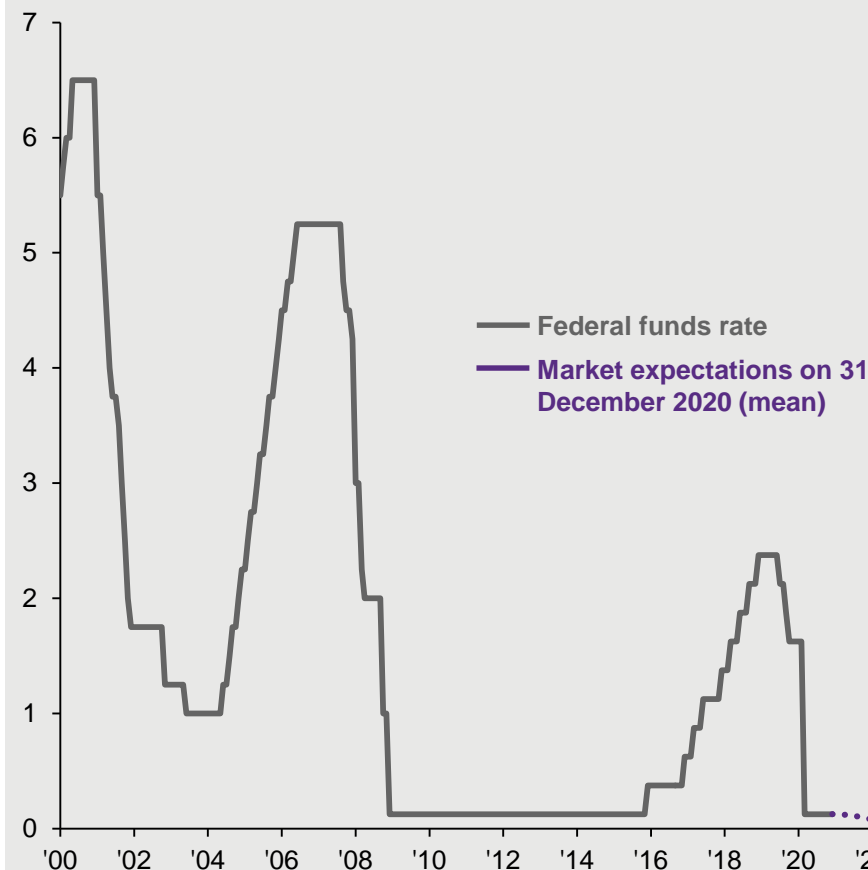
% change year on year



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

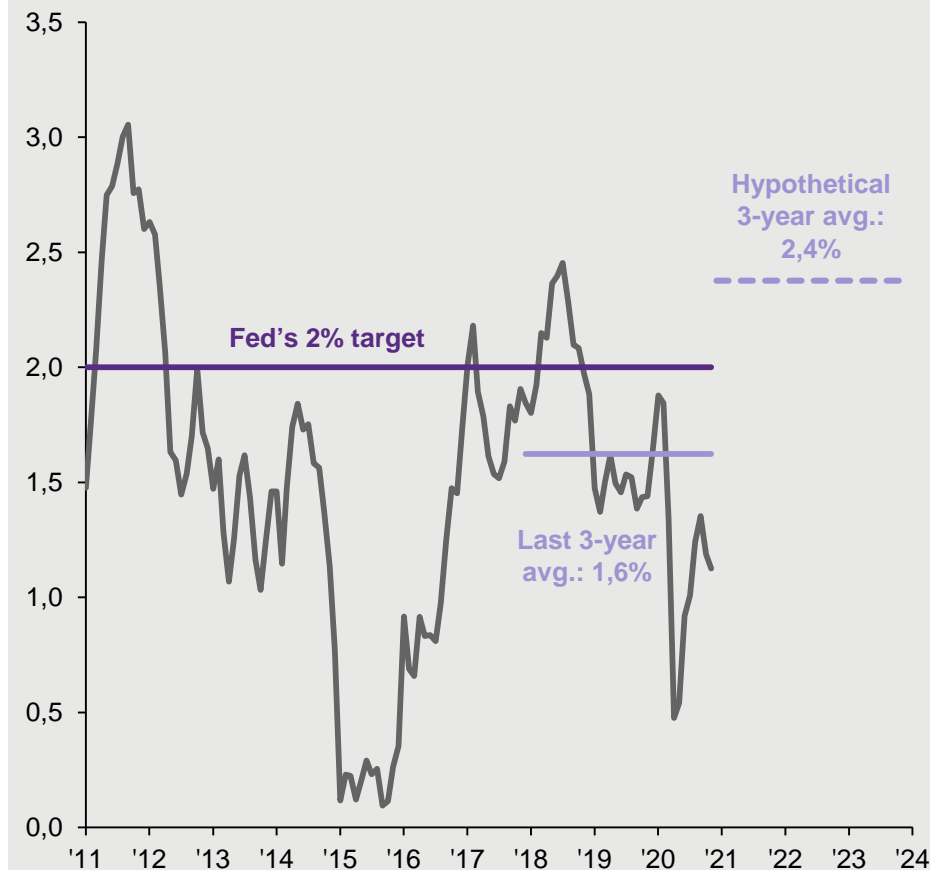
Federal funds policy rate expectations

% Fed funds rate and market expectations



Headline personal consumption expenditure inflation

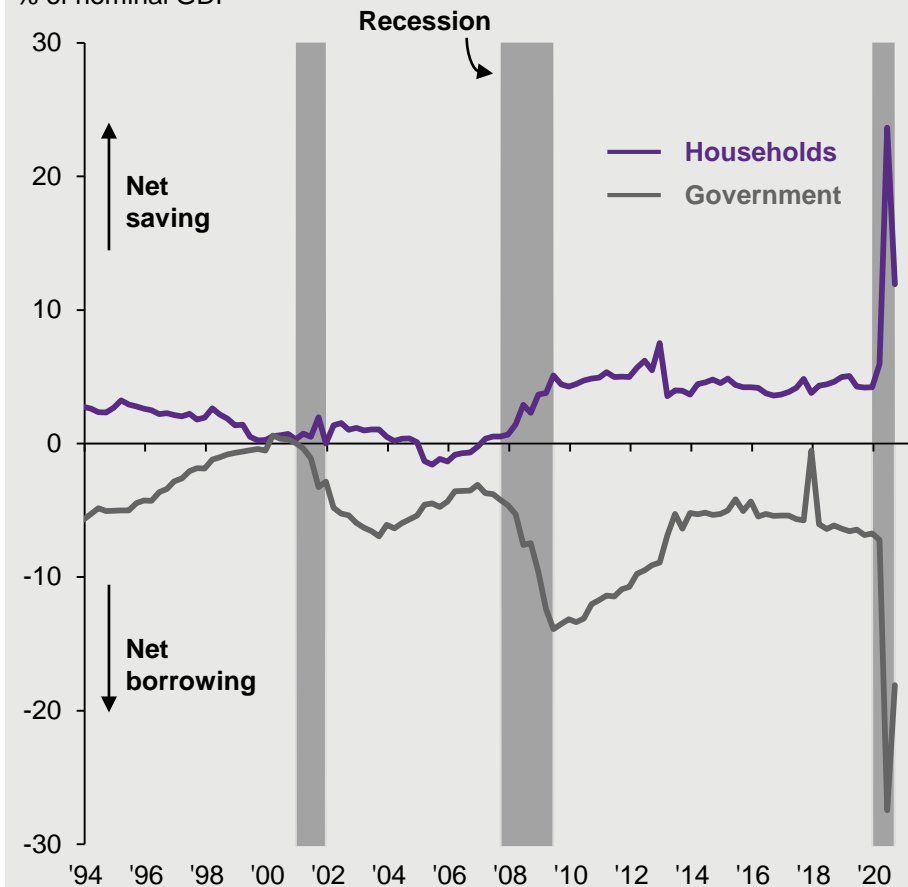
% change year on year



Source: (Left) Bloomberg, US Federal Reserve, J.P. Morgan Asset Management. Market expectations are calculated using OIS forwards. (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. *Guide to the Markets - Europe*. Data as of 31 December 2020.

US net saving and borrowing by sector

% of nominal GDP



US company bankruptcies

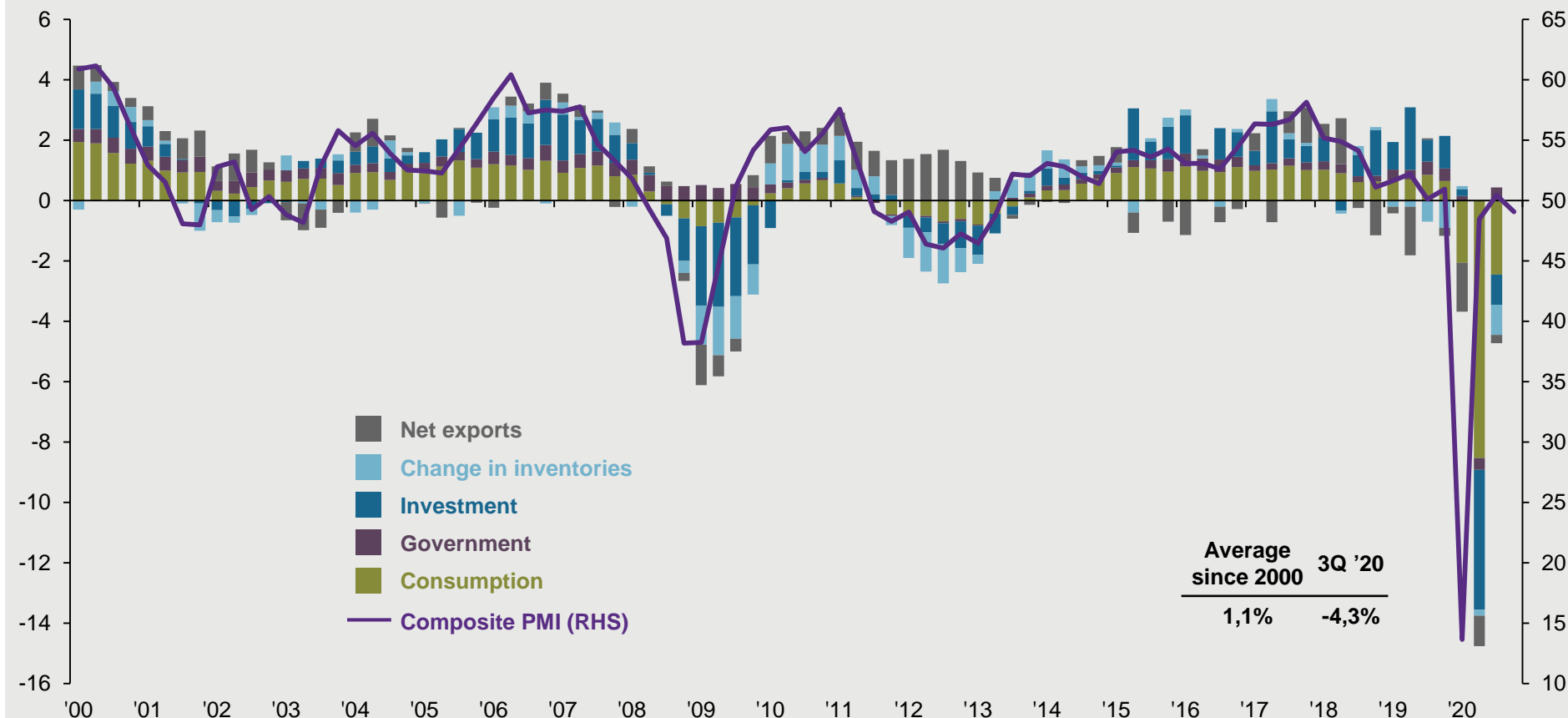
Thousands of companies per quarter



Source: (Left) Bloomberg, US Federal Reserve, J.P. Morgan Asset Management. (Right) Administrative Office of the United States Courts, Refinitiv Datastream, J.P. Morgan Asset Management. Periods of "recession" are defined using US National Bureau of Economic Research (NBER) business cycle dates. Past performance is not a reliable indicator of current and future results. *Guide to the Markets - Europe*. Data as of 31 December 2020.

Contribution to eurozone real GDP growth and composite PMI

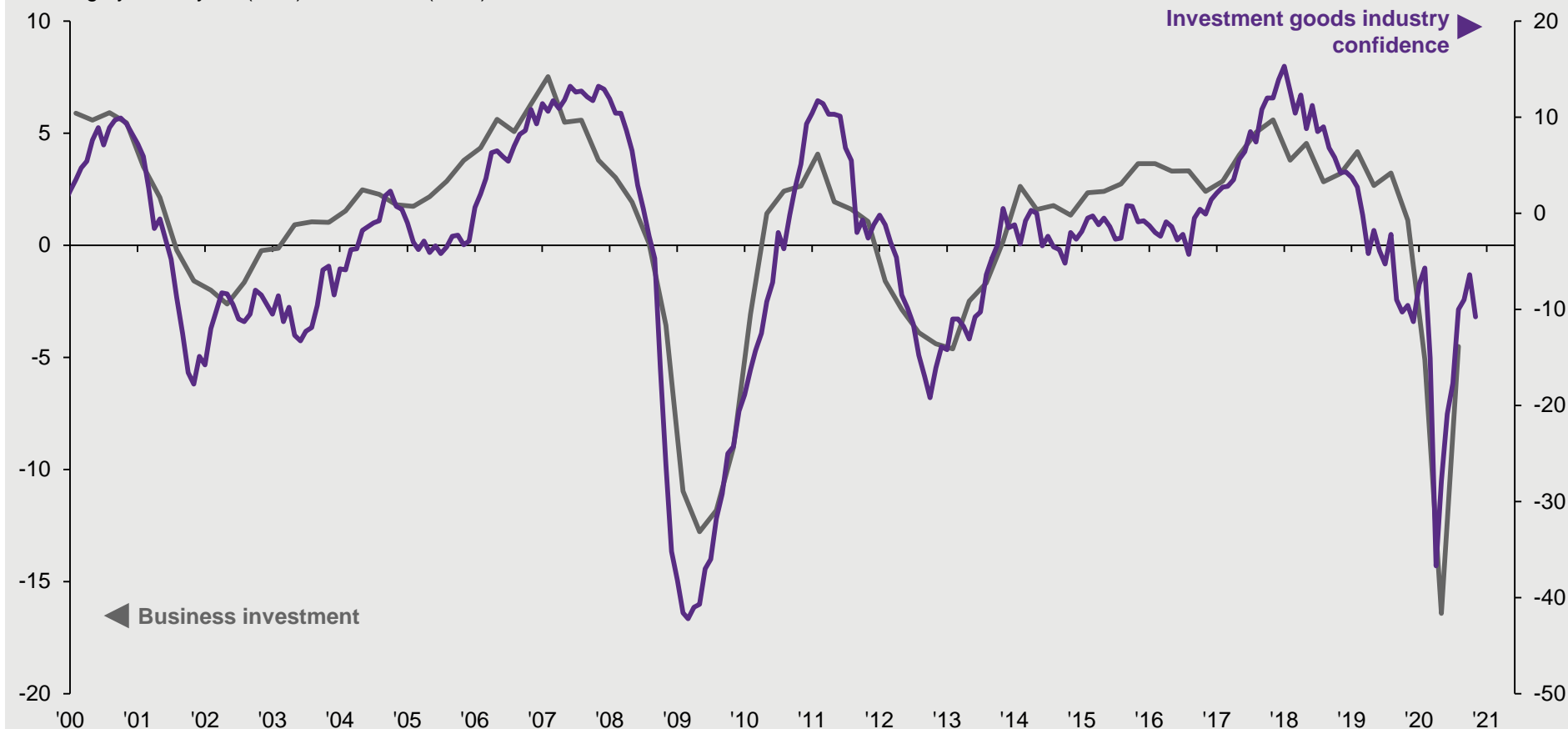
% change year on year (LHS); index level (RHS)



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

Eurozone business investment and investment confidence

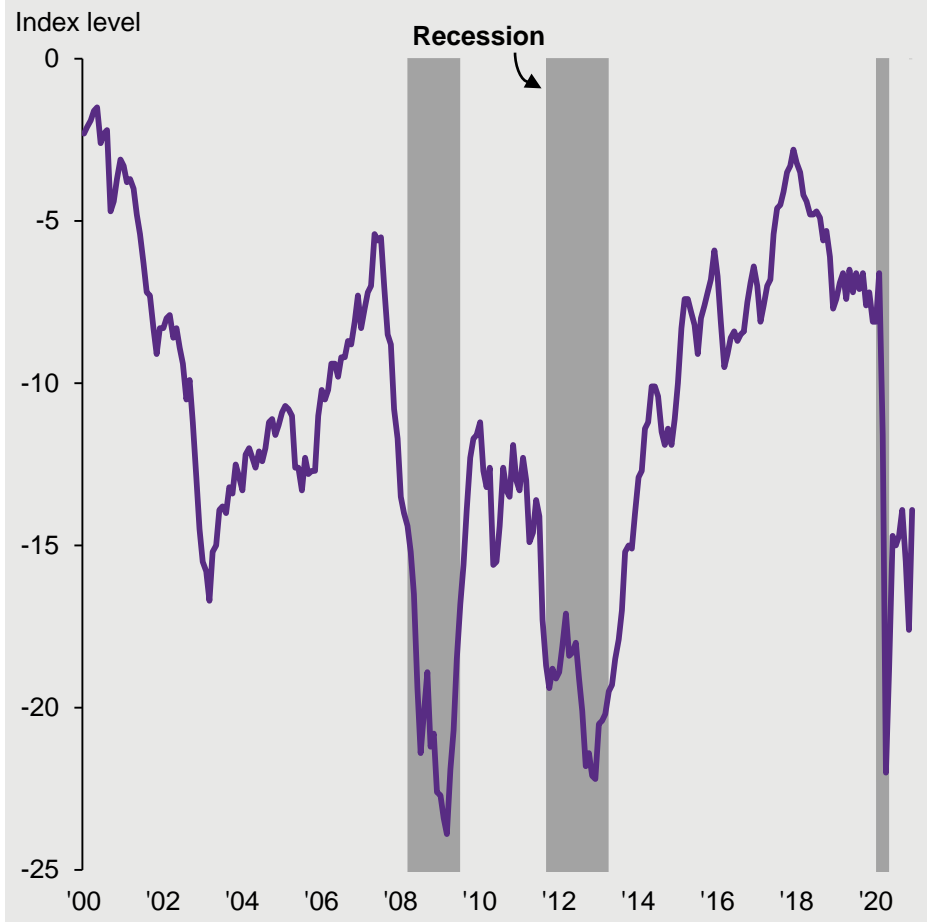
% change year on year (LHS); index level (RHS)



Source: Eurostat, Refinitiv Datastream, J.P. Morgan Asset Management. Past performance is not a reliable indicator of current and future results.

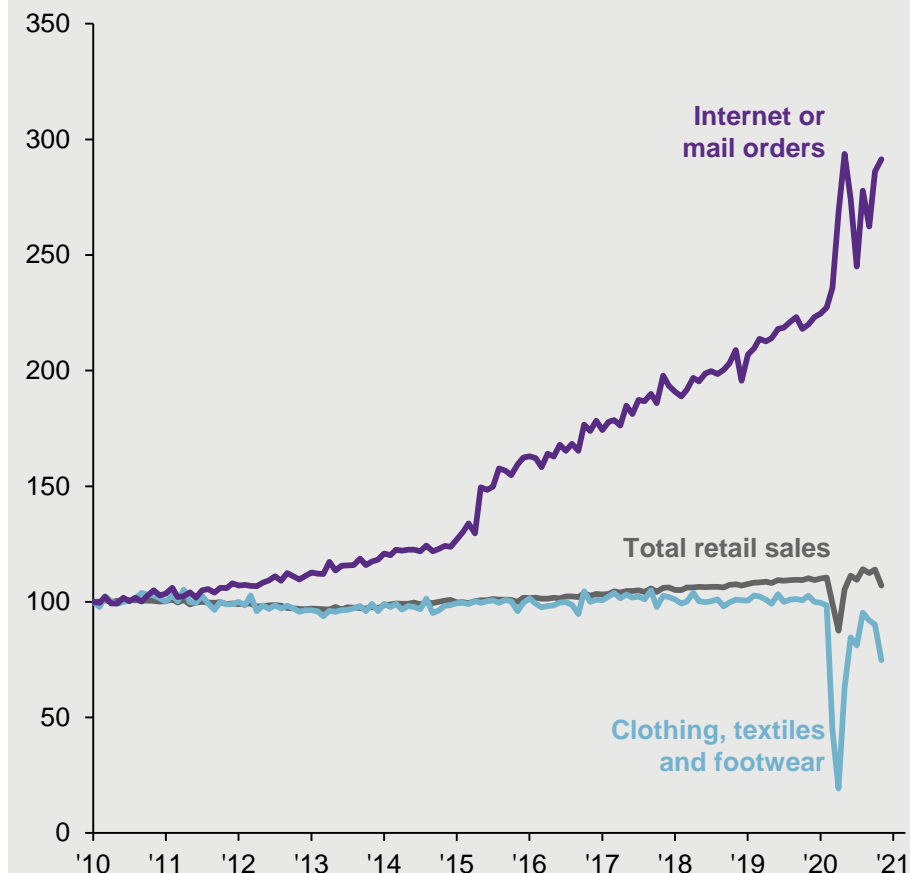
Guide to the Markets - Europe. Data as of 31 December 2020.

Eurozone consumer confidence



Eurozone retail sales volumes

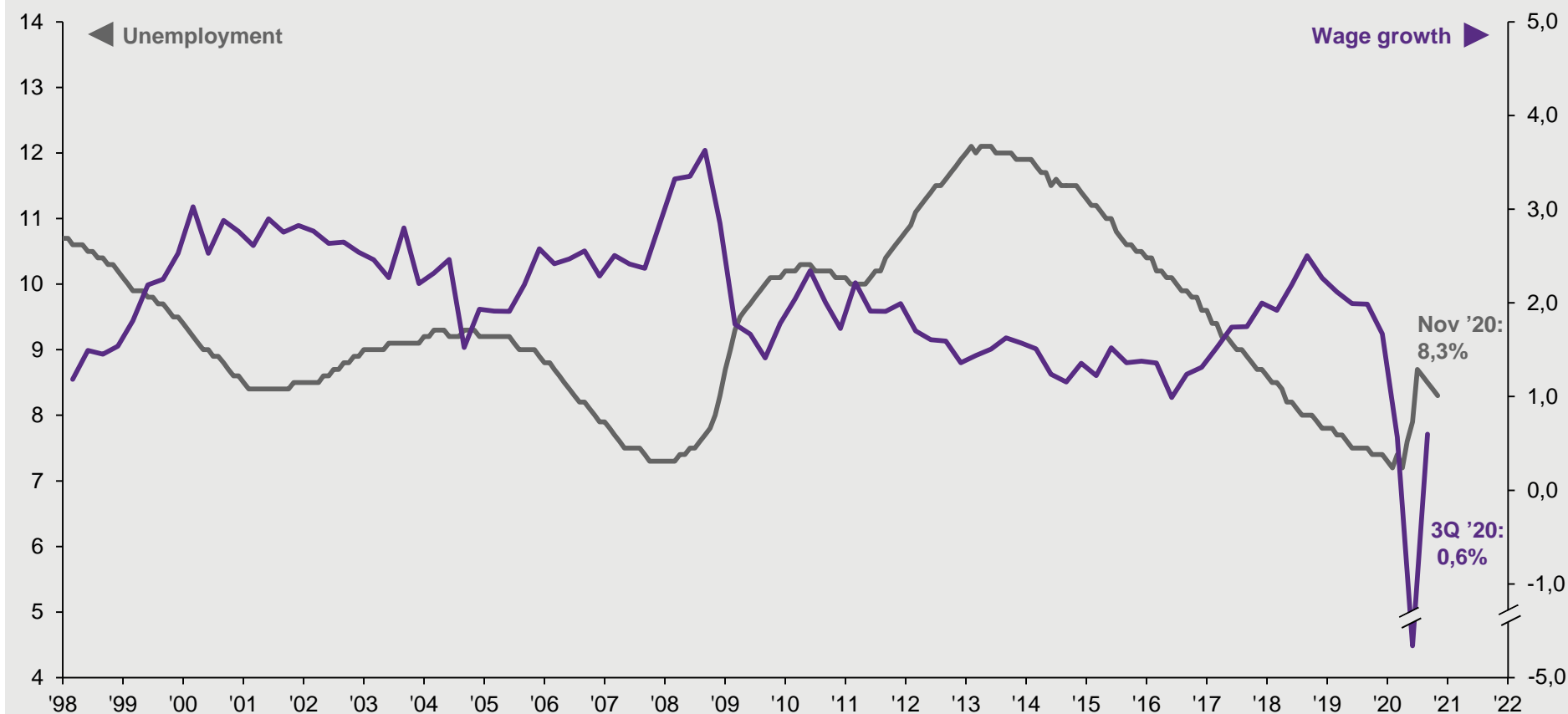
Real index level, rebased to 100 at Jan 2010



Source: (Left) European Commission, Refinitiv Datastream, J.P. Morgan Asset Management. Light grey columns indicate recession in the eurozone. (Right) Eurostat, 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 2020.

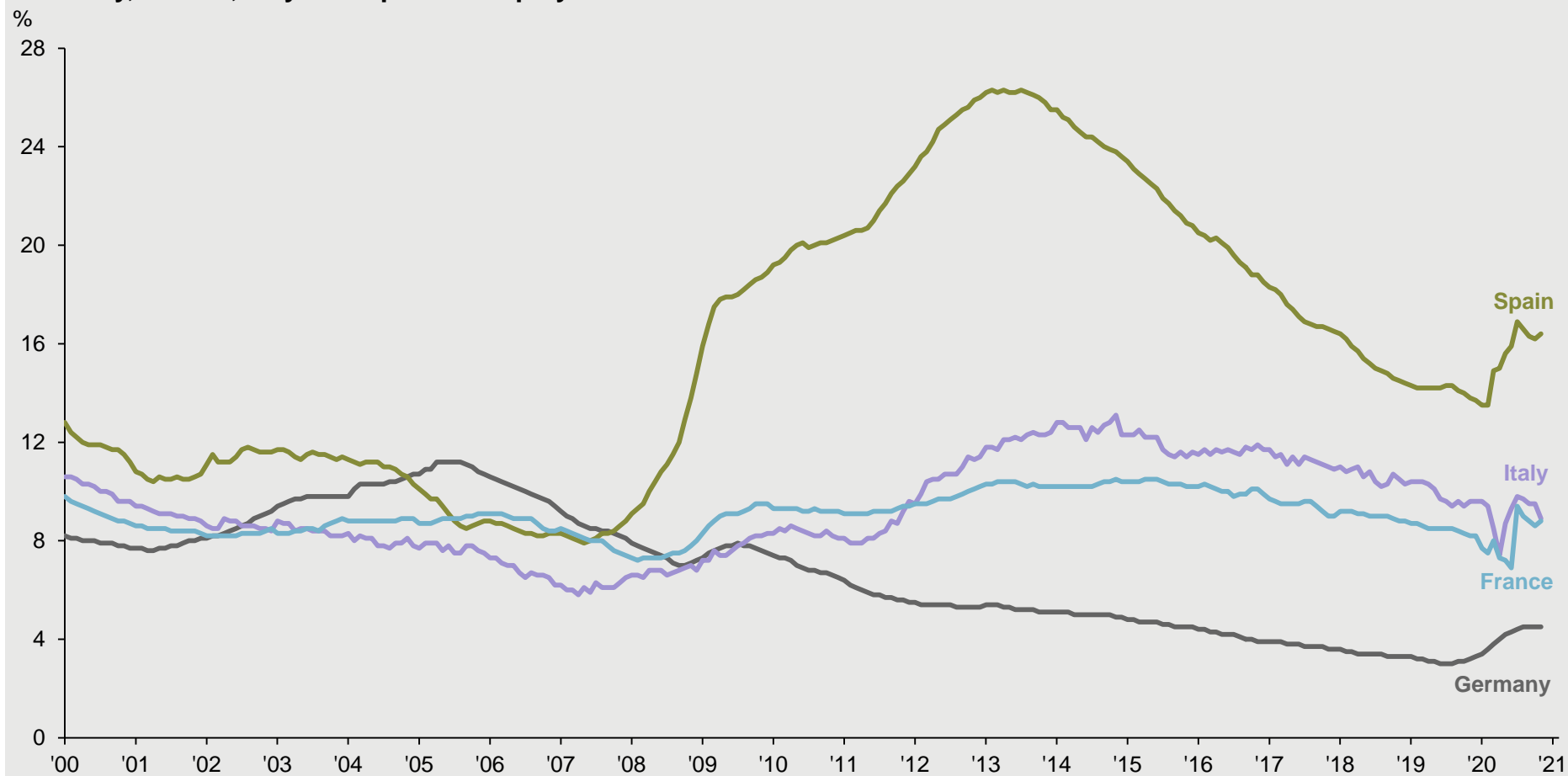
Eurozone unemployment rate and wage growth

%, wage growth is year on year



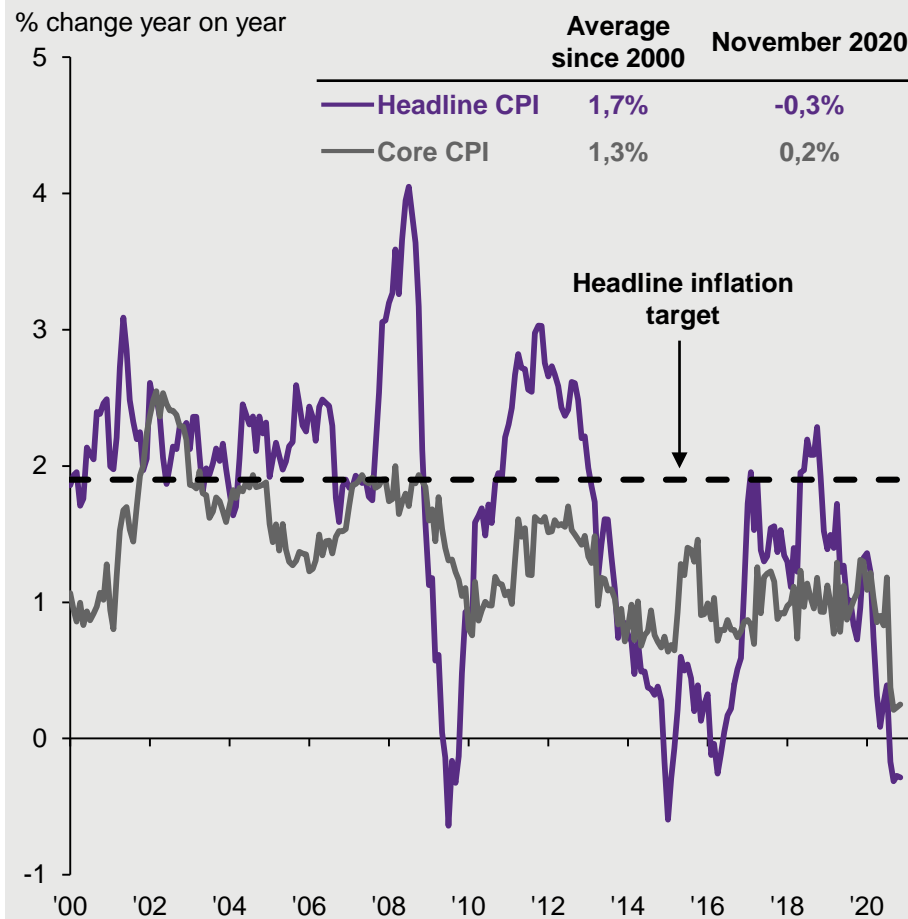
Source: ECB, Refinitiv Datastream, J.P. Morgan Asset Management. Wage growth is compensation per employee. Past performance is not a reliable indicator of current and future results. *Guide to the Markets - Europe*. Data as of 31 December 2020.

Germany, France, Italy and Spain unemployment rates



Source: Eurostat, 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 2020.

Eurozone headline and core inflation



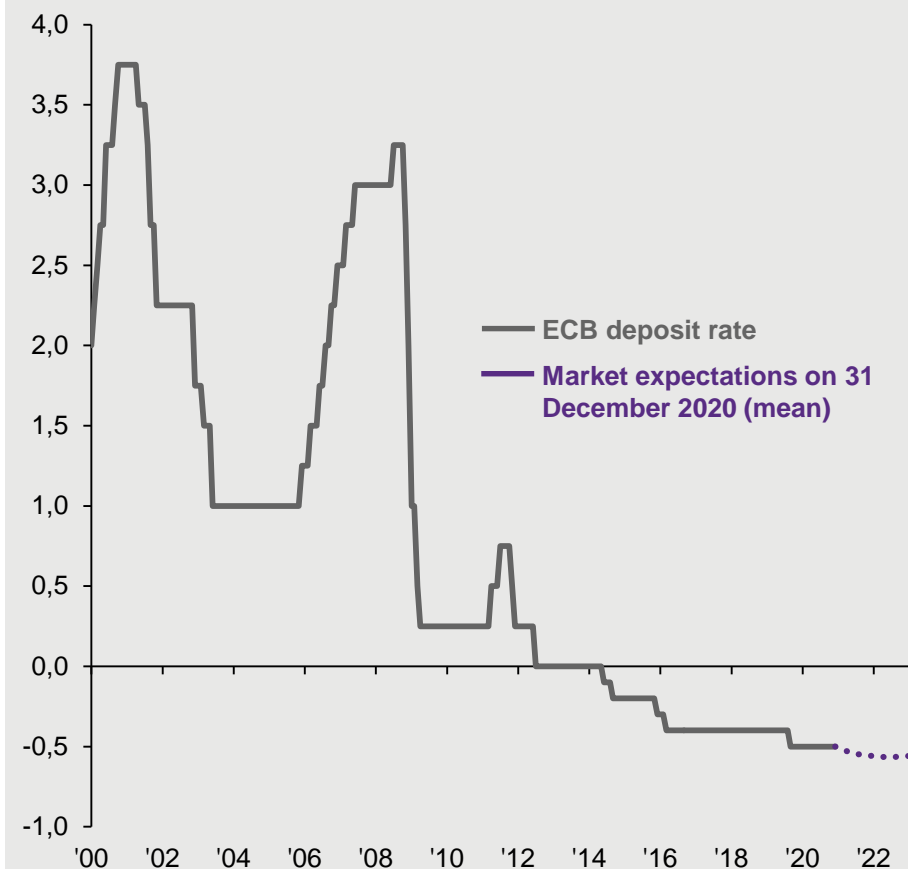
Eurozone core goods and services inflation



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. *Guide to the Markets - Europe*. Data as of 31 December 2020.

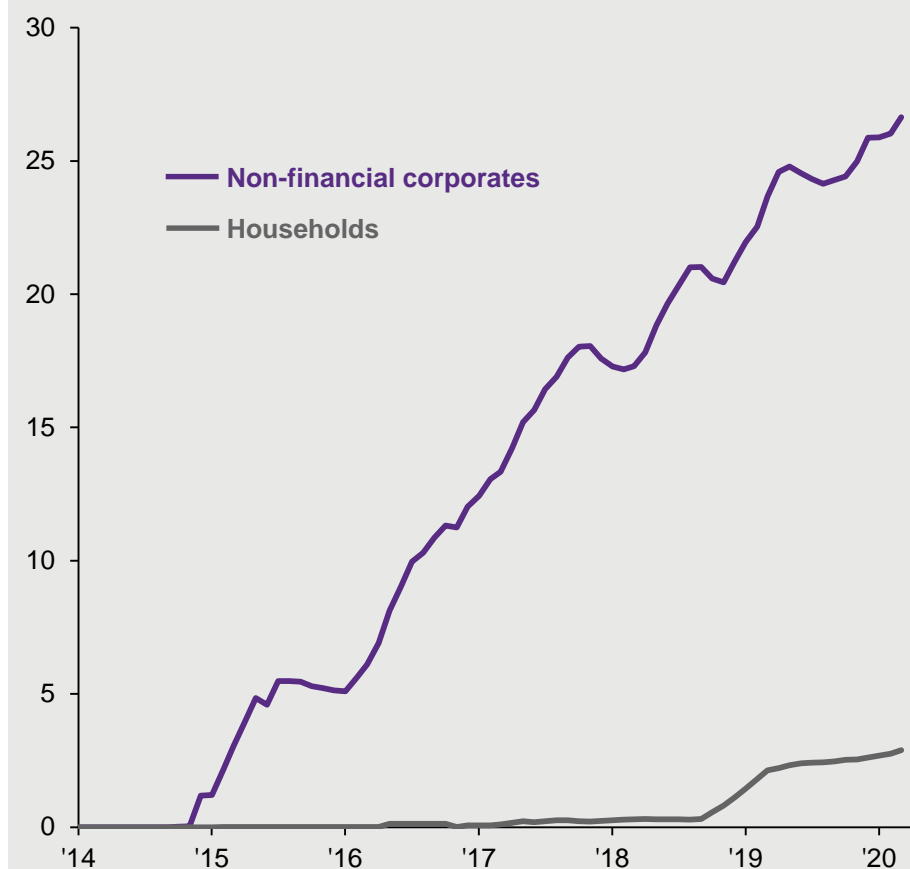
European Central Bank policy rate expectations

% deposit rate and market expectations



Proportion of eurozone deposits with negative interest rates

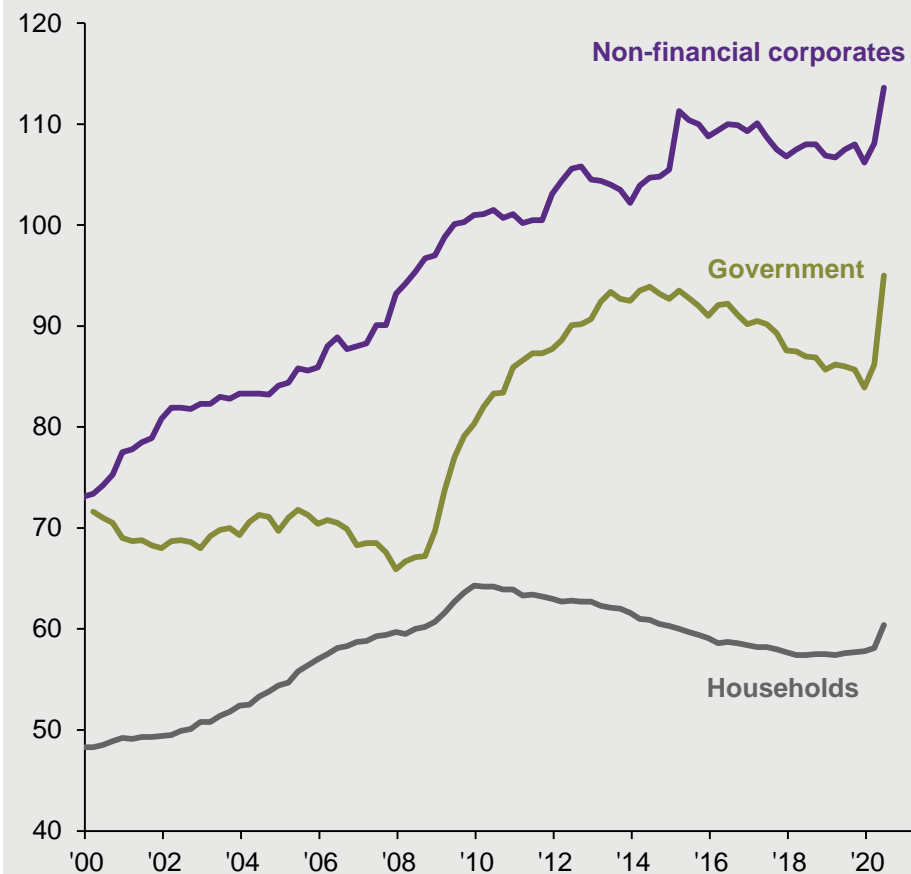
% of deposits



Source: (Left) Bloomberg, European Central Bank, J.P. Morgan Asset Management. Market expectations are calculated using OIS forwards. (Right) European Central Bank, J.P. Morgan Asset Management. Data is based on a specific sample of monetary financial institutions and not necessarily representative of the entire population of financial institutions. Past performance is not a reliable indicator of current and future results. *Guide to the Markets - Europe*. Data as of 31 December 2020.

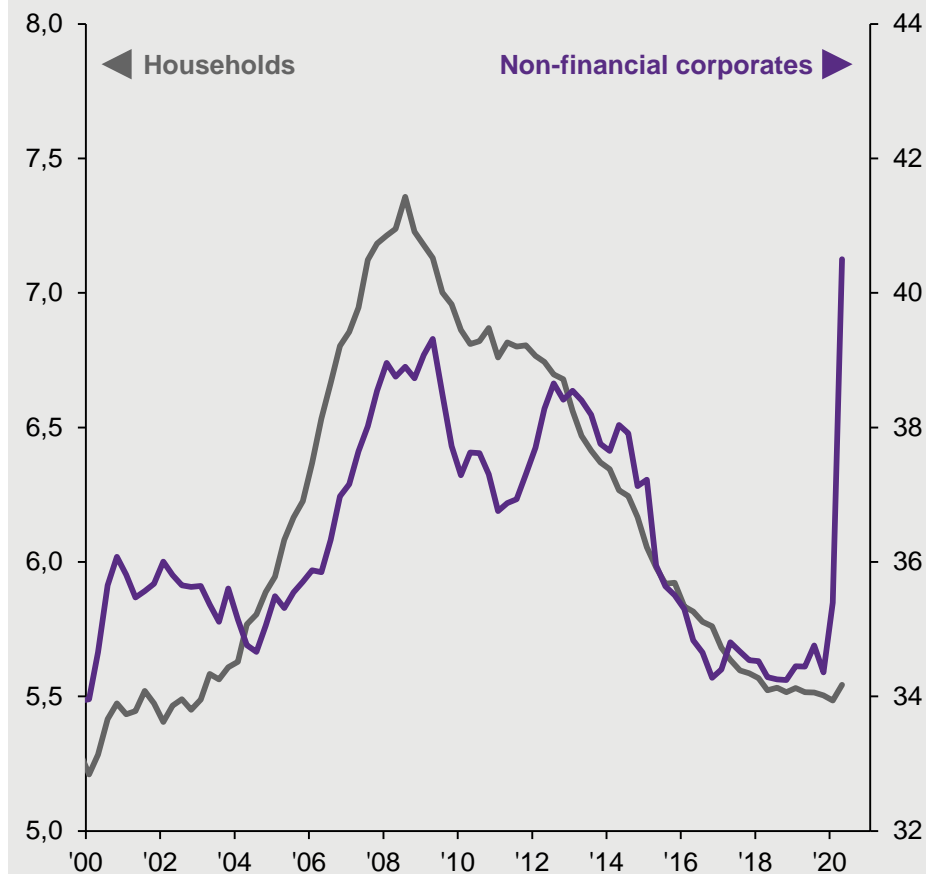
Eurozone debt to GDP ratios

% of nominal GDP

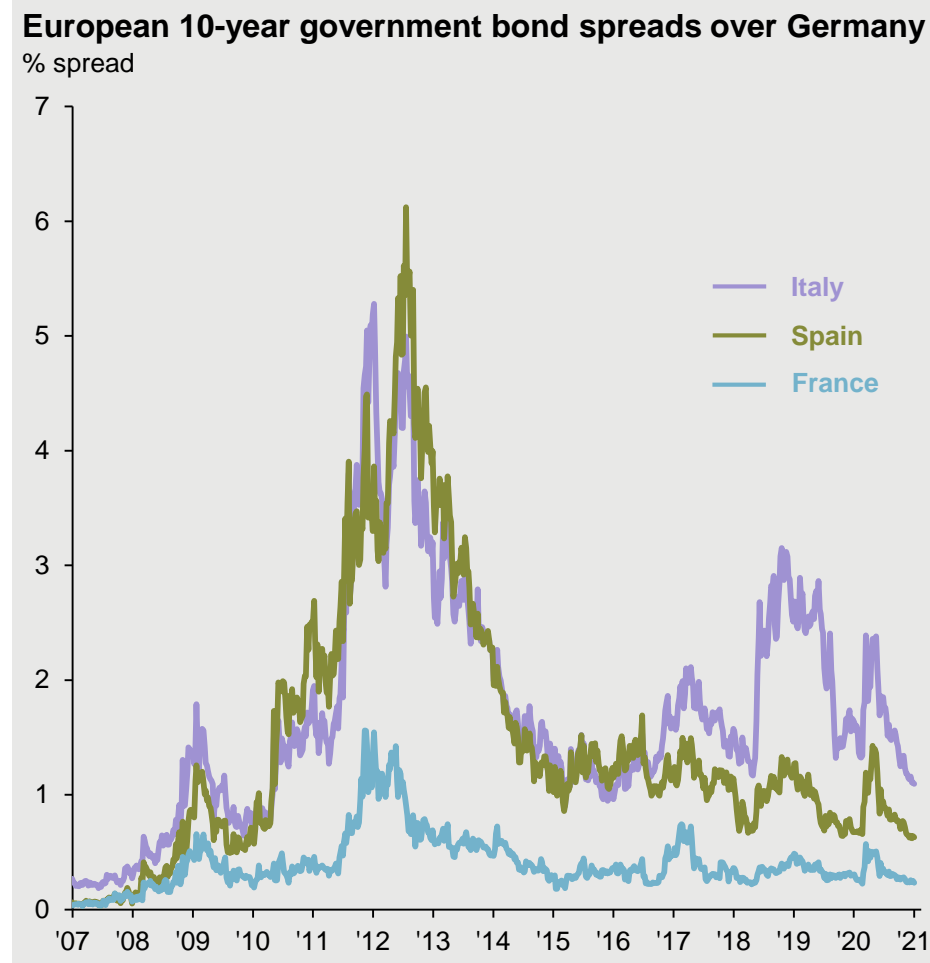
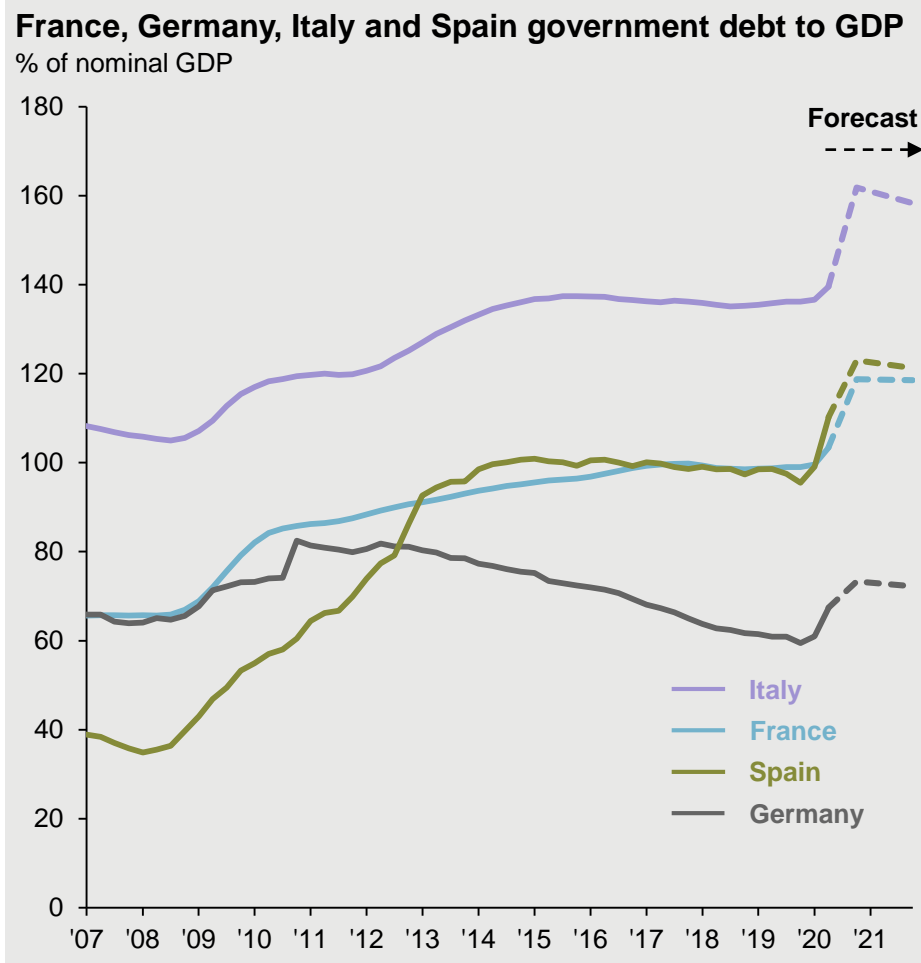


Eurozone debt service ratios

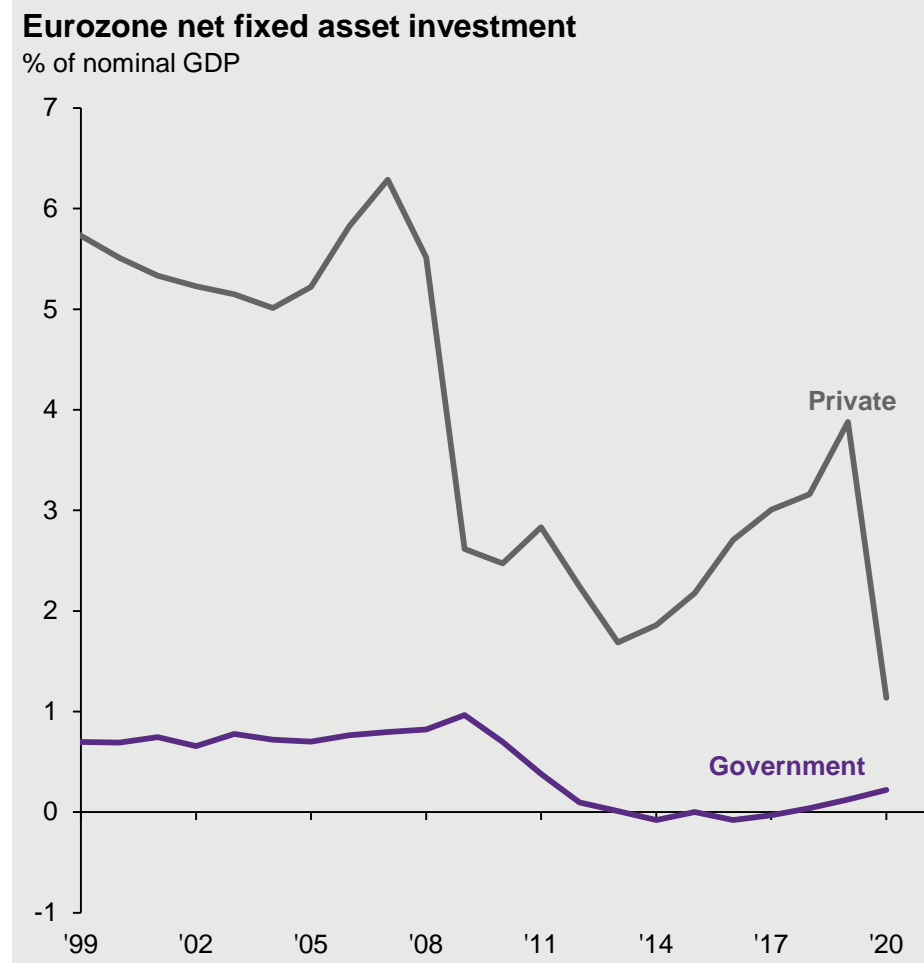
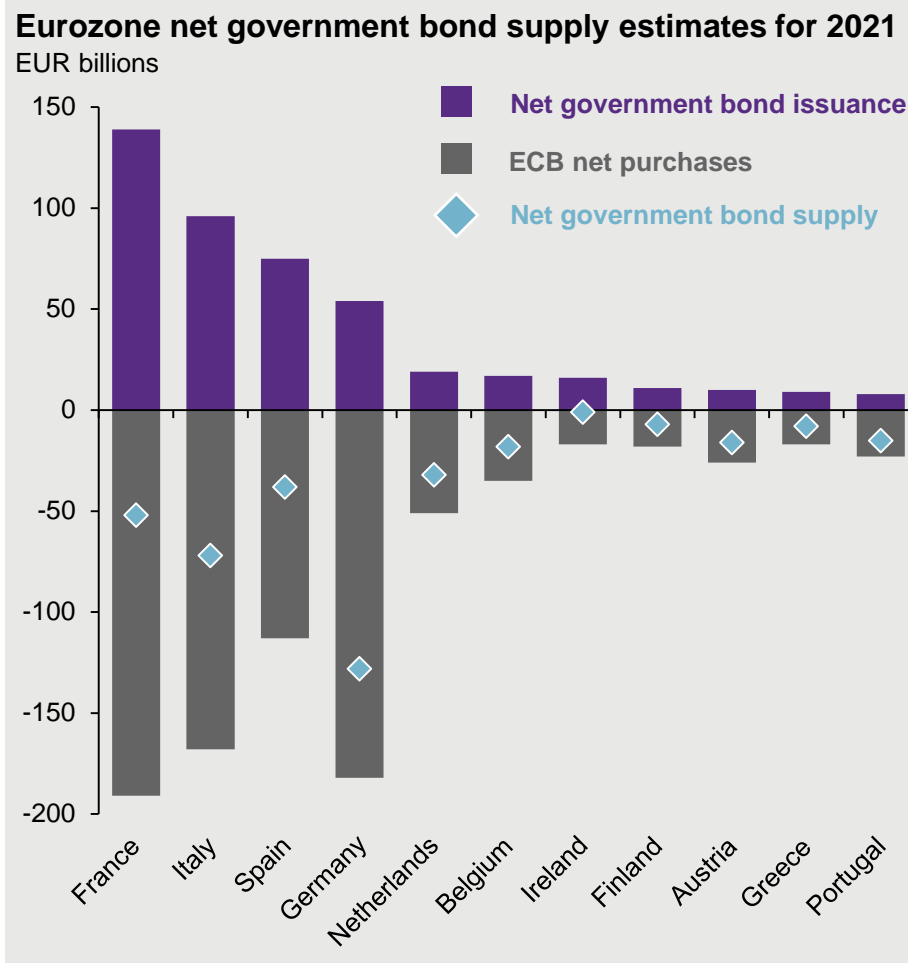
% of disposable income



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



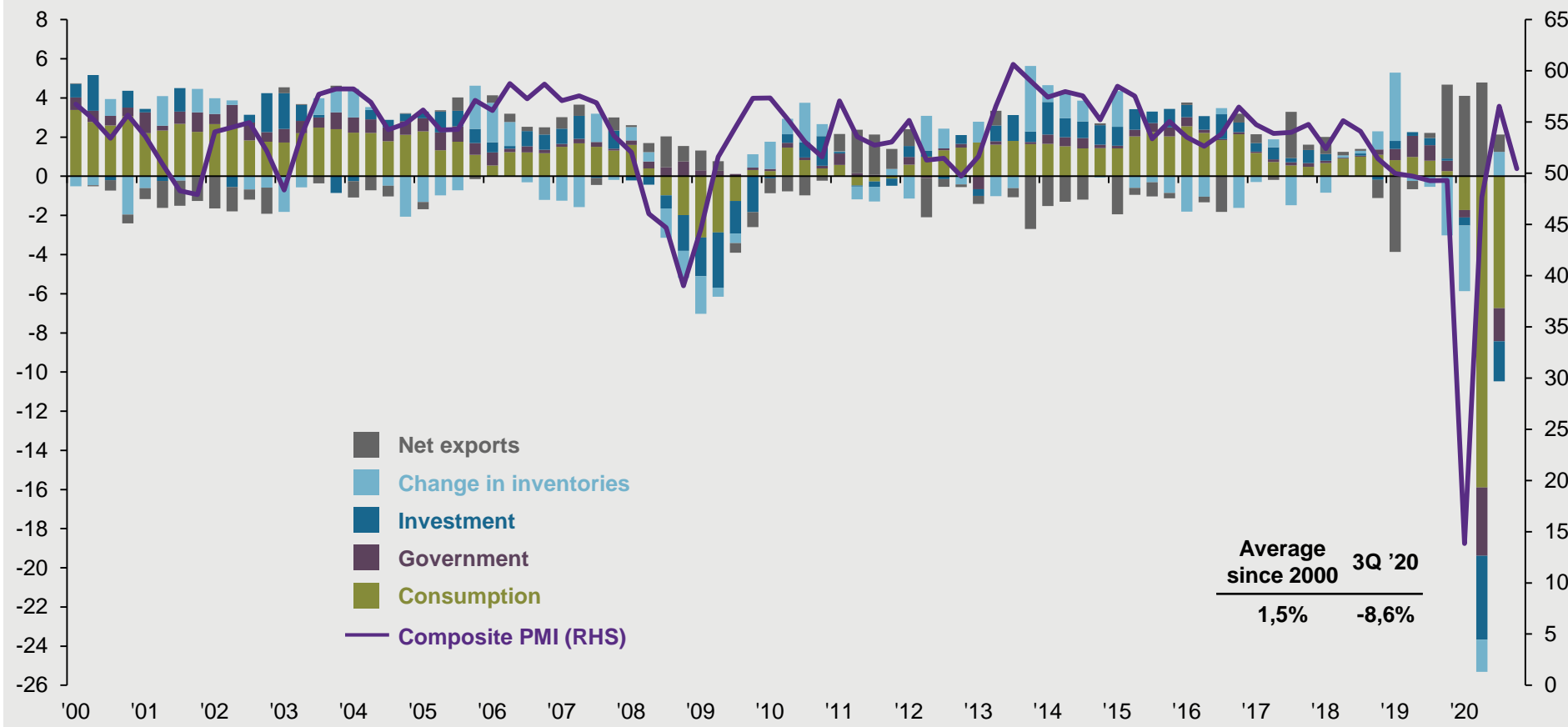
Source: (Left) Bank for International Settlements, Refinitiv Datastream, J.P. Morgan Asset Management. Italy and France data are four-quarter moving averages. Debt refers to gross debt. Dotted lines represent the IMF forecasts for government debt to GDP in 2020 and 2021. (Right) Refinitiv Datastream, 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 2020.



Source: (Left) J.P. Morgan Securities Research, J.P. Morgan Asset Management. ECB purchases include purchases under the Public Sector Purchase Programme and Pandemic Emergency Purchase Programme, excluding T-bills, based on currently announced policy. (Right) Bloomberg, European Commission, J.P. Morgan Asset Management. *Guide to the Markets - Europe*. Data as of 31 December 2020.

Contribution to UK real GDP growth and composite PMI

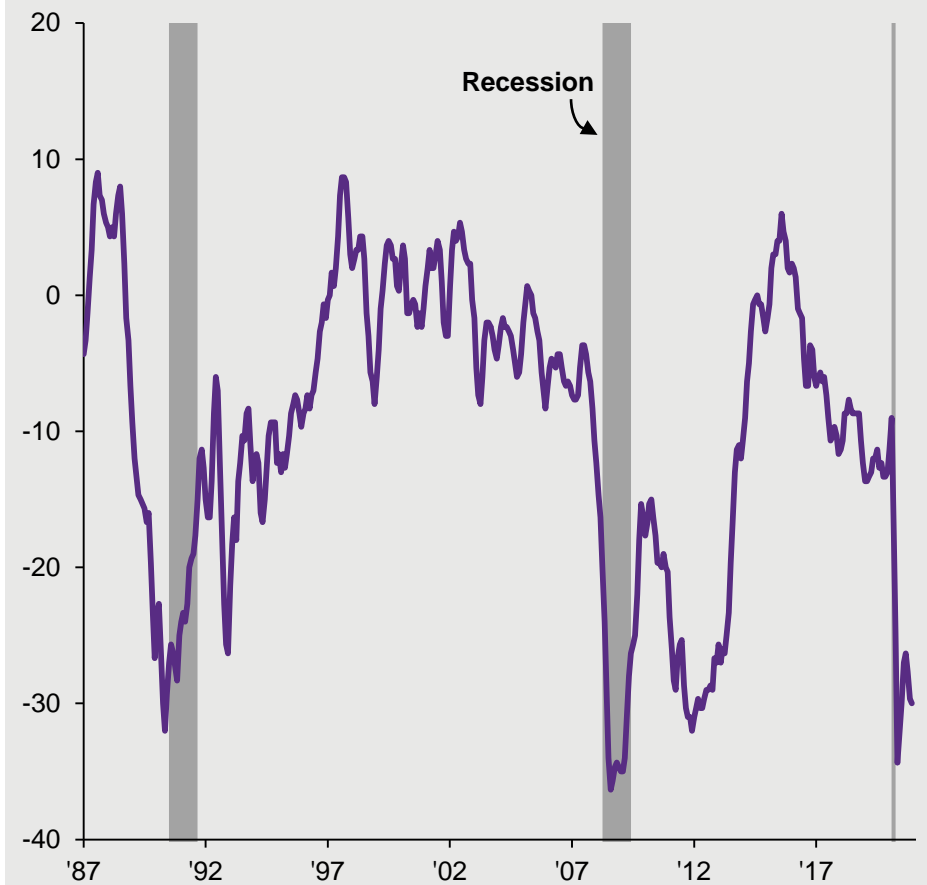
% change year on year (LHS); index level (RHS)



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 31 December 2020.

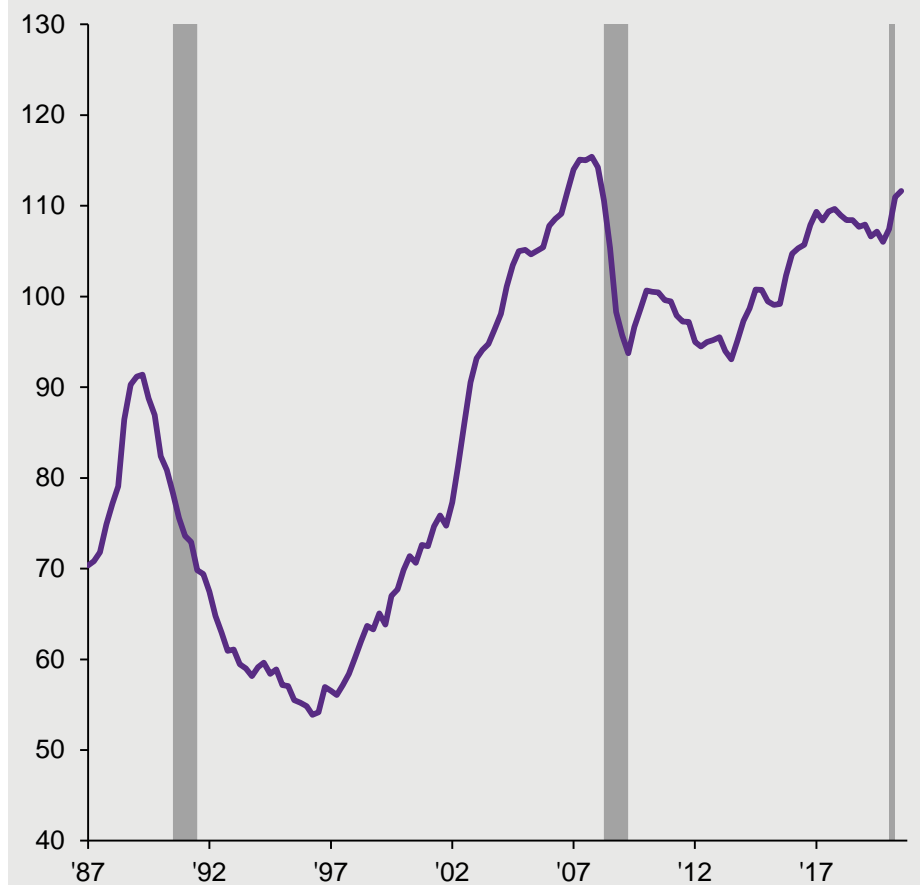
UK consumer confidence

Index level, three-month moving average



UK house prices relative to income

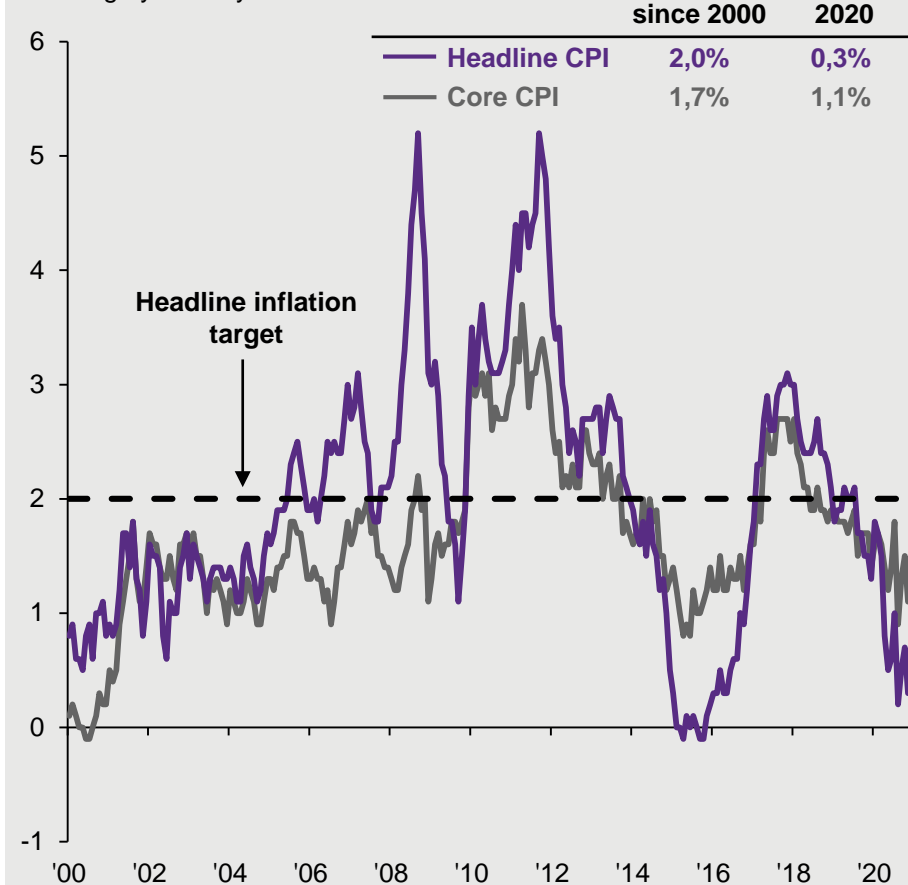
Index level



Source: (Left) GfK, Refinitiv Datastream, J.P. Morgan Asset Management. (Right) OECD, Refinitiv Datastream, J.P. Morgan Asset Management. Light grey columns indicate recession. Past performance is not a reliable indicator of current and future results. *Guide to the Markets - Europe*. Data as of 31 December 2020.

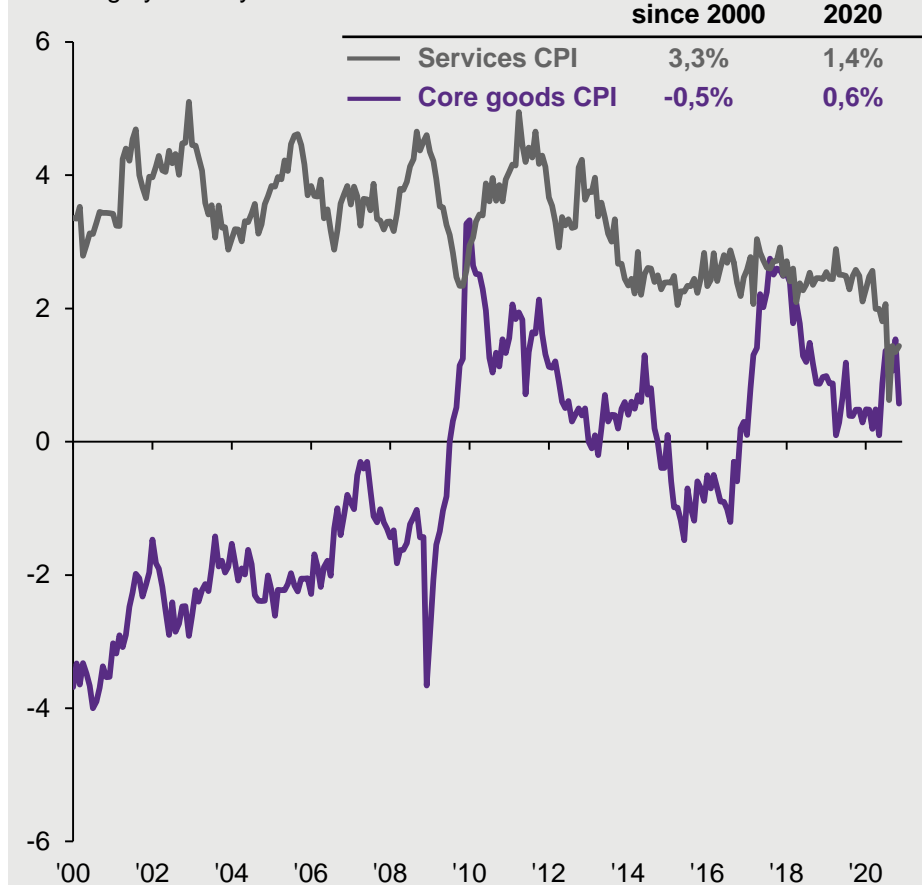
UK headline and core inflation

% change year on year



UK core goods and services inflation

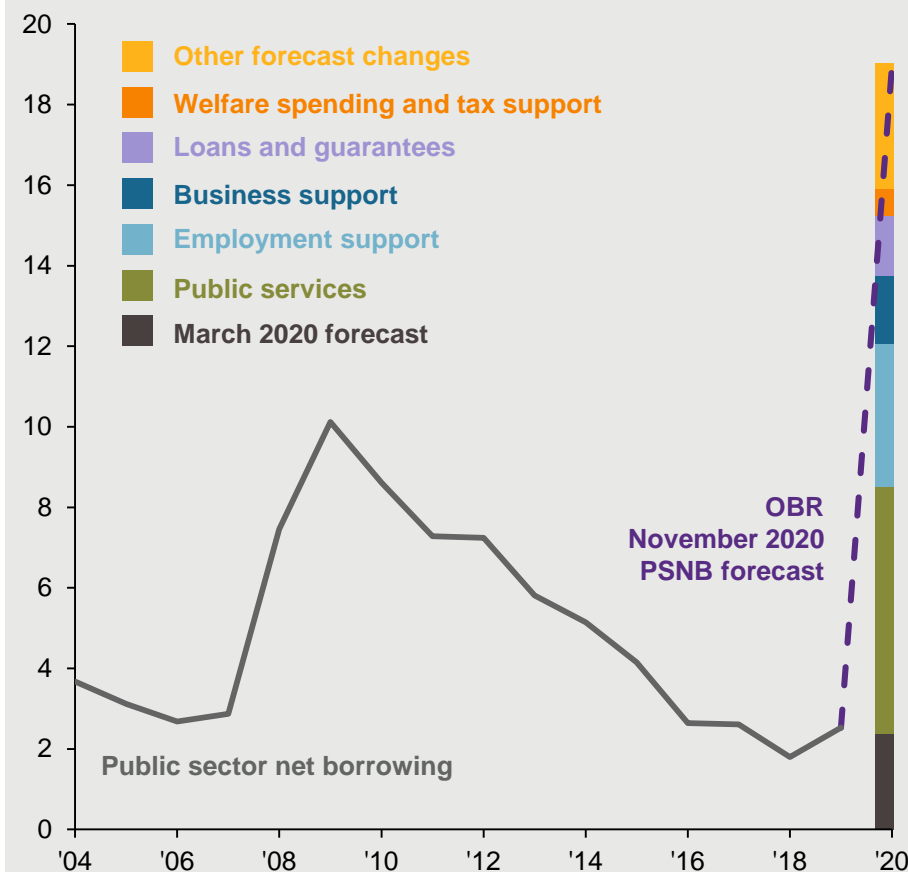
% change year on year



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

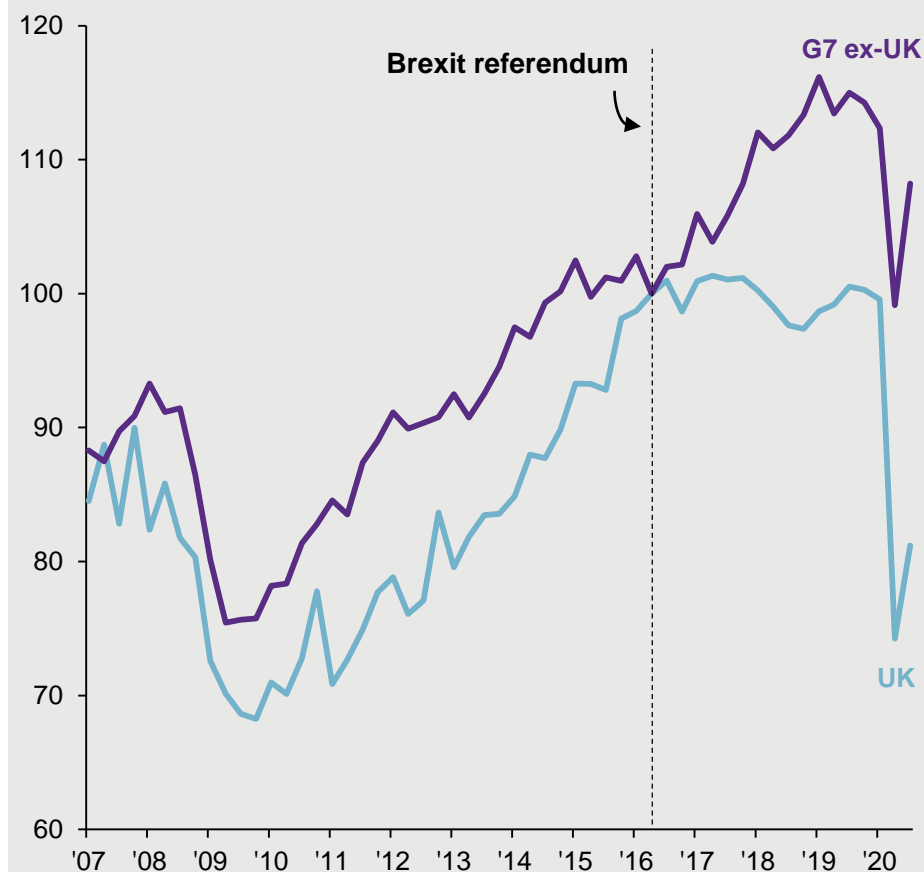
UK public sector net borrowing (PSNB)

% of nominal GDP, by fiscal year



UK and G7 ex-UK real business investment

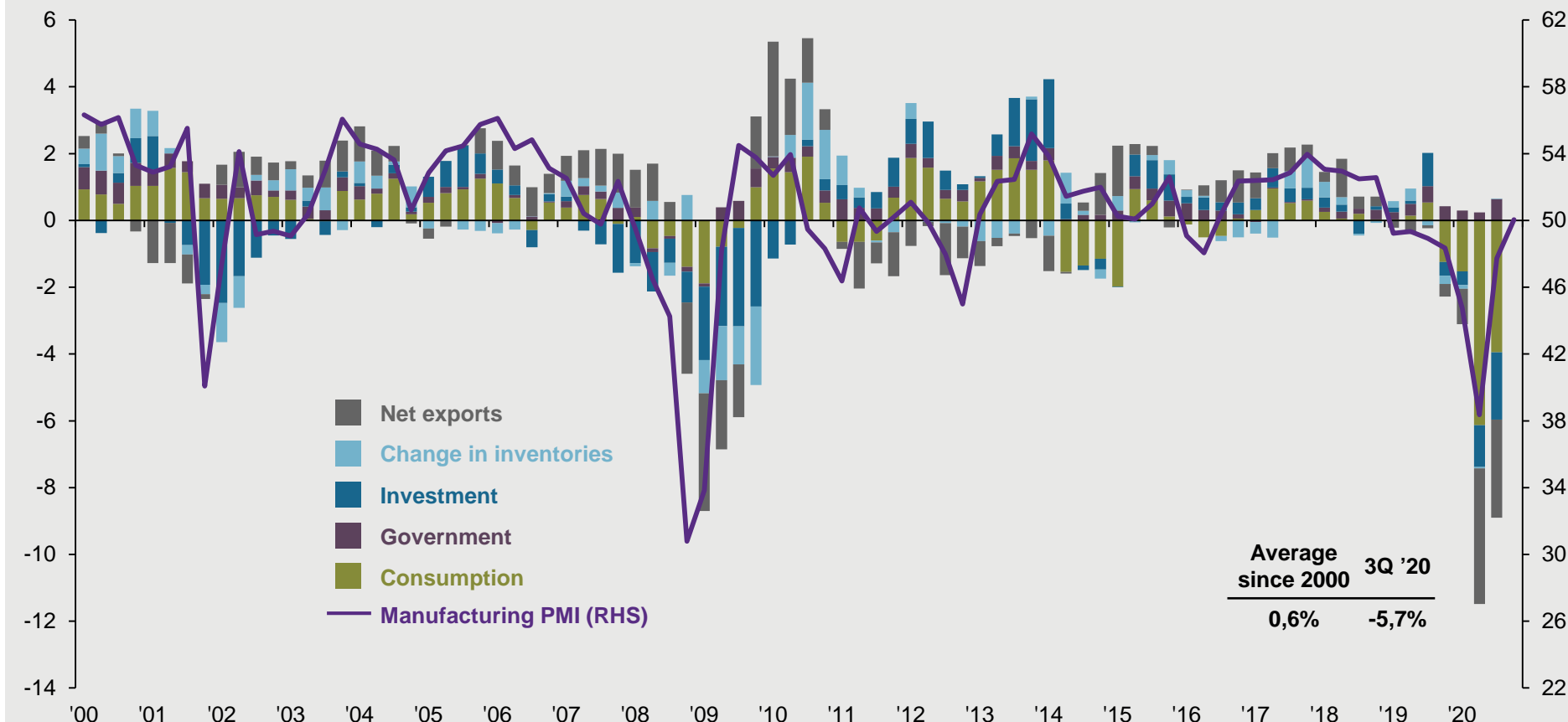
Index level, rebased to 100 at 2Q 2016



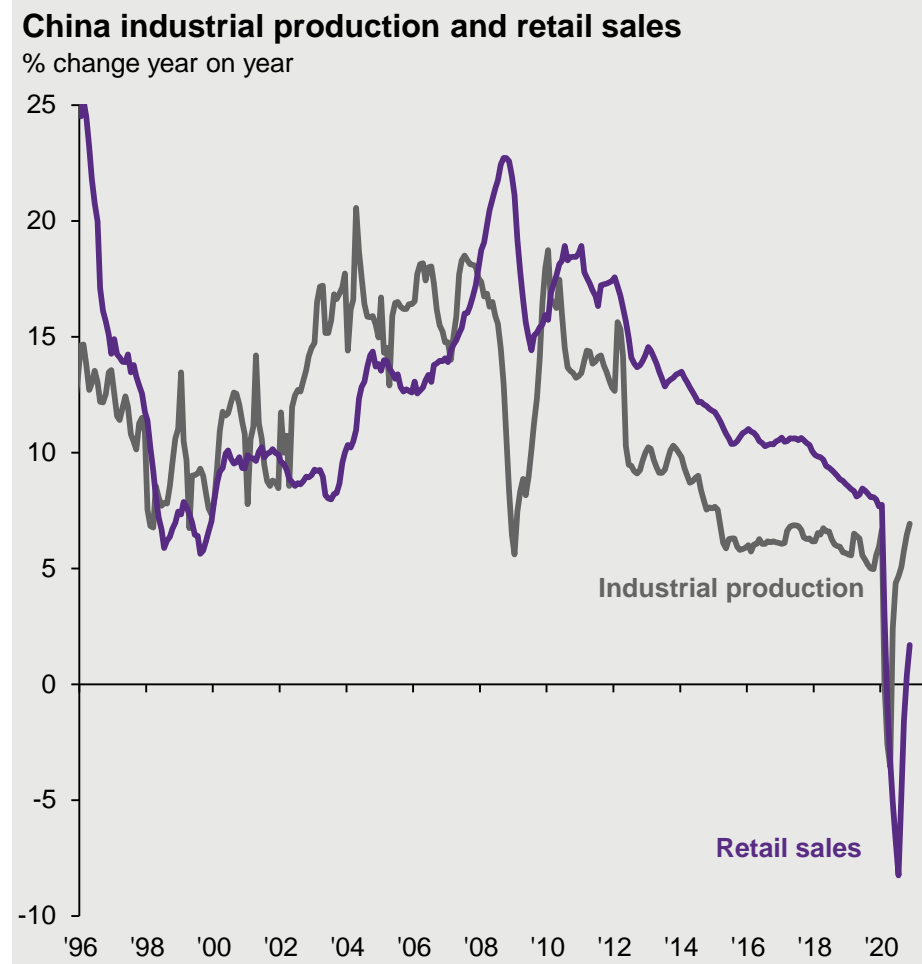
Source: (Left) OBR, ONS, J.P. Morgan Asset Management. Other forecast changes include changes to the OBR's forecasts for general receipts, spending and indirect effects. The remainder of the breakdown is related to Covid-19 borrowing. (Right) Bank of England, OECD, ONS, Oxford Economics, Refinitiv Datastream, Statistics Canada, US Bureau of Economics Analysis, 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 2020.

Contribution to Japan real GDP growth and manufacturing PMI

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



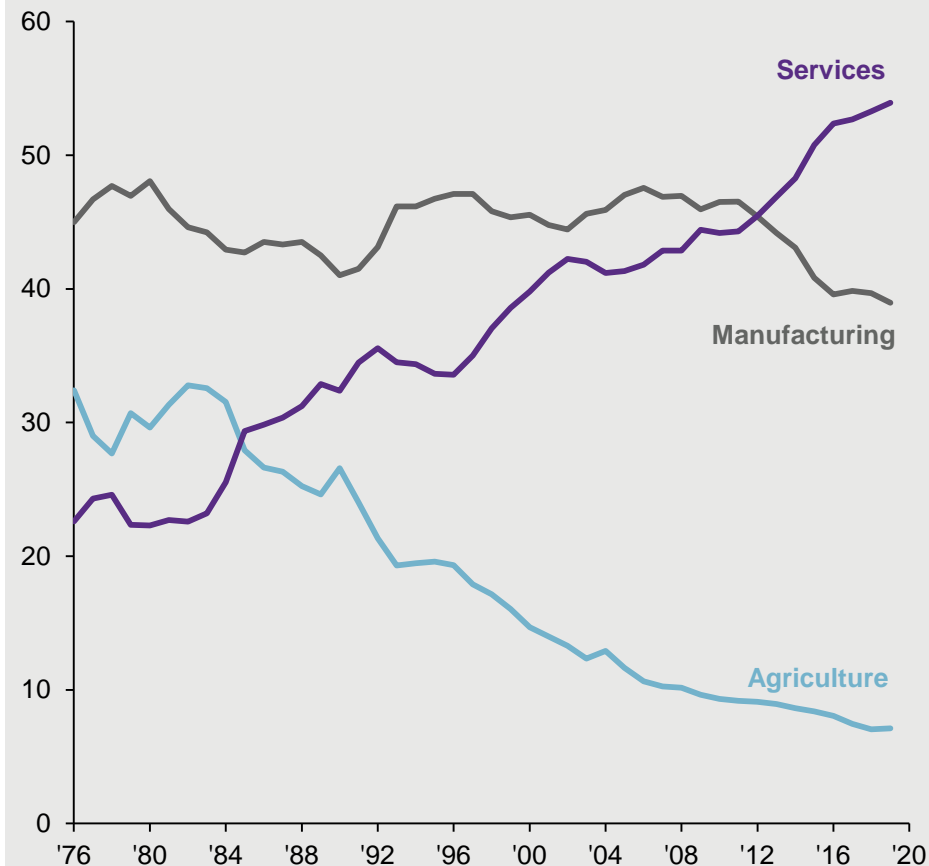
Source: Japan Cabinet Office, Markit, Refinitiv Datastream, J.P. Morgan Asset Management. PMI is Purchasing Managers' Index where a score of 50 indicates that economic activity is neither expanding nor contracting, above 50 indicates expansion. PMI data is shown with quarterly frequency. Past performance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



Source: (Left) Bloomberg, National Bureau of Statistics of China, Refinitiv Datastream, J.P. Morgan Asset Management. GDP forecast is from Bloomberg contributor composite. (Right) National Bureau of Statistics of China, Refinitiv Datastream, J.P. Morgan Asset Management. Industrial production is a three-month moving average and retail sales is a six-month moving average. Past performance is not a reliable indicator of current and future results. *Guide to the Markets - Europe*. Data as of 31 December 2020.

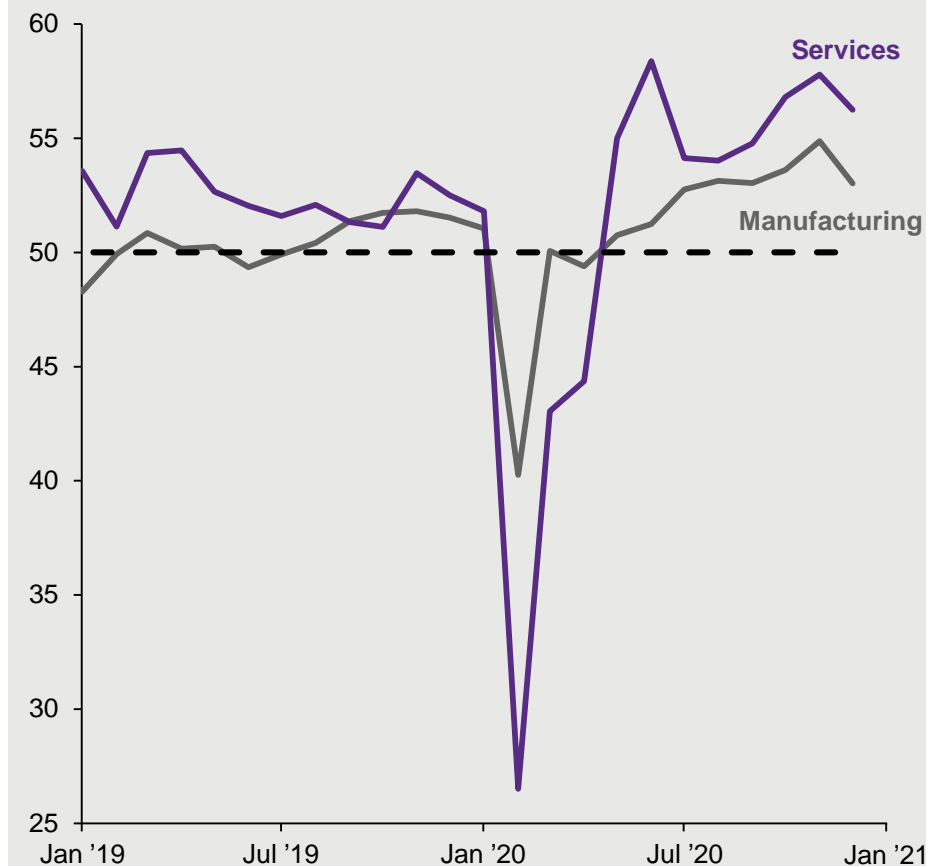
China economic sector weights

% of nominal GDP



China manufacturing and services PMIs

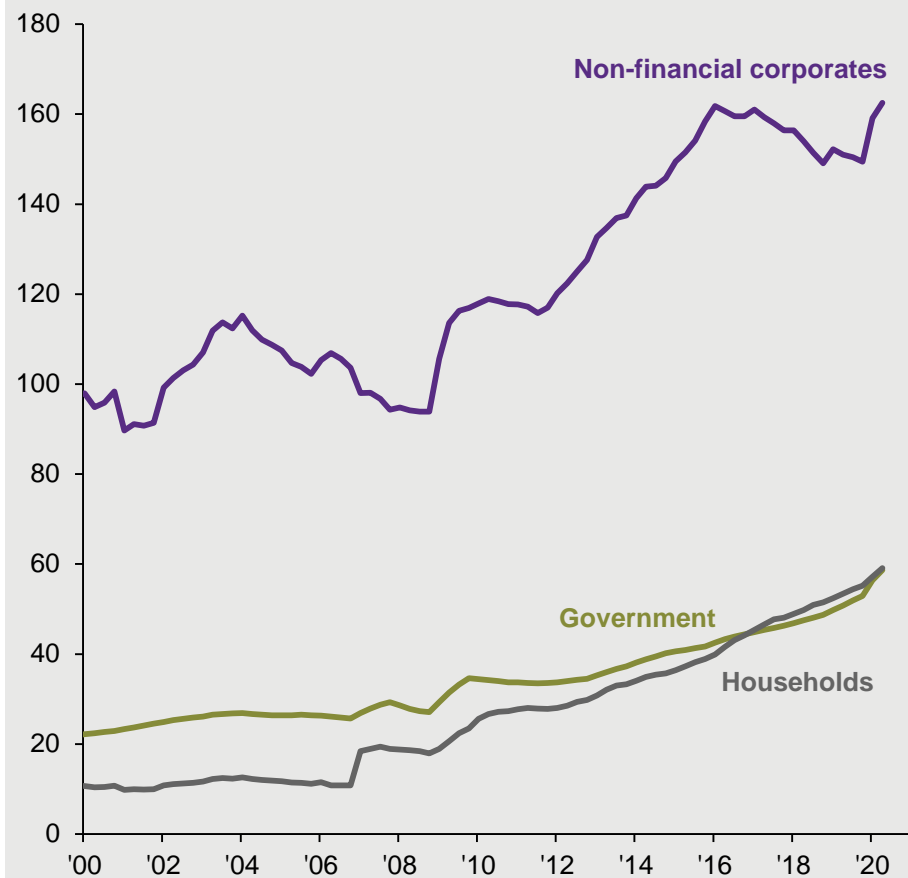
Index level



Source: (Left) National Bureau of Statistics of China, Refinitiv Datastream, J.P. Morgan Asset Management. (Right) Markit, 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. Past performance is not a reliable indicator of current and future results. *Guide to the Markets - Europe*. Data as of 31 December 2020.

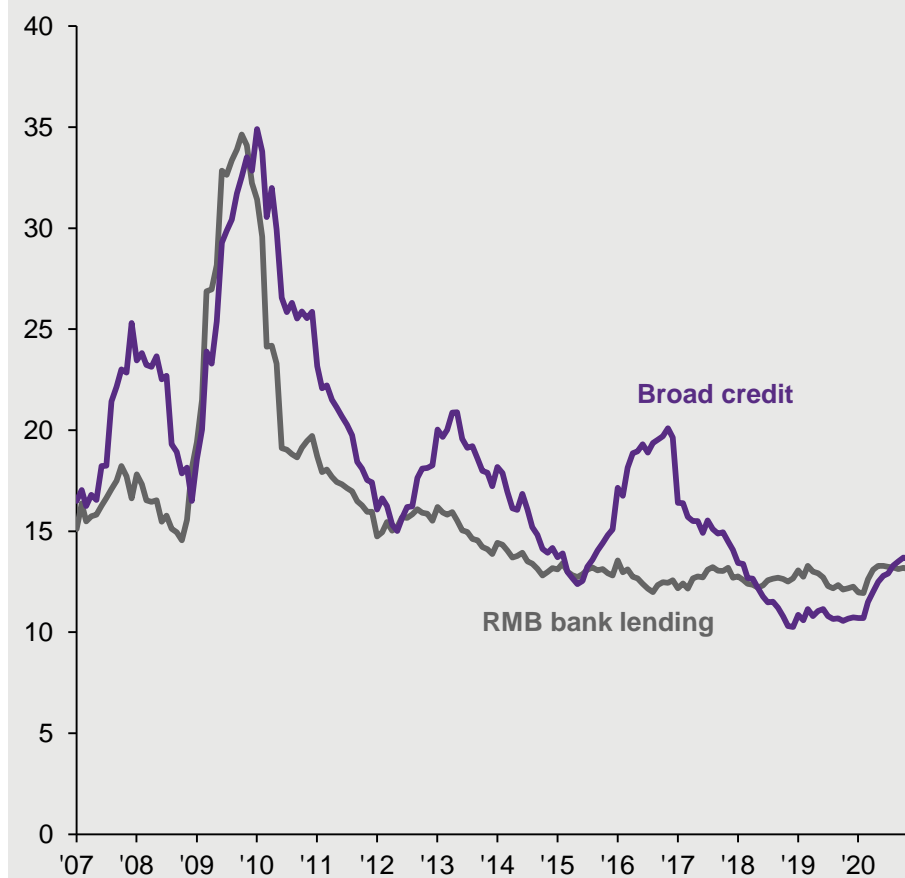
China debt to GDP ratios

% of nominal GDP



China credit growth

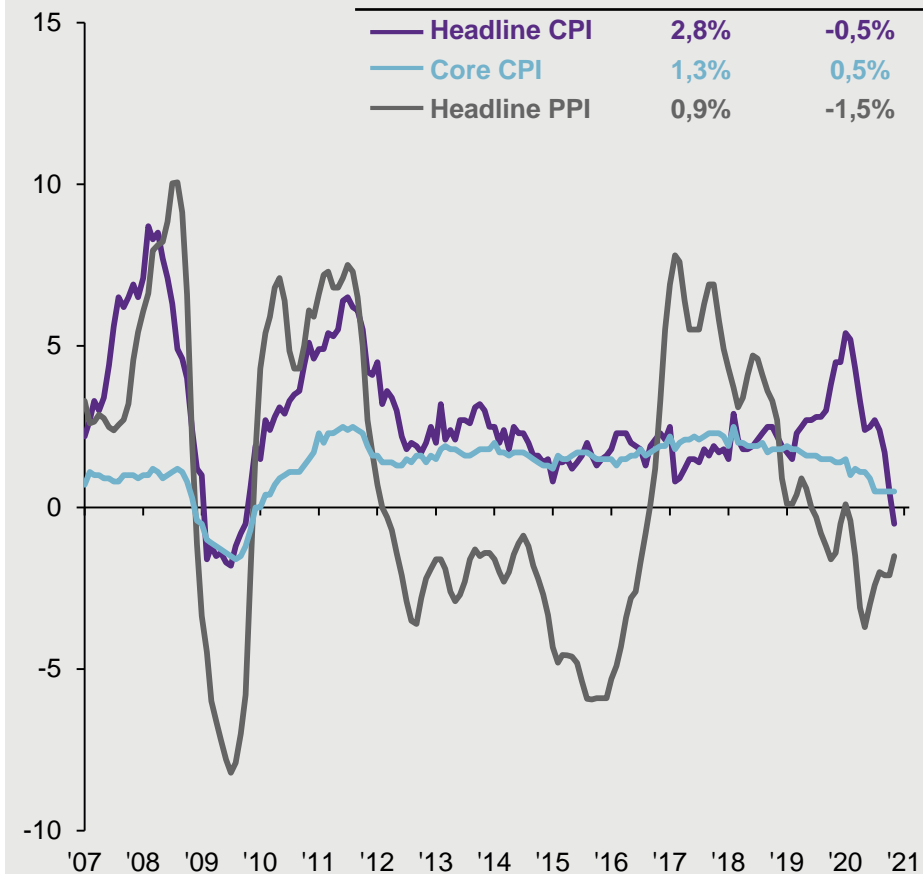
% change year on year



Source: (Left) Bank for International Settlements, Refinitiv Datastream, J.P. Morgan Asset Management. Debt refers to gross debt. (Right) People's Bank of China (PBoC), J.P. Morgan Asset Management. This chart includes two measures of credit ranging from the narrowest – bank lending – to the more extensive broad credit. Specifically, bank lending is the sum of all loans made by the commercial banking system to domestic borrowers. Broad credit includes all finance provided to non-financial entities in private and public sectors. Broad credit is all funding to domestic borrowers, including bank lending, trust loans, entrusted loans, bankers' acceptances, corporate bonds, equity financing by non-financial enterprises, asset-backed securities, loan write-offs, central government and local government bonds. Past performance is not a reliable indicator of current and future results. *Guide to the Markets - Europe*. Data as of 31 December 2020.

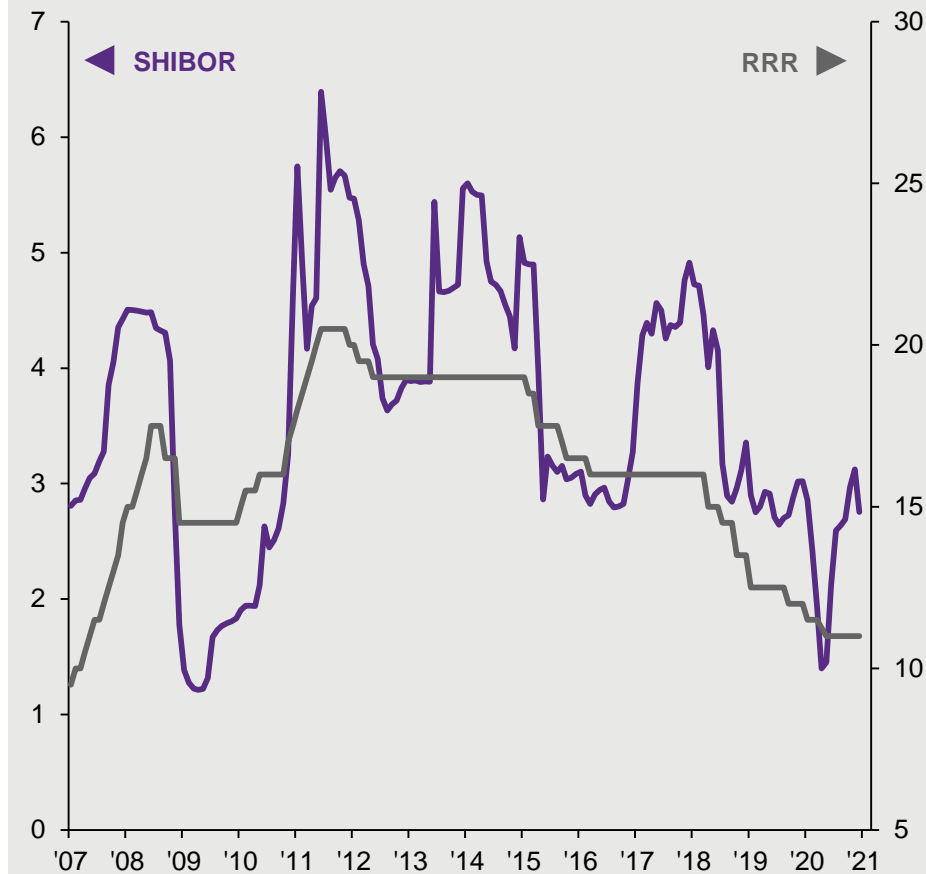
China inflation

% change year on year



China interbank rate and reserve requirement ratio (RRR)

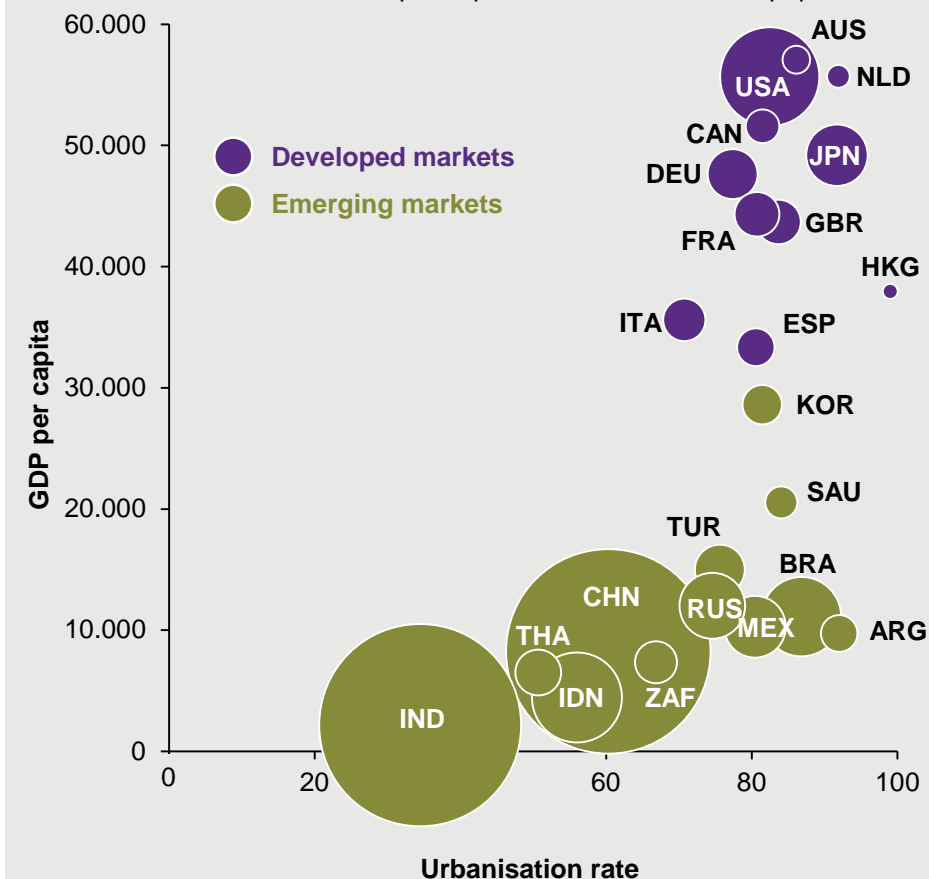
% rate



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 2020.

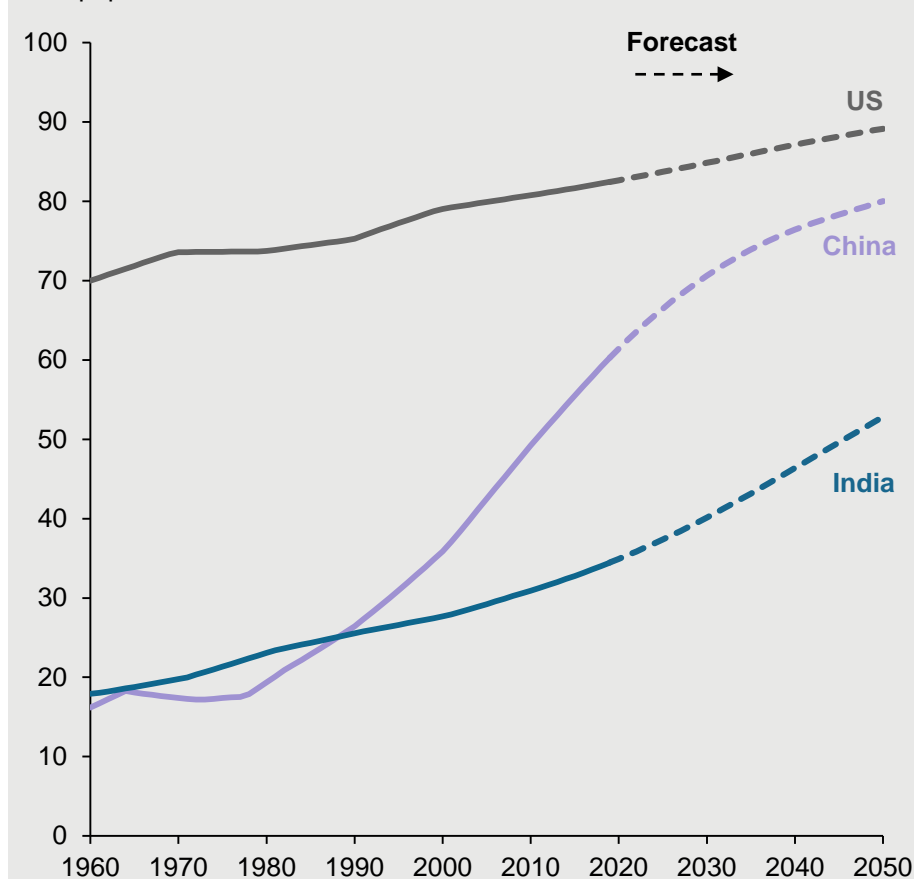
Urbanisation, real GDP per capita and population size

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



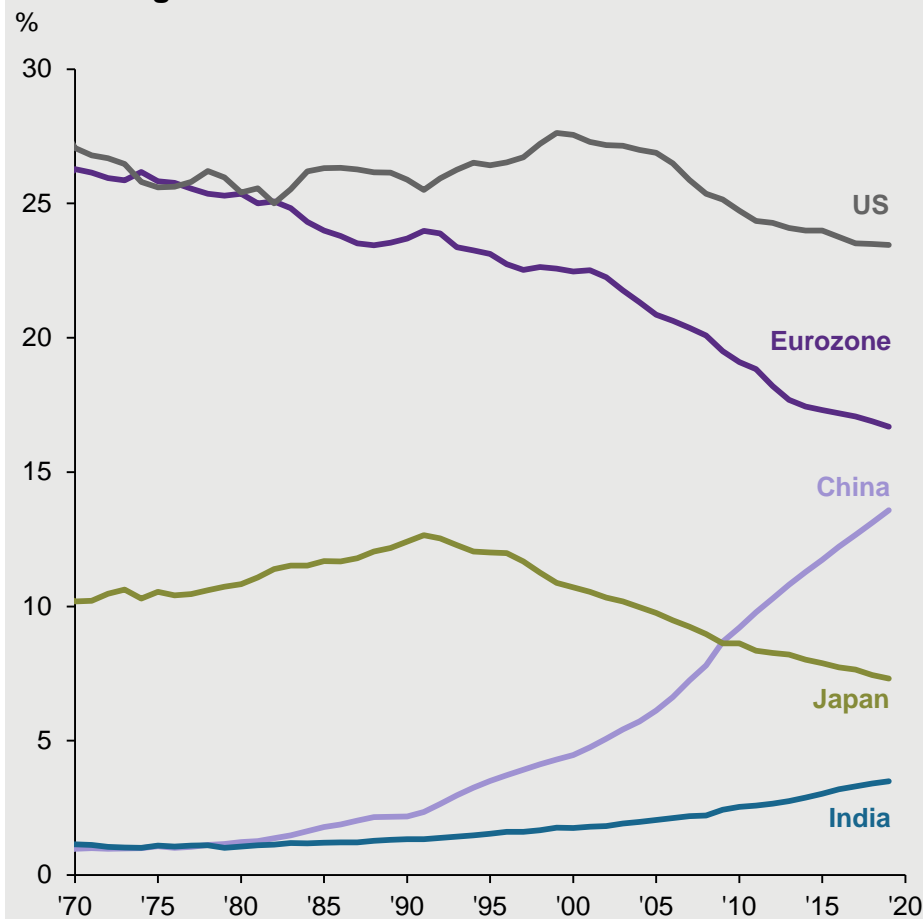
Urbanisation rates over time

% of population

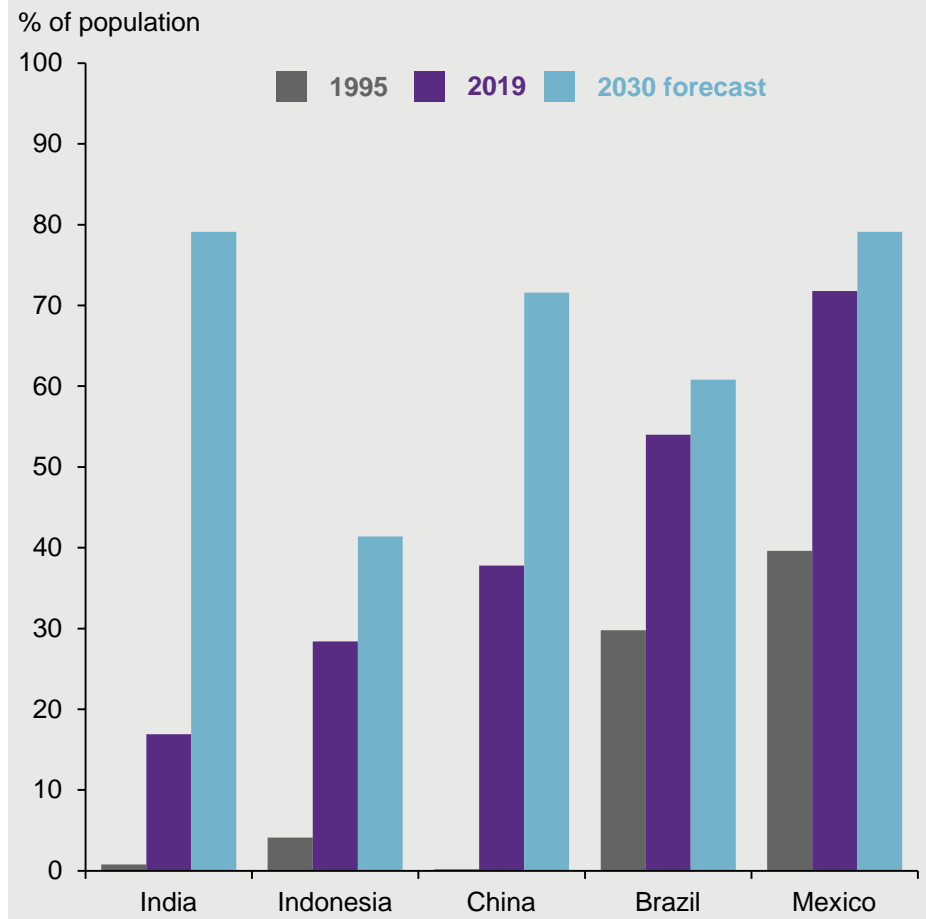


Source: (All charts) World Bank, J.P. Morgan Asset Management. Urbanisation rate refers to the proportion of the total population living within an urban area defined by national statistical offices. Countries are labelled using three-letter International Organisation of Standardisation country codes. Forecasts are from World Bank for 2019 onwards. Past performance is not a reliable indicator of current and future results. *Guide to the Markets - Europe*. Data as of 31 December 2020.

Share of global real GDP



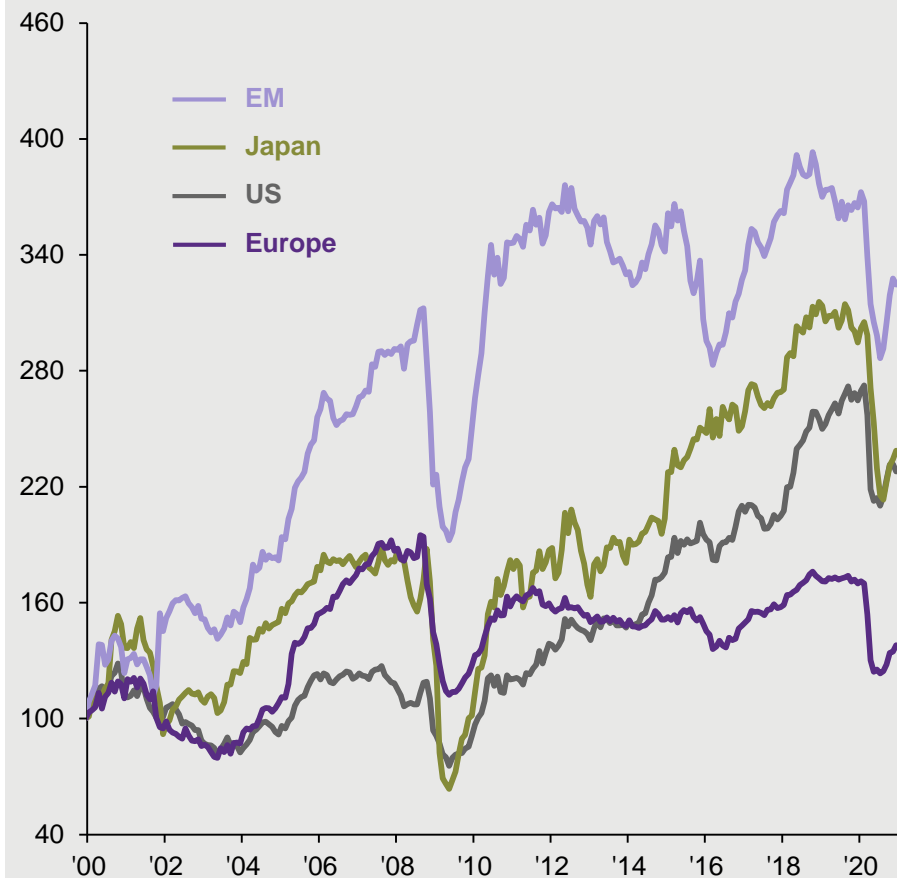
Growth of the middle class



Source: (Left) Refinitiv Datastream, World Bank, J.P. Morgan Asset Management. (Right) Brookings Institute, J.P. Morgan Asset Management. Middle class is defined as \$3,600-\$36,000 annual per capita income in purchasing power parity terms. Historical (1995) and forecast figures (2019 and 2030) come from the Brookings Development, Aid and Governance Indicators. Past performance is not a reliable indicator of current and future results. *Guide to the Markets - Europe*. Data as of 31 December 2020.

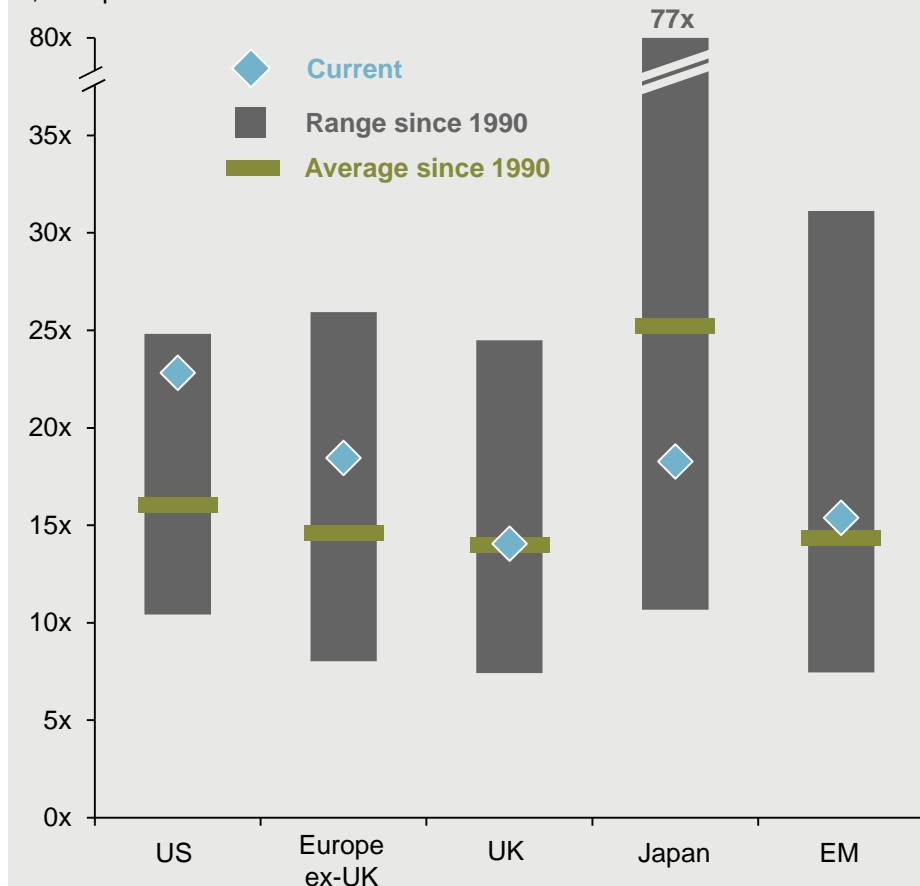
Consensus estimates for global earnings per share

Index level, next 12 months' EPS in EUR rebased to 100 at Jan 2000



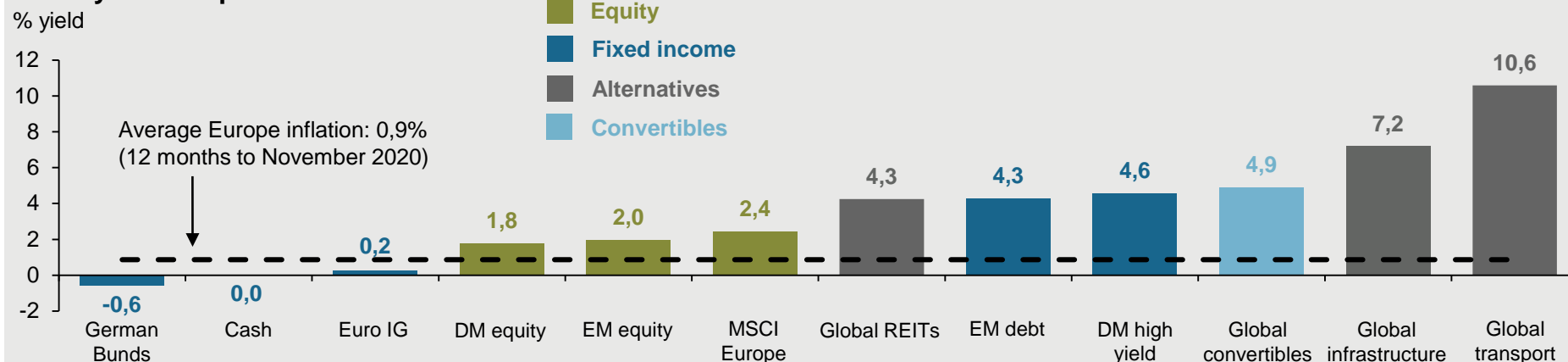
Global forward price-to-earnings ratios

x, multiple

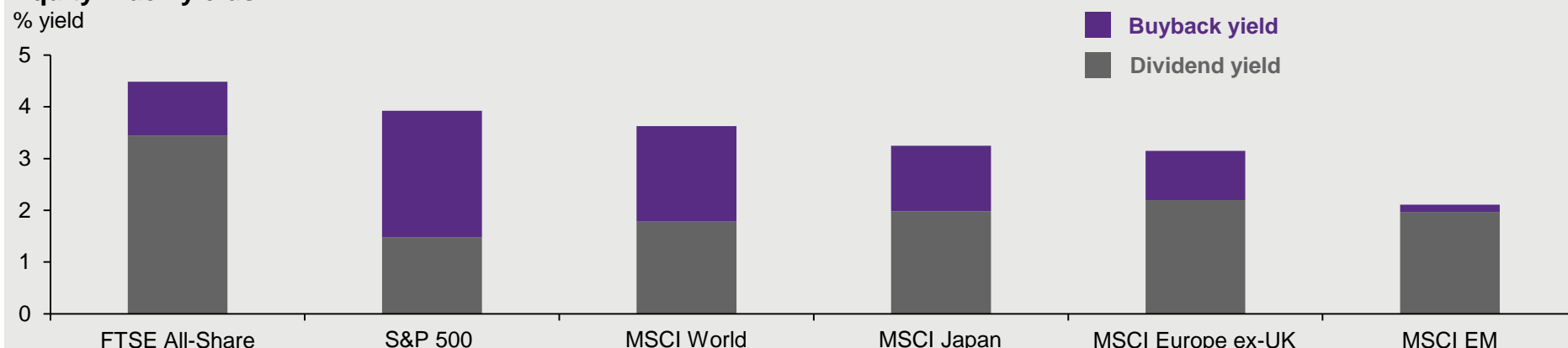


Source: (Left) FTSE, IBES, MSCI, Refinitiv Datastream, Standard & Poor's, TOPIX, J.P. Morgan Asset Management. MSCI indices are used for Europe and EM. UK is FTSE All-Share, US is S&P 500 and Japan is TOPIX. EPS is earnings-per-share. (Right) IBES, MSCI, Refinitiv Datastream, Standard & Poor's, J.P.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

Asset yield comparison



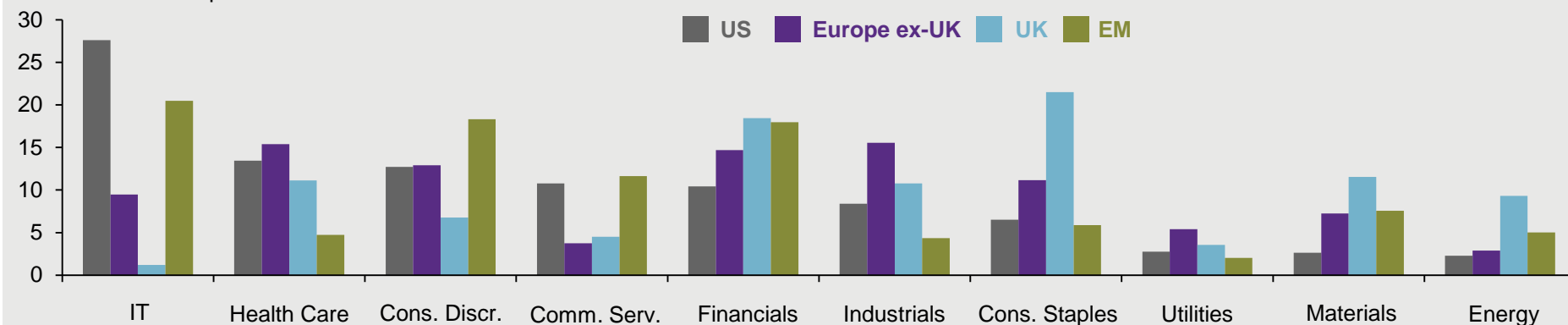
Equity index yields



Source: (Top) Bloomberg Barclays, BofA/Merrill Lynch, Clarkson, Drewry Maritime Consultants, MSCI, Refinitiv Datastream, J.P. Morgan Asset Management. Additional yield often comes with associated capital and/or liquidity risk. Global transport levered yield is as of September 2020 and global infrastructure yield is as of June 2020. Yields for the bond indices are yield to worst and dividend yields for the equity indices. Global transport levered yield is rental income minus operating expenses, debt amortisation and interest expenses, expressed as a percentage of equity value. Global convertibles: Bloomberg Barclays Global Convertibles; DM equity: MSCI World; EM equity: MSCI EM; German bunds: Germany 10-year yield; Euro IG: Bloomberg Barclays Euro Agg. – Corporates; Global REITs: FTSE NAREIT Index; DM high yield: BofA/Merrill Lynch Developed Markets High Yield Constrained; EM debt: J.P. Morgan EMBI Global; Global infrastructure: MSCI Global Infrastructure Asset Index – Low risk. (Bottom) Bloomberg, FTSE, MSCI, Refinitiv Datastream, Standard & Poor's, J.P. Morgan Asset Management. Buyback yield is last 12 months' buybacks divided by the market cap of the index. Past performance is not a reliable indicator of current and future results. *Guide to the Markets - Europe*. Data as of 31 December 2020.

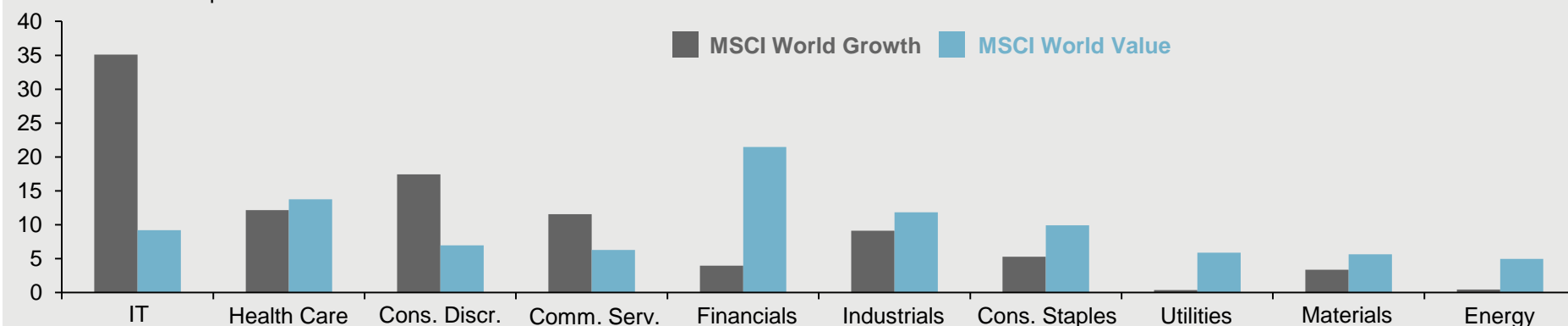
Global equity sector weights

% of total market cap



MSCI World Growth and Value sector weights

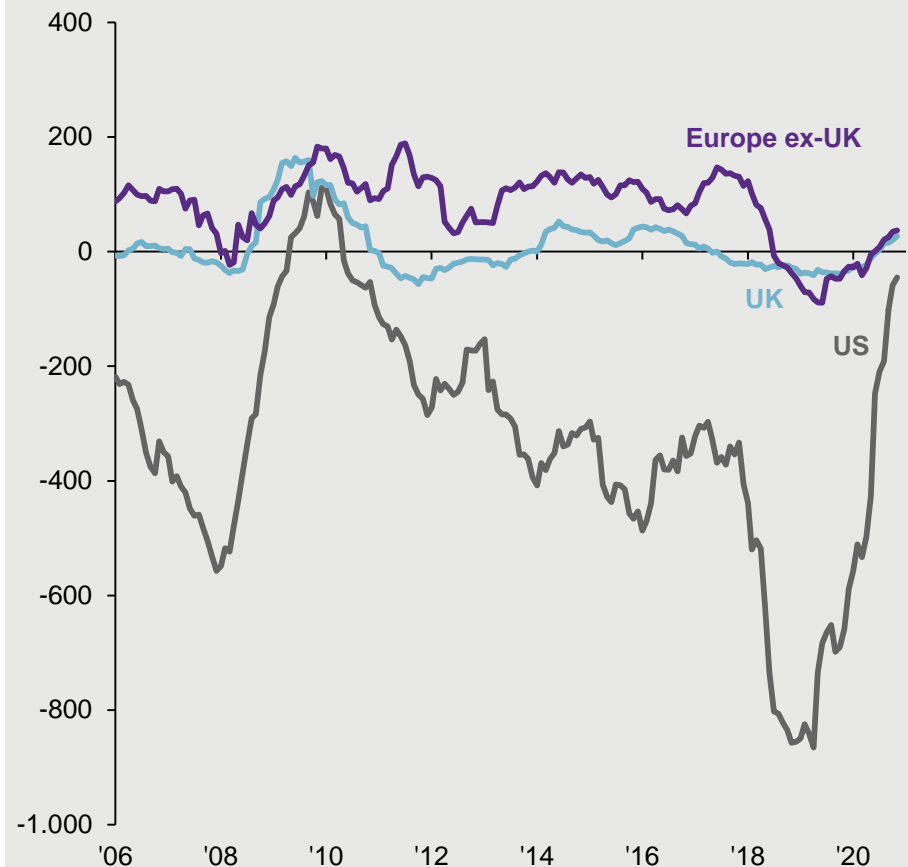
% of total market cap



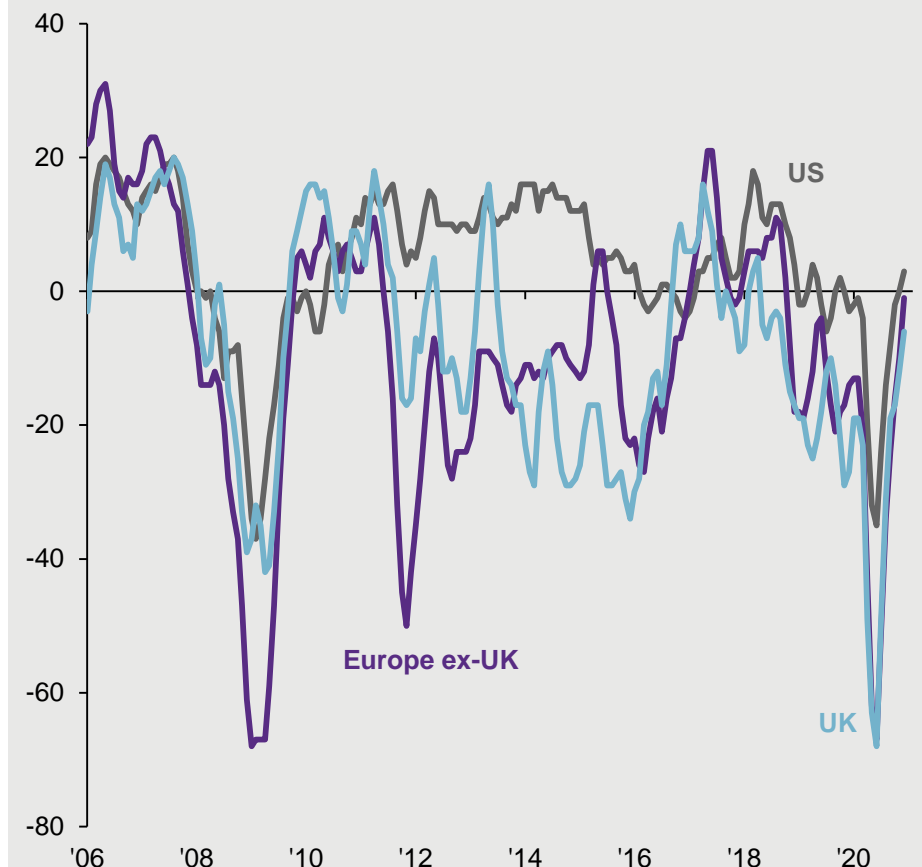
Source: (Top) MSCI, Refinitiv Datastream, Standard & Poor's, J.P. Morgan Asset Management. Indices are all MSCI, except for US, which is S&P 500. (Bottom) MSCI, Refinitiv Datastream, J.P. Morgan Asset Management. Real estate is not included in these sector breakdowns due to the small size of the weight 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 2020.

US and Europe net equity issuance

USD billions, 12-month rolling

**US and Europe dividend revision ratios**

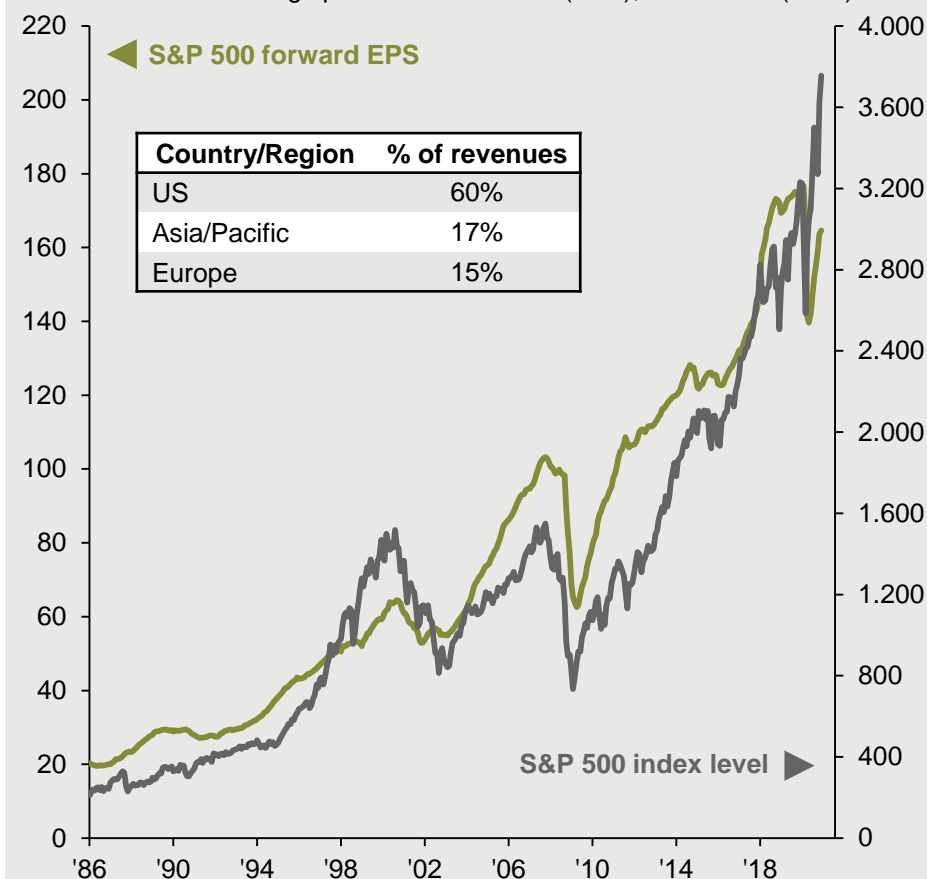
% net upgrades as a proportion of total dividend estimate revisions



Source: (Left) Bernstein, Bloomberg, J.P. Morgan Asset Management. Net equity issuance is equity issuance minus buybacks. (Right) IBES, MSCI, 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 2020.

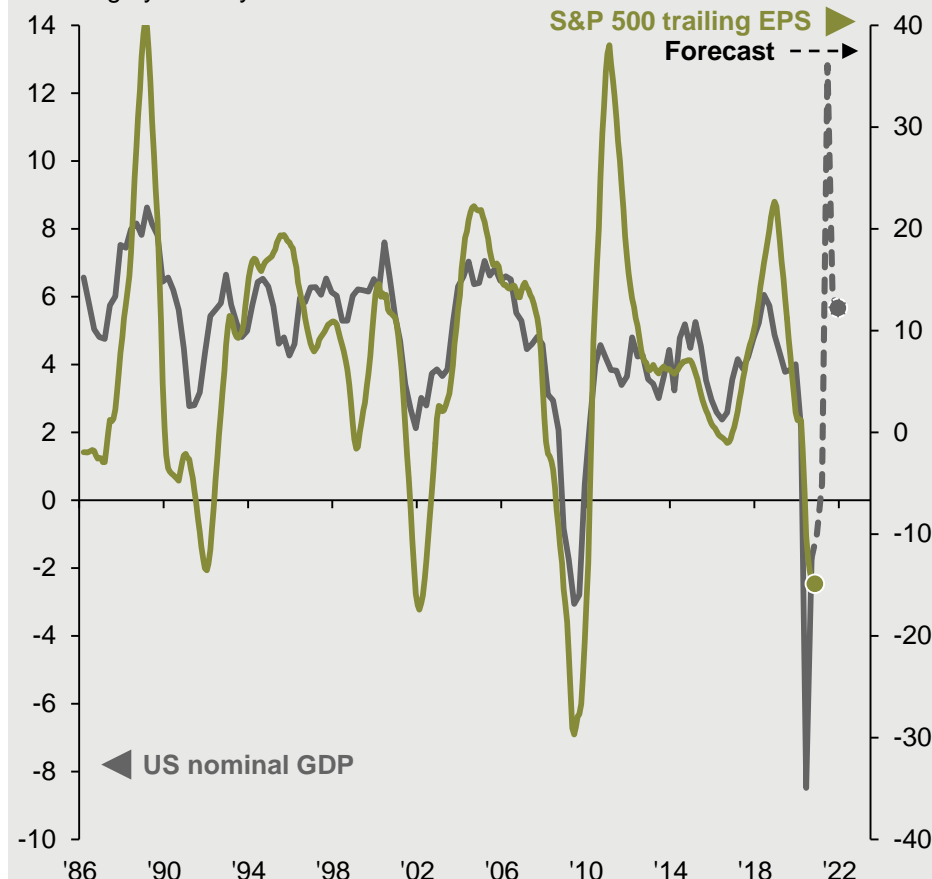
S&P 500 earnings and performance

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



US nominal GDP growth and earnings growth

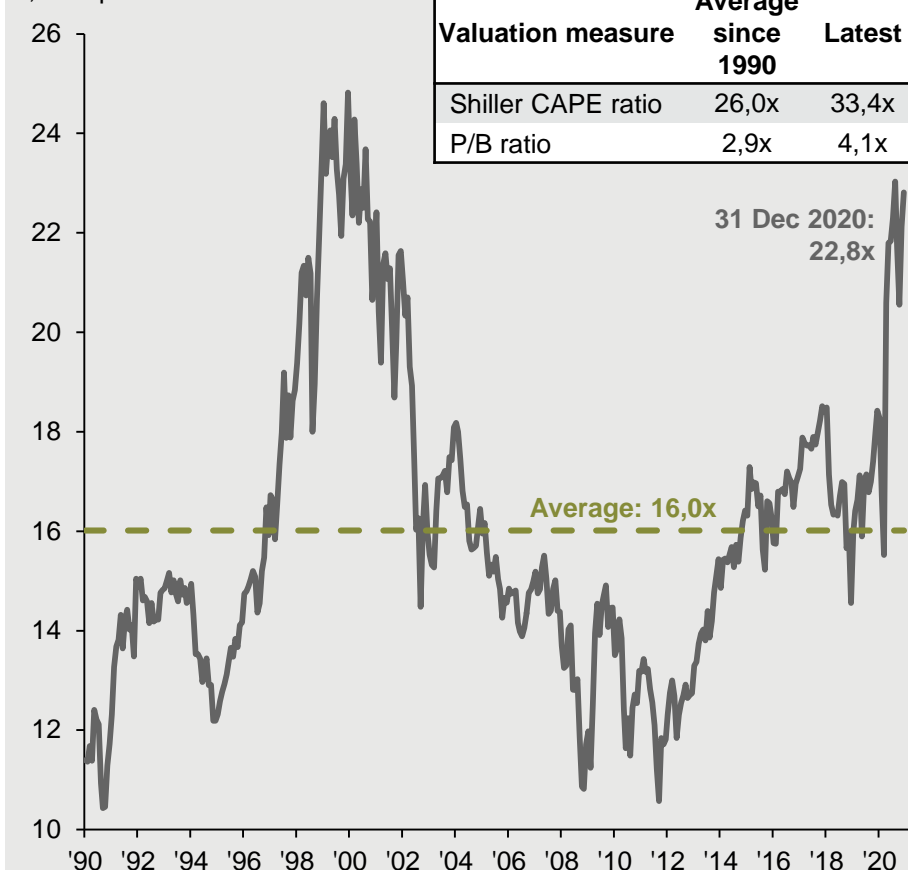
% change year on year



Source: (Left) FactSet, IBES, Refinitiv Datastream, Standard & Poor's, J.P. Morgan Asset Management. Earnings data is based on 12-month forward estimates. (Right) BEA, IBES, Refinitiv Datastream, Standard & Poor's, J.P. Morgan Asset Management. Earnings data is last 12 months' earnings per share. Nominal GDP forecasts are from J.P. Morgan Securities Research. Past performance and forecasts are not reliable indicators of current and future results. *Guide to the Markets - Europe*. Data as of 31 December 2020.

S&P 500 forward P/E ratio

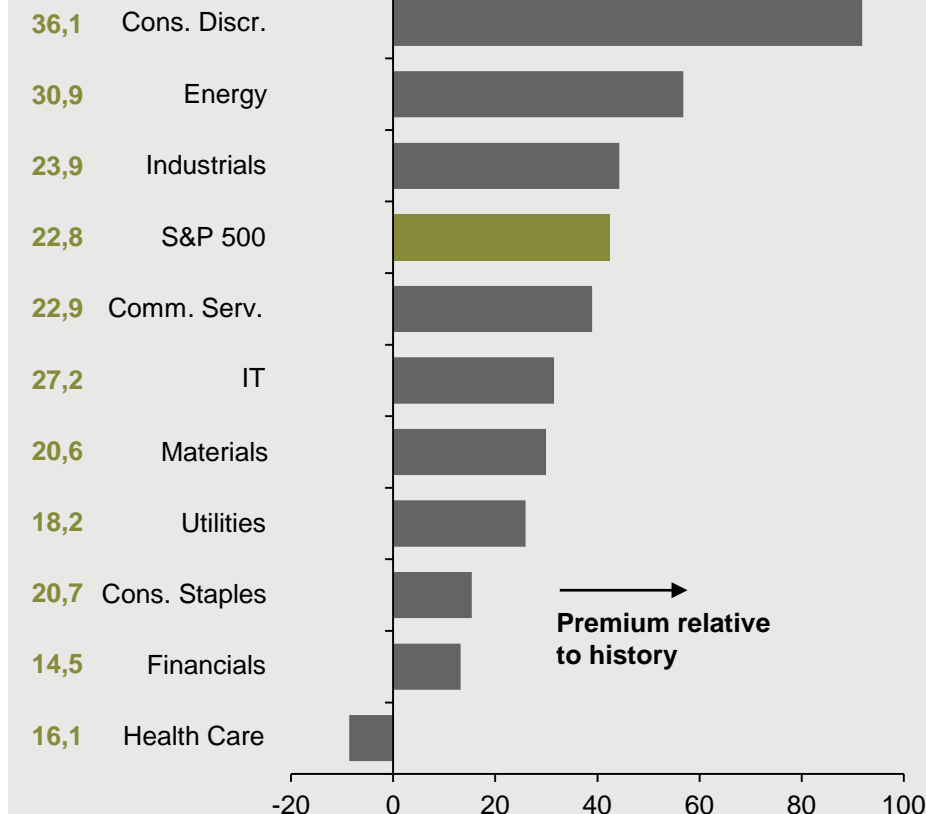
x, multiple



S&P 500 forward P/E ratio sector breakdown

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

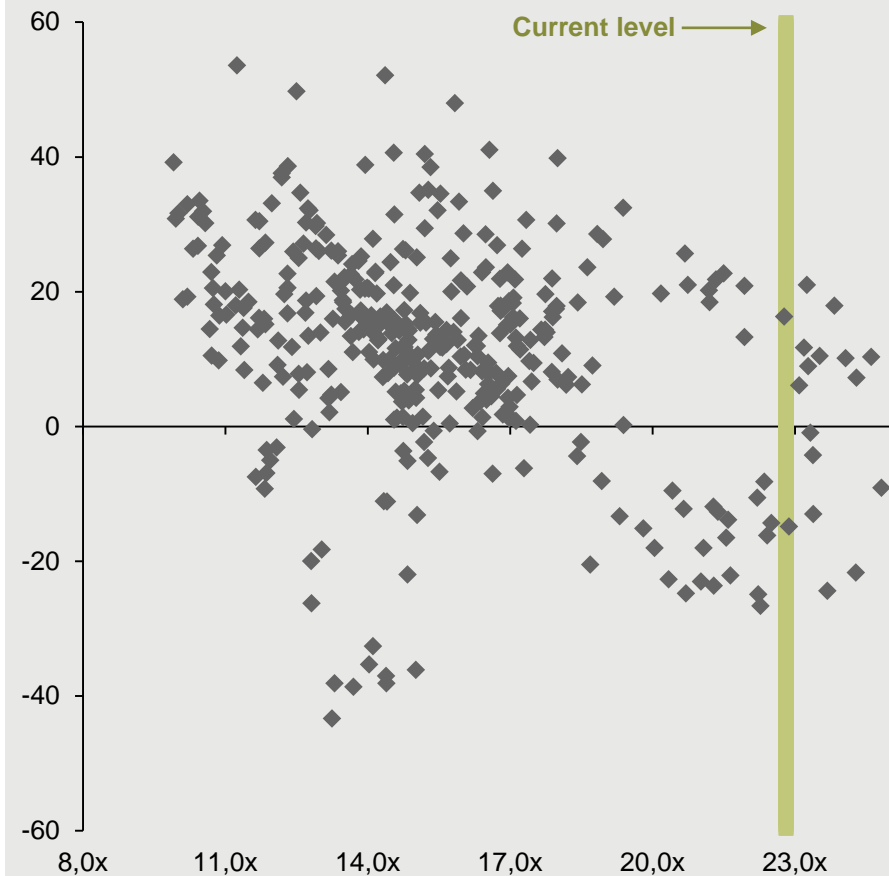
Current P/E ratio



Source: (Left) FactSet, IBES, Refinitiv Datastream, Robert Shiller, Standard & Poor's, J.P. Morgan Asset Management. P/E ratio calculated using IBES earnings estimates for next 12 months. P/E data may differ from *Guide to the Markets - US*, which uses FactSet earnings estimates. Shiller cyclically-adjusted P/E (CAPE) is price-to-earnings ratio adjusted using trailing 10-year average inflation-adjusted earnings. P/B ratio is trailing price-to-book ratio. (Right) IBES, Refinitiv Datastream, Standard & Poor's, 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 2020.

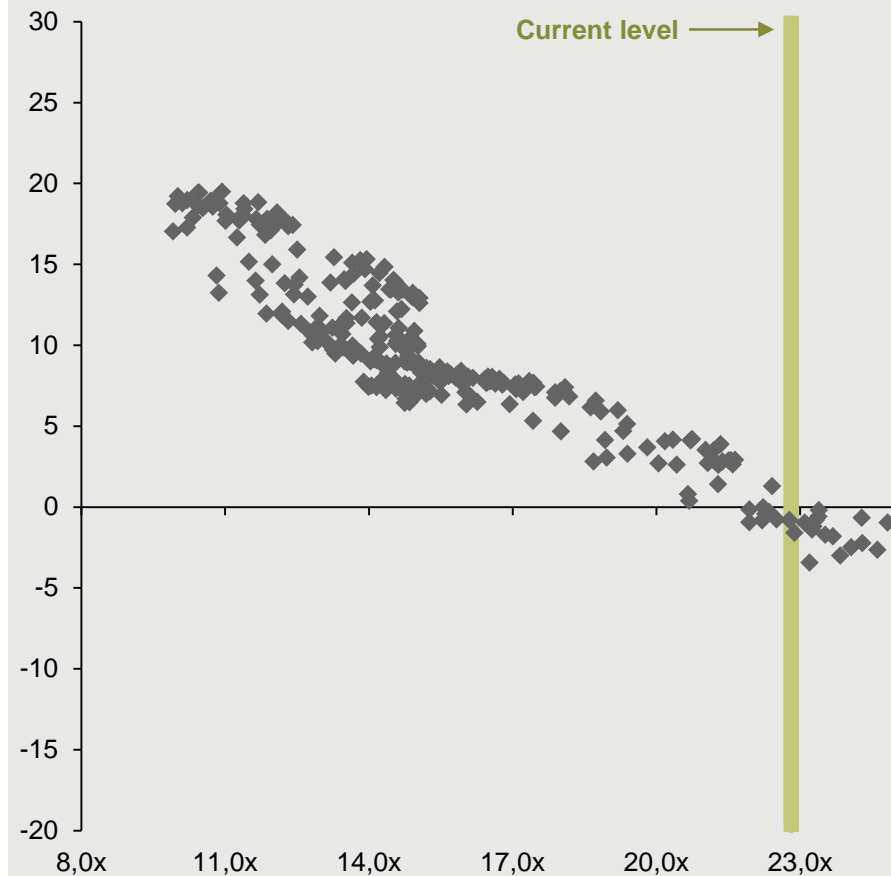
S&P 500 forward P/E ratios and subsequent 1-year returns

%, annualised total return*



S&P 500 forward P/E ratios and subsequent 10-year returns

%, annualised total return*



Source: (All charts) IBES, Refinitiv Datastream, Standard & Poor's, J.P. Morgan Asset Management. *Dots represent monthly data points since 1988, which is earliest available. Past performance is not a reliable indicator of current and future results. *Guide to the Markets - Europe*. Data as of 31 December 2020.

S&P 500 Quality/S&P 500 relative performance

Relative total return index level, rebased to 100 in 1990

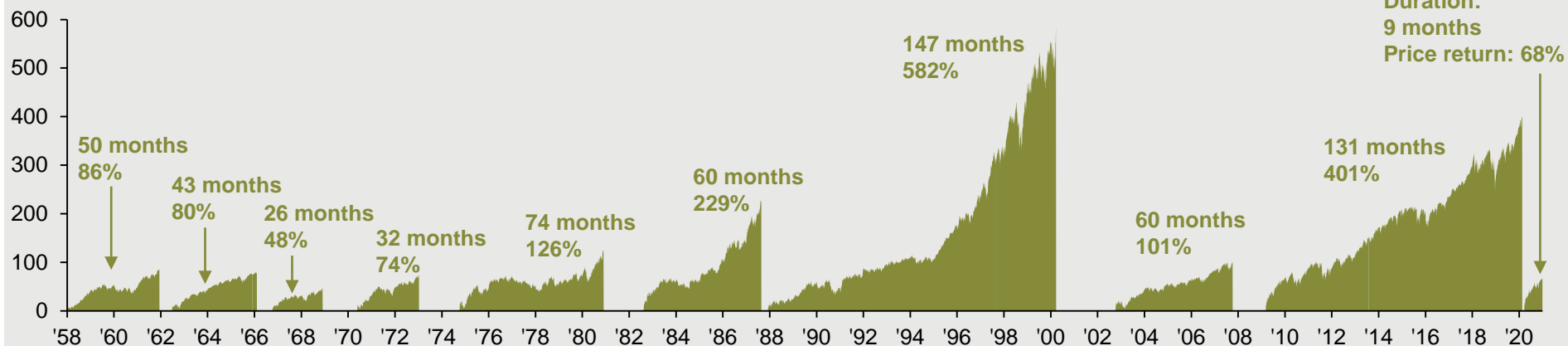
**MSCI World Growth and Value forward P/E ratio**

x, multiple

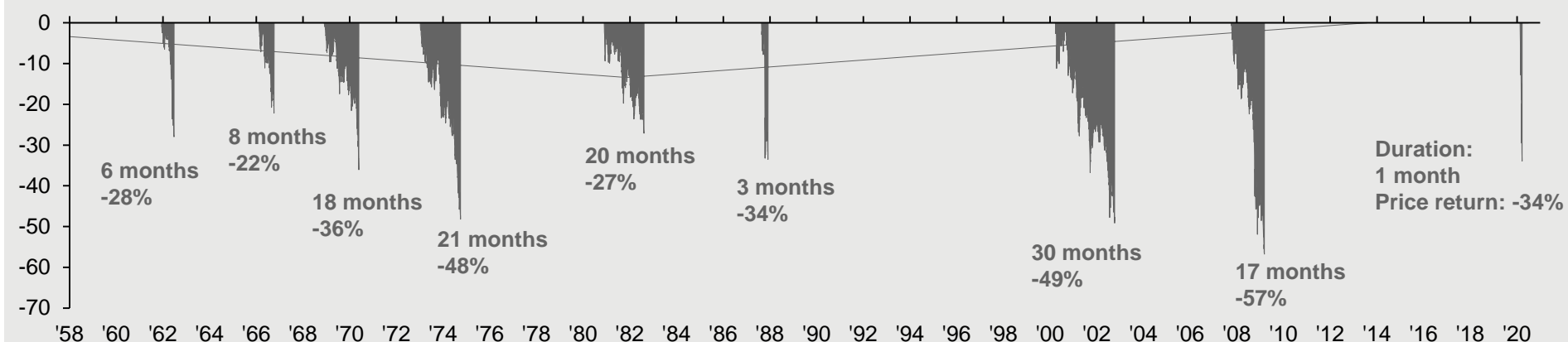


Source: (Left) J.P. Morgan Asset Management Quantitative Beta Solutions, Standard and Poor's, J.P. Morgan Asset Management. S&P 500 Quality index is the top quartile quality stocks in the S&P 500 determined by JPMAM Quantitative Beta Strategies based on measures of profitability, financial risk and earnings quality. Periods of "recession" are defined using US National Bureau of Economic Research (NBER) business cycle dates. (Right) MSCI, Refinitiv Datastream, J.P. Morgan Asset Management. Forward P/E ratio is the price to 12-months forward ratio, as published by MSCI. Past performance is not a reliable indicator of current and future results. *Guide to the Markets - Europe*. Data as of 31 December 2020.

S&P 500 bull markets, %



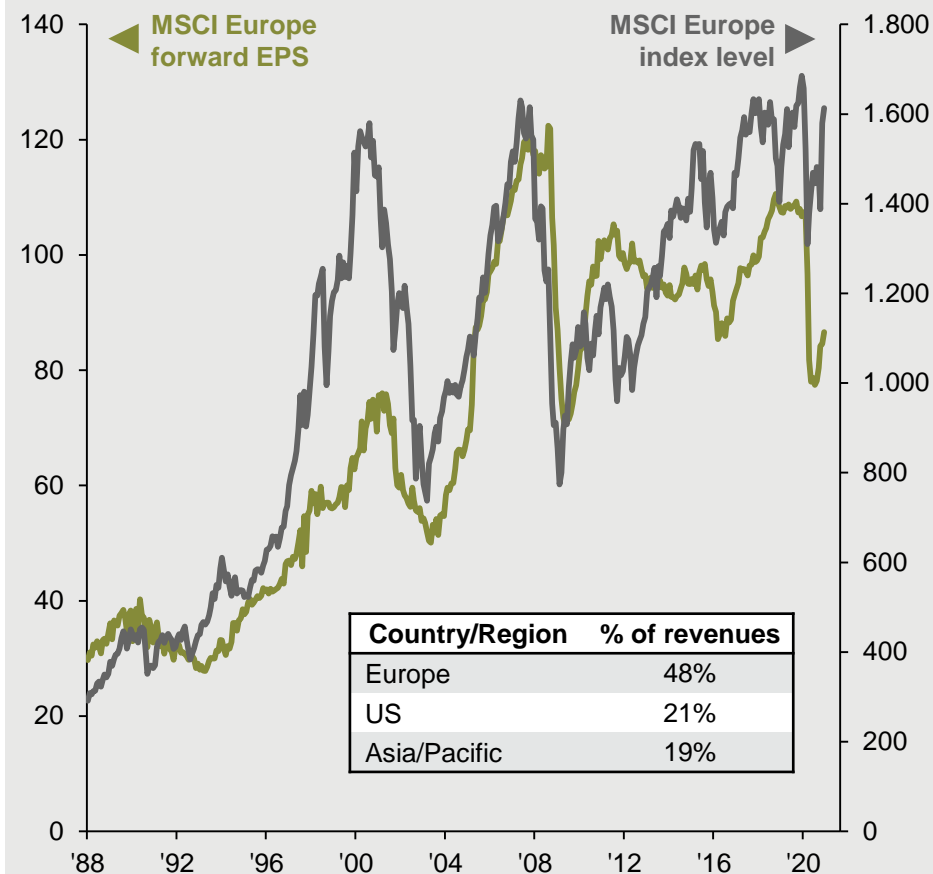
S&P 500 bear markets, %



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 2020.

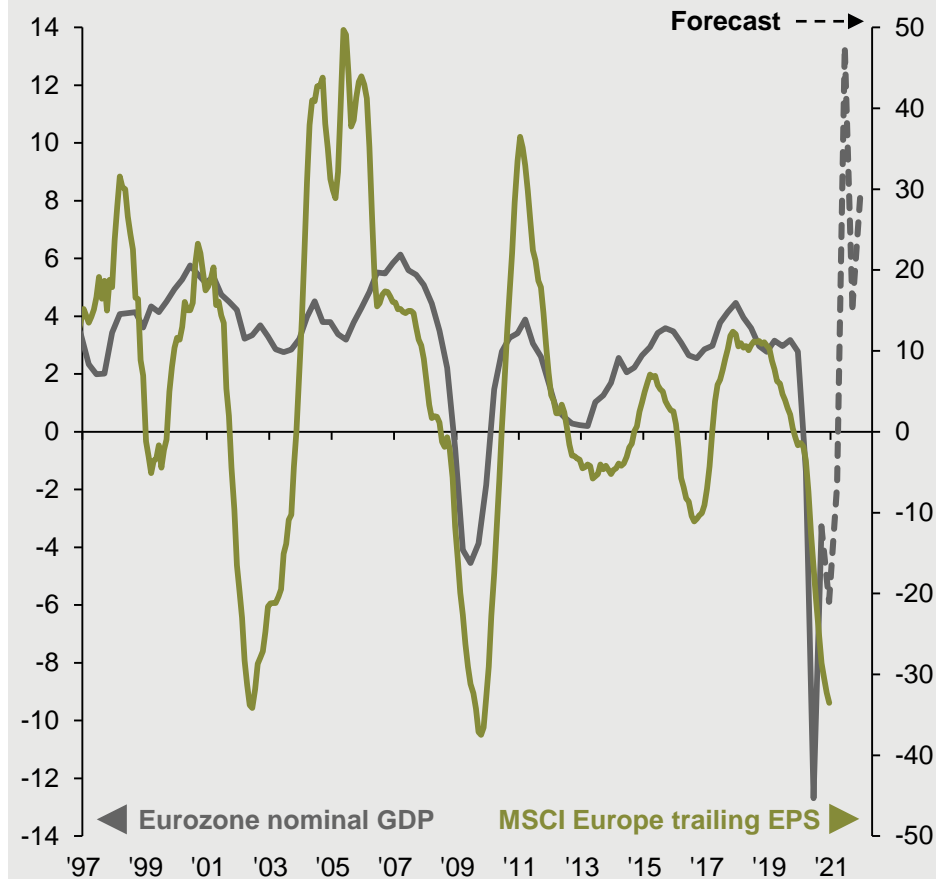
MSCI Europe earnings and performance

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



Europe nominal GDP growth and earnings growth

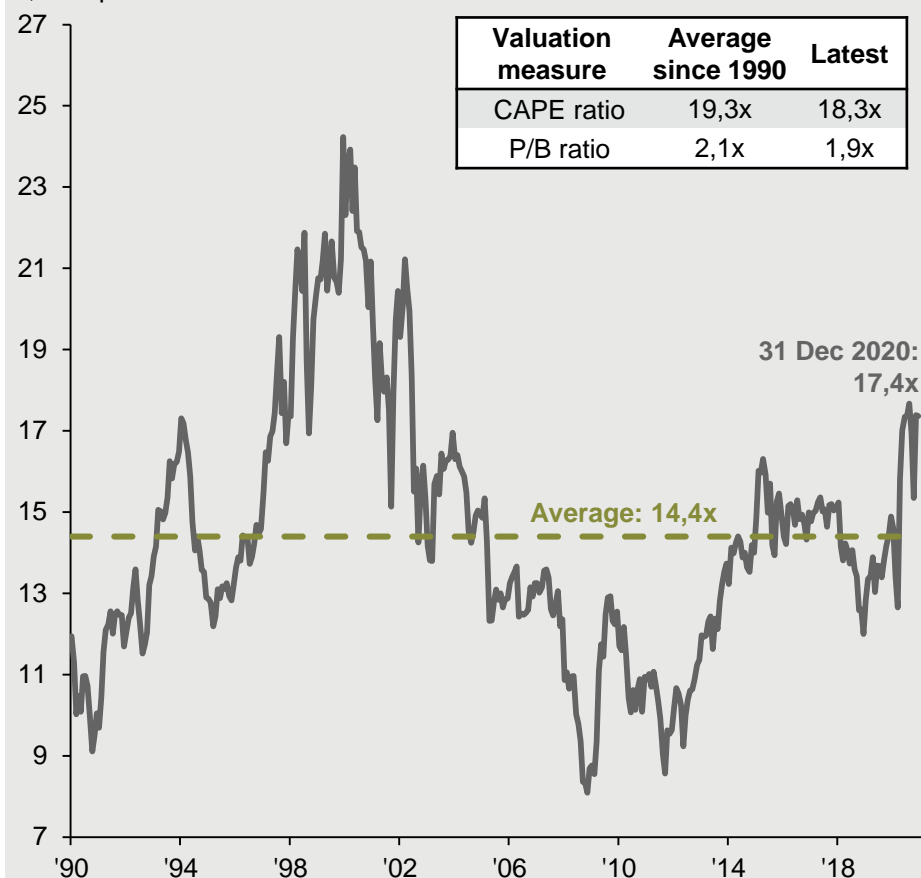
% change year on year



Source: (Left) FactSet, IBES, MSCI, Refinitiv Datastream, J.P. Morgan Asset Management. Earnings data is based on 12-month forward estimates. (Right) Eurostat, IBES, MSCI, Refinitiv Datastream, J.P. Morgan Asset Management. Earnings data is last 12 months' earnings per share. Nominal GDP forecasts are from J.P. Morgan Securities Research. Past performance and forecasts are not reliable indicators of current and future results. *Guide to the Markets - Europe*. Data as of 31 December 2020.

MSCI Europe forward P/E ratio

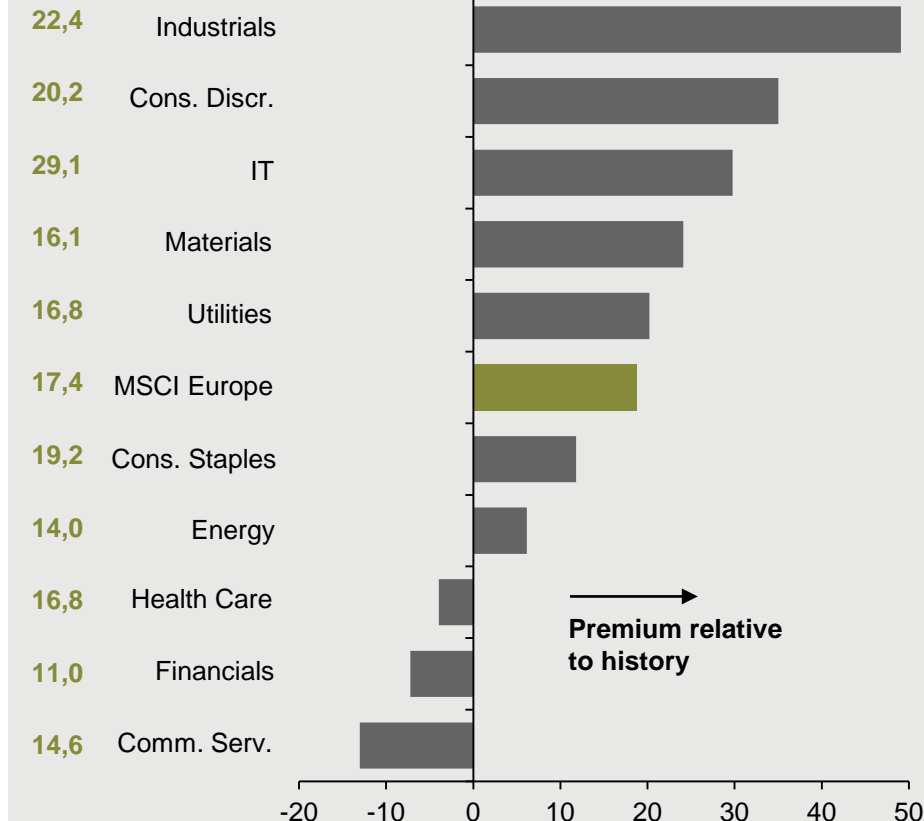
x, multiple



MSCI Europe forward P/E ratio sector breakdown

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

Current P/E ratio



Source: (Left) FactSet, IBES, MSCI, Refinitiv Datastream, J.P. Morgan Asset Management. P/E ratio calculated using IBES earnings estimates for next 12 months. Cyclically-adjusted P/E (CAPE) is price-to-earnings ratio adjusted using trailing 10-year average inflation-adjusted earnings. P/B ratio is trailing price-to-book ratio. (Right) IBES, MSCI, 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 2020.

MSCI Europe large, mid & small cap performance

Index level, rebased to 100 in Jan 1995

**MSCI Europe large, mid & small cap valuations**

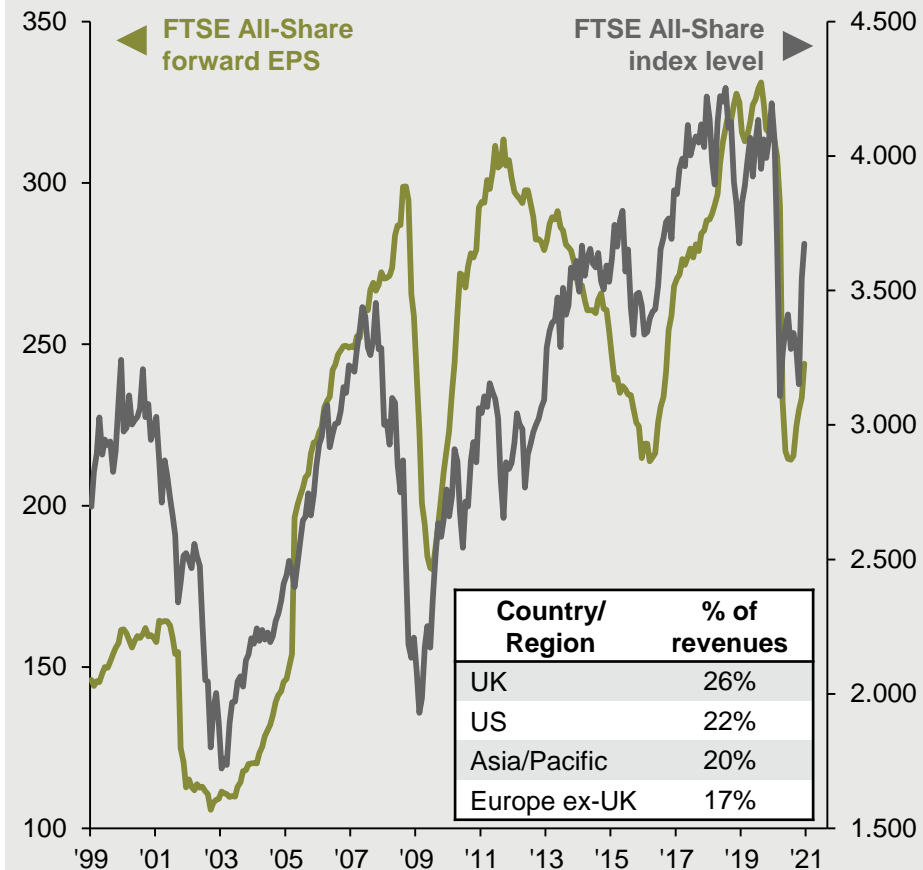
x, 12-month forward price-to-earnings ratio



Source: (All charts) MSCI, Refinitiv Datastream, J.P. Morgan Asset Management. Past performance is not a reliable indicator of current and future results.
 Guide to the Markets - Europe. Data as of 31 December 2020.

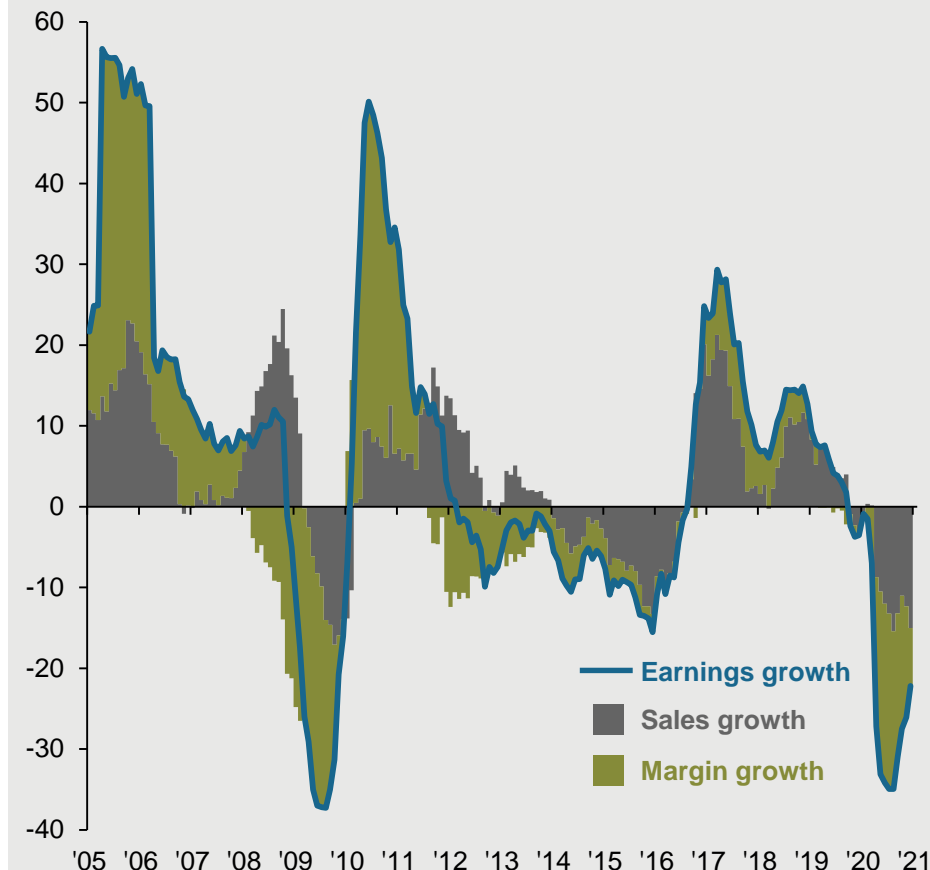
FTSE All-Share earnings and performance

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



FTSE All-Share earnings per share growth

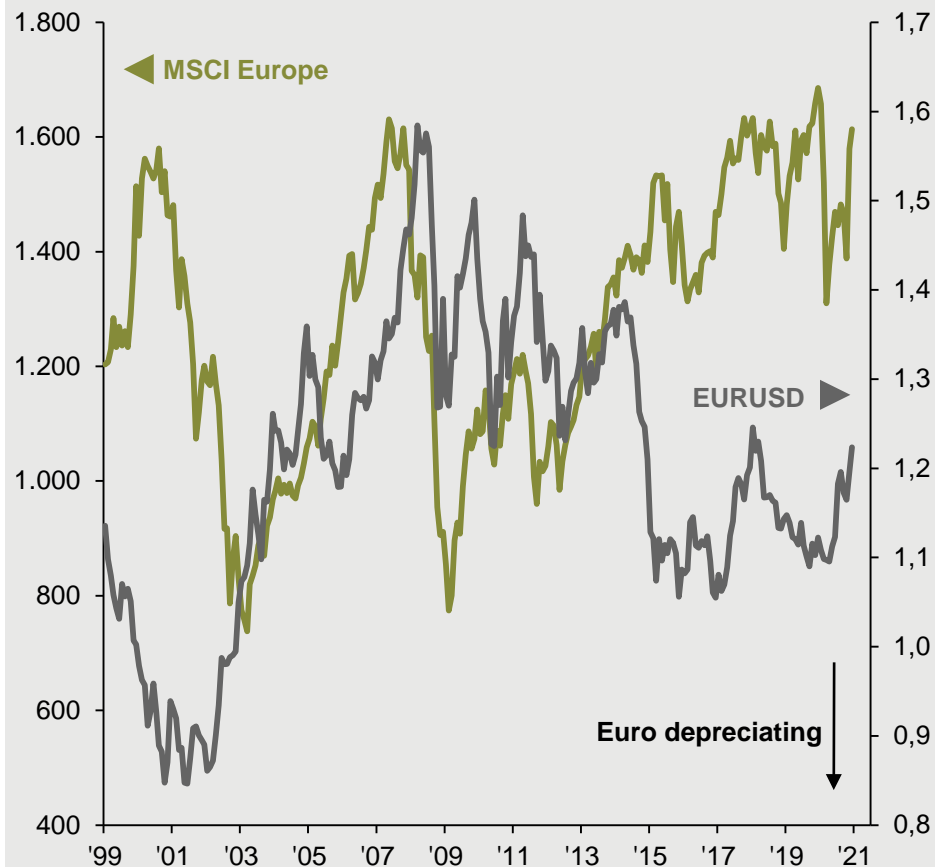
% change year on year



Source: (All charts) FactSet, FTSE, IBES, Refinitiv Datastream, J.P. Morgan Asset Management. Earnings data are based on 12-month forward estimates. Margin growth is the growth rate of earnings per share divided by sales per share. Past performance is not a reliable indicator of current and future results.
Guide to the Markets - Europe. Data as of 31 December 2020.

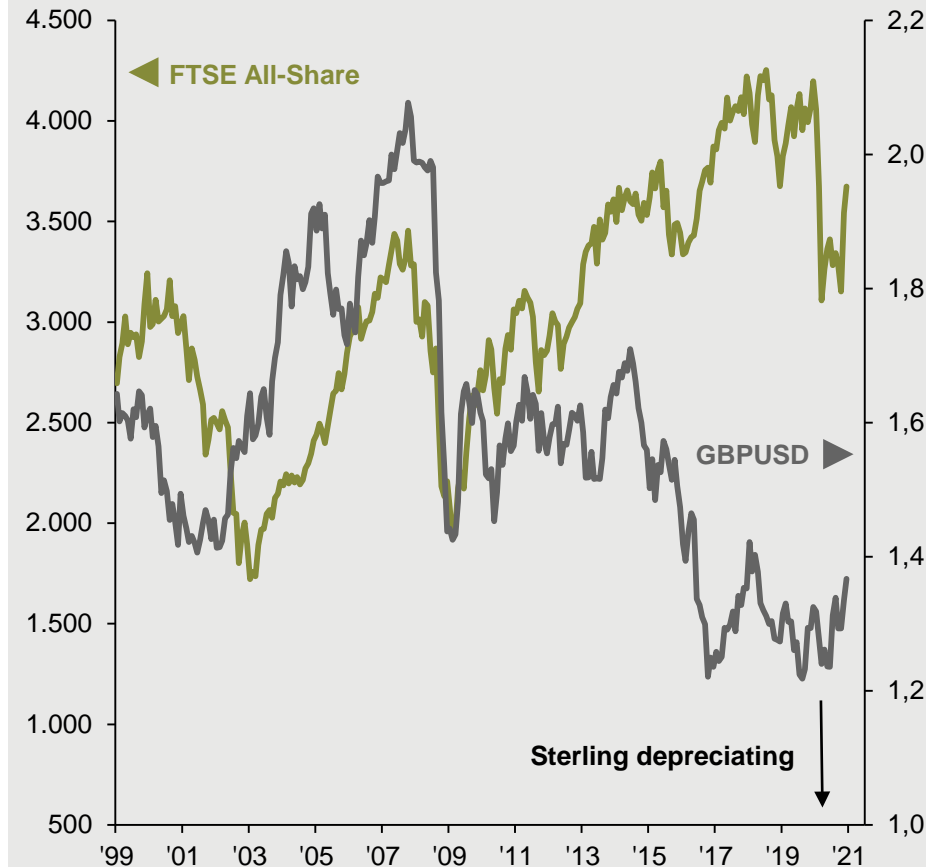
MSCI Europe and euro vs. US dollar

Index level (LHS); US dollars per euro (RHS)



FTSE All-Share and sterling vs. US dollar

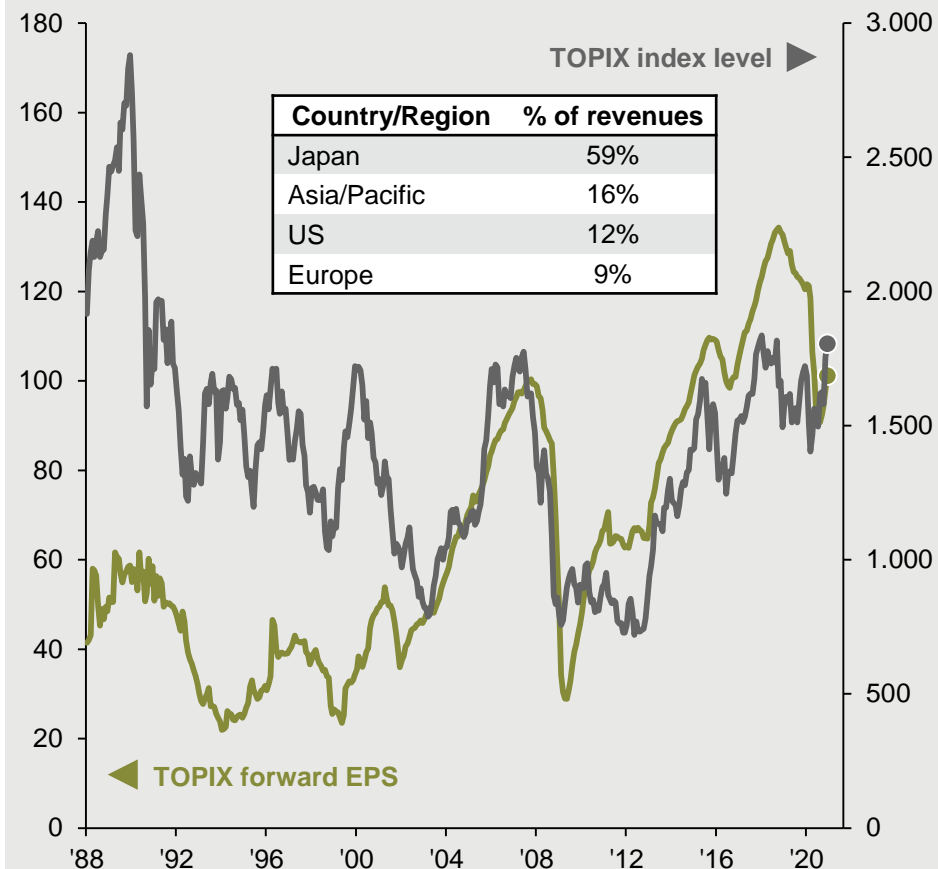
Index level (LHS); US dollars per UK pound (RHS)



Source: (Left) MSCI, Refinitiv Datastream, J.P. Morgan Asset Management. (Right) FTSE, Refinitiv Datastream, J.P. Morgan Asset Management. Past performance is not a reliable indicator of current and future results. *Guide to the Markets - Europe*. Data as of 31 December 2020.

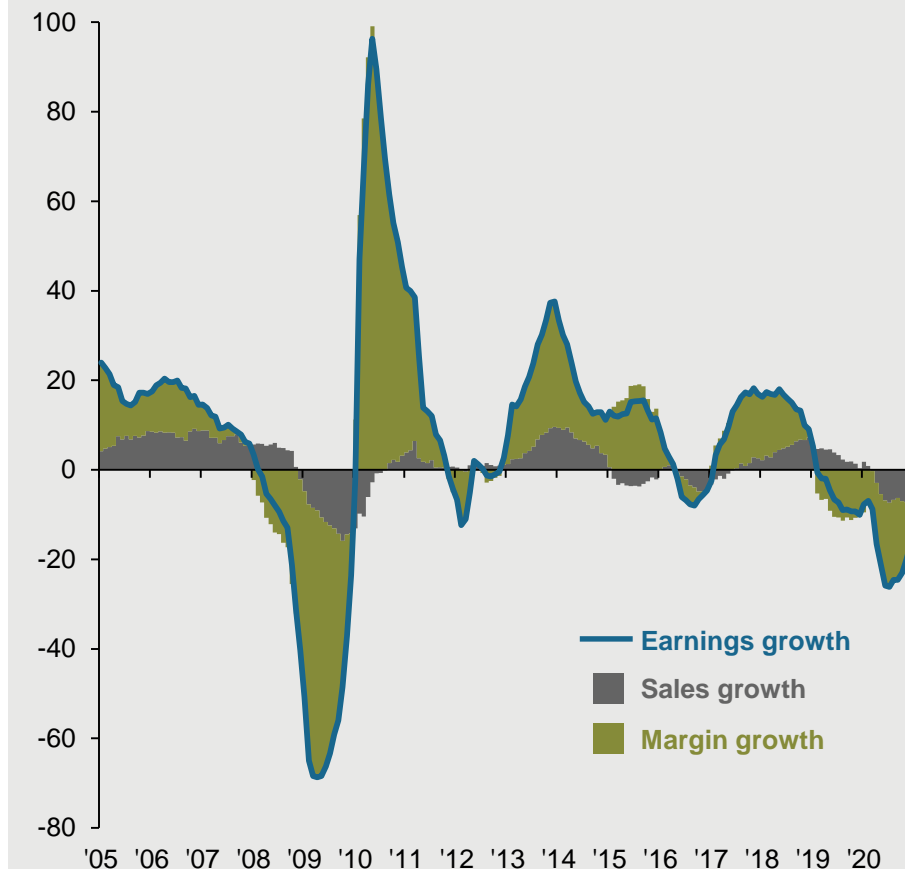
TOPIX earnings and performance

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



TOPIX earnings per share growth

% change year on year



Source: (All charts) FactSet, IBES, Refinitiv Datastream, TOPIX, J.P. Morgan Asset Management. Earnings data are based on 12-month forward estimates. Margin growth is the growth rate of earnings per share divided by sales per share. Past performance is not a reliable indicator of current and future results.
Guide to the Markets - Europe. Data as of 31 December 2020.

TOPIX and the yen vs. US dollar

Index level (LHS); Japanese yen per US dollar (RHS)

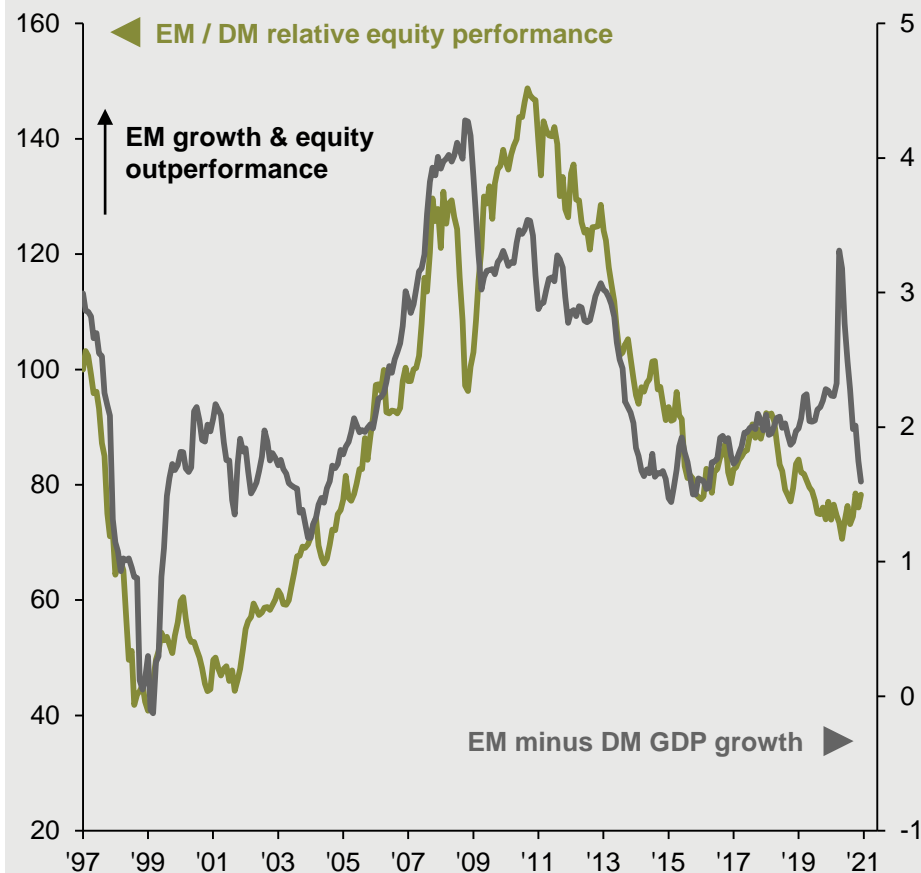


Source: Refinitiv Datastream, TOPIX, J.P. Morgan Asset Management. Past performance is not a reliable indicator of current and future results.

Guide to the Markets - Europe. Data as of 31 December 2020.

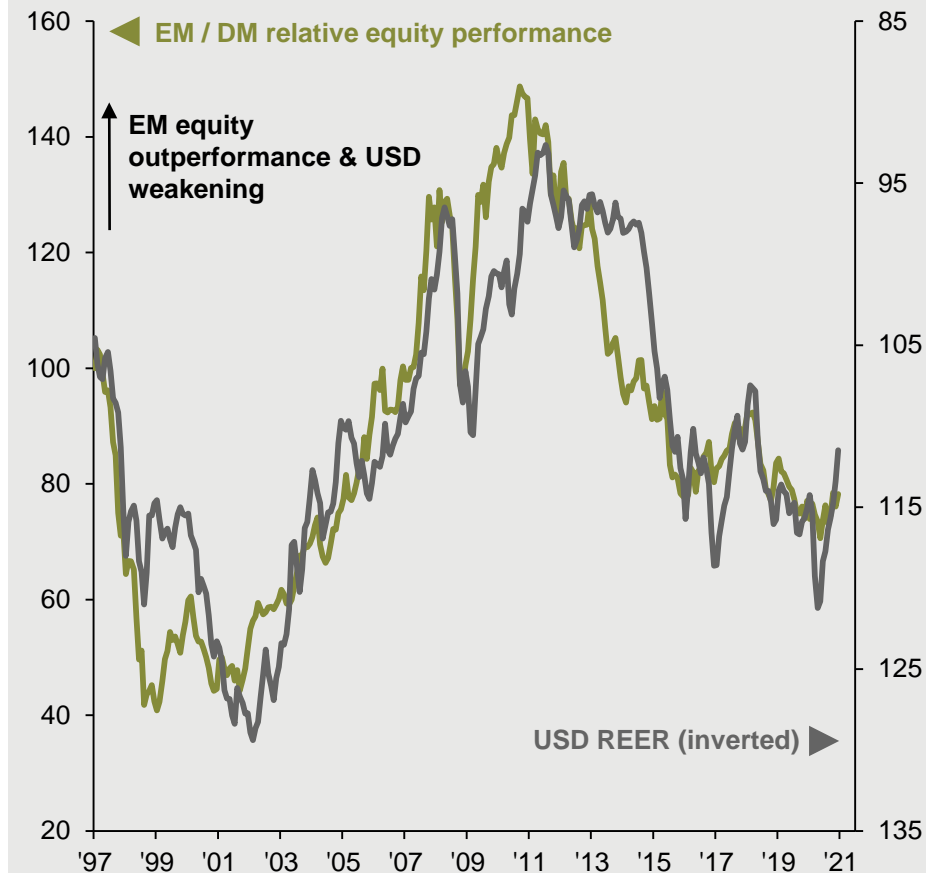
EM/DM relative equity performance and growth gap

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)

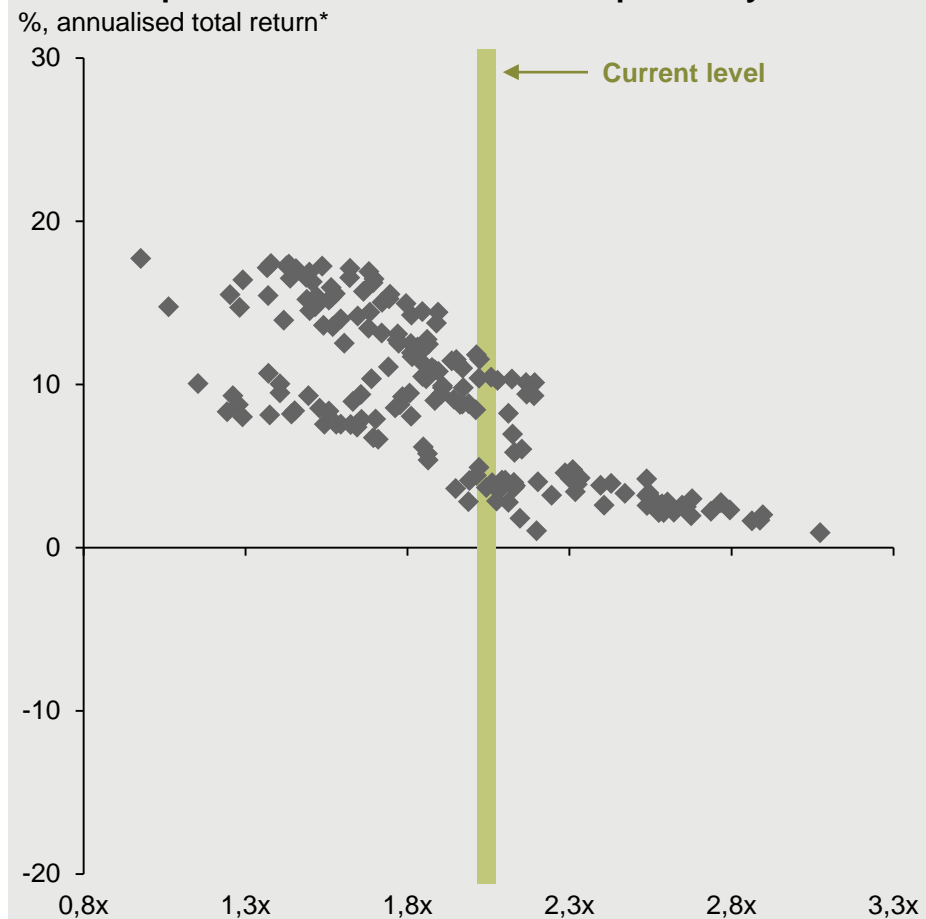


Source: (Left) Consensus Economics, Refinitiv Datastream, J.P. Morgan Asset Management. "EM minus DM GDP growth" is consensus estimates for emerging markets growth in the next 12 months minus consensus estimates for developed markets growth in the next 12 months, provided by Consensus Economics. (Right) 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. *Guide to the Markets - Europe*. Data as of 31 December 2020.

MSCI EM price-to-book ratio



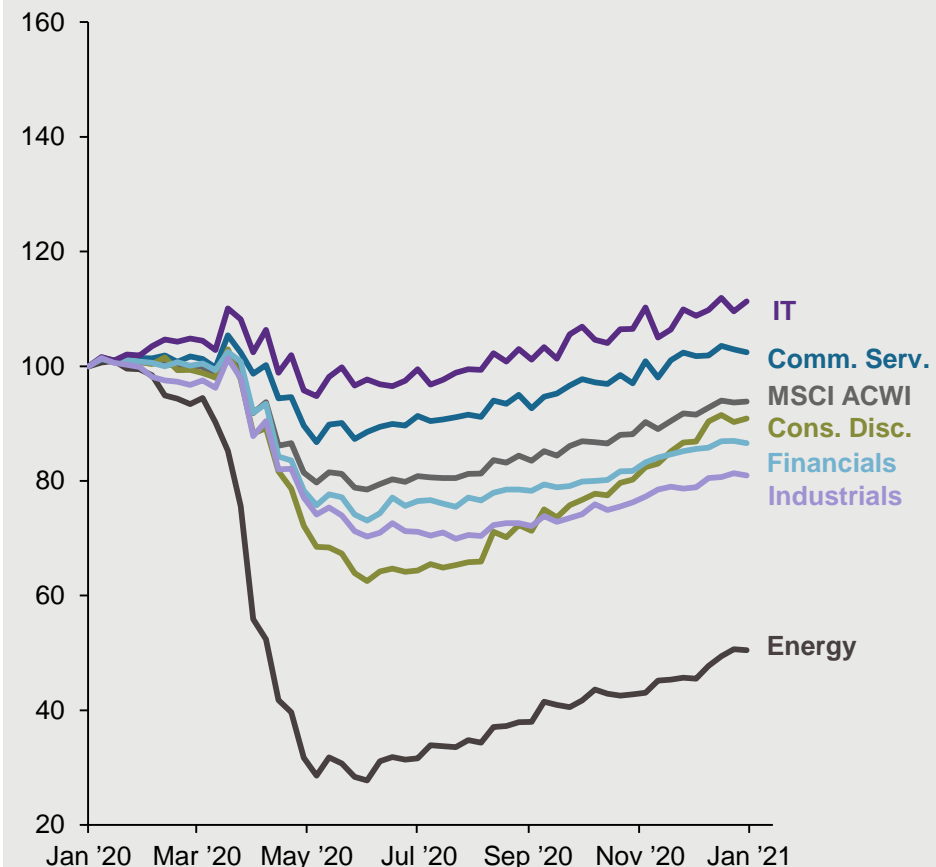
MSCI EM price-to-book ratio and subsequent 10-year returns



Source: (All charts) MSCI, Refinitiv Datastream, J.P. Morgan Asset Management. *Dots represent monthly data points since 1996, which is earliest available. MSCI EM Index returns are in USD. Past performance is not a reliable indicator of current and future results. *Guide to the Markets - Europe*. Data as of 31 December 2020.

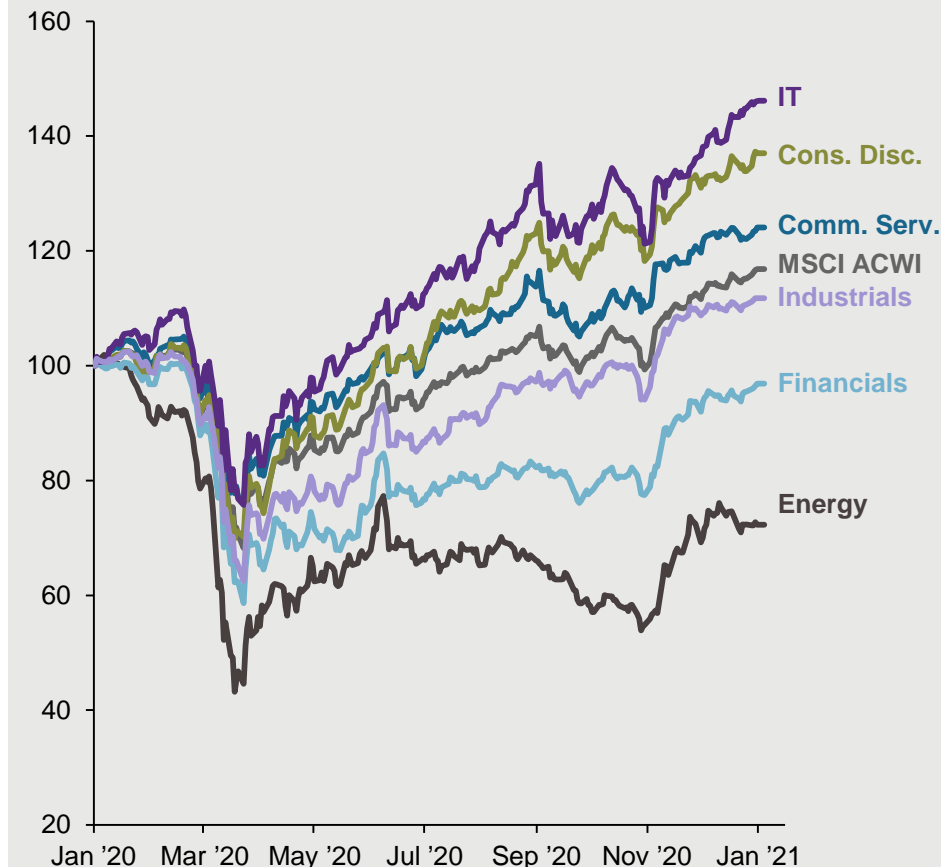
Global equity forward earnings estimates

Next 12 months' earnings per share, rebased to 100 at the start of 2020



Global equity performance by sector

Total return index level, rebased to 100 at the start of 2020



Source: (All charts) IBES, MSCI, Refinitiv Datastream, J.P. Morgan Asset Management. ACWI is the All Country World Index and includes developed and emerging market stocks. Past performance is not a reliable indicator of current and future results. *Guide to the Markets - Europe*. Data as of 31 December 2020.

World stock market returns

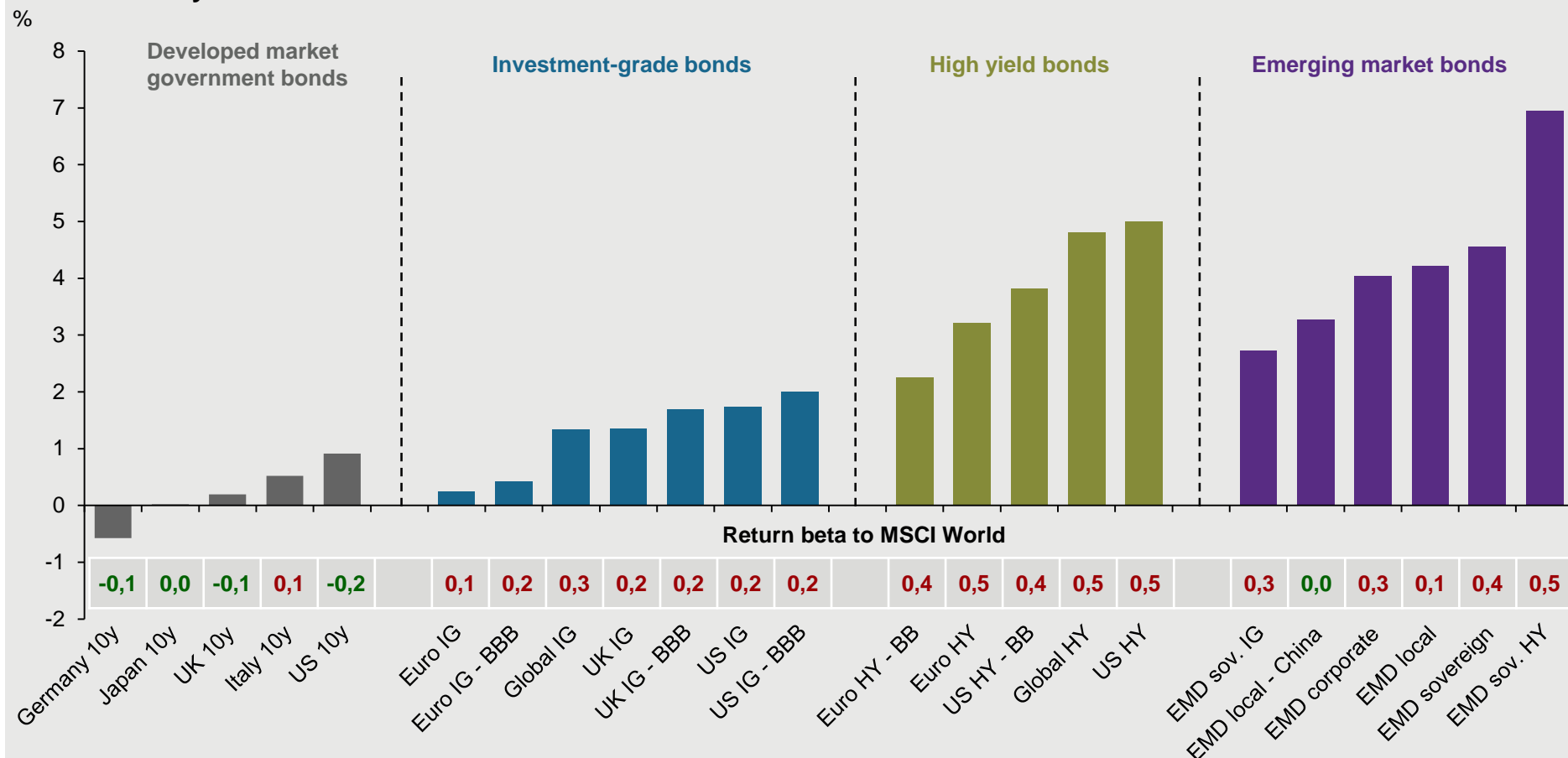
GTM - Europe | 66

Equities

		2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	4Q '20	10-year ann. return
EUR	Local	5,5% US S&P 500 2,1%	20,8% Asia ex-Jp 19,7%	26,7% US S&P 500 32,4%	29,5% US S&P 500 13,7%	24,4% TOPIX 12,1%	15,3% US S&P 500 12,0%	24,8% Asia ex-Jp 35,9%	0,4% US S&P 500 -4,4%	33,9% US S&P 500 31,5%	15,0% Asia ex-Jp 22,7%	14,8% MSCI EM 16,1%	14,9% US S&P 500 13,9%
		-5,7% Portfolio -7,5%	18,1% Europe 16,4%	21,5% TOPIX 54,4%	19,7% Asia ex-Jp 7,7%	12,9% US S&P 500 1,4%	14,9% MSCI EM 10,1%	21,0% MSCI EM 31,0%	-6,8% Portfolio -9,1%	26,9% Portfolio 24,5%	8,9% MSCI EM 19,5%	13,7% Asia ex-Jp 16,2%	9,4% Portfolio 9,5%
		-7,5% Europe -8,8%	16,8% MSCI EM 17,4%	20,5% Europe 22,3%	16,2% Portfolio 8,6%	8,8% Portfolio 2,2%	9,5% Portfolio 8,5%	12,7% Portfolio 21,8%	-9,4% TOPIX -16,0%	26,9% Europe 24,6%	8,6% US S&P 500 18,4%	10,8% Europe 10,3%	8,0% TOPIX 9,6%
		-9,6% TOPIX -17,0%	15,8% Portfolio 17,2%	16,2% Portfolio 24,1%	11,8% MSCI EM 5,6%	8,8% Europe 5,4%	8,9% Asia ex-Jp 6,4%	11,2% TOPIX 22,2%	-9,8% Asia ex-Jp -12,0%	21,4% TOPIX 18,1%	4,8% Portfolio 10,9%	10,5% Portfolio 12,4%	7,8% Asia ex-Jp 7,4%
		-14,3% Asia ex-Jp -14,6%	14,2% US S&P 500 16,0%	-1,1% Asia ex-Jp 6,2%	10,1% TOPIX 10,3%	1,5% Asia ex-Jp -5,3%	6,6% TOPIX 0,3%	10,9% Europe 13,7%	-9,9% MSCI EM -9,7%	21,1% MSCI EM 18,5%	3,7% TOPIX 7,4%	8,9% TOPIX 11,2%	6,9% Europe 6,9%
		-15,4% MSCI EM -12,5%	5,9% TOPIX 20,9%	-6,5% MSCI EM 3,8%	7,4% Europe 5,2%	-4,9% MSCI EM -5,4%	3,2% Europe 7,9%	7,0% US S&P 500 21,8%	-10,0% Europe -10,0%	20,7% Asia ex-Jp 18,2%	-2,8% Europe -1,7%	7,5% US S&P 500 12,1%	5,0% MSCI EM 7,0%

Source: MSCI, Refinitiv Datastream, Standard & Poor's, TOPIX, J.P. Morgan Asset Management. Annualised return covers the period 2011 to 2020. Hypothetical portfolio (for illustrative purposes only and should not be taken as a recommendation): 35% Europe; 30% S&P 500; 15% EM; 10% Asia ex-Japan; 10% TOPIX. 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 31 December 2020.

Fixed income yields

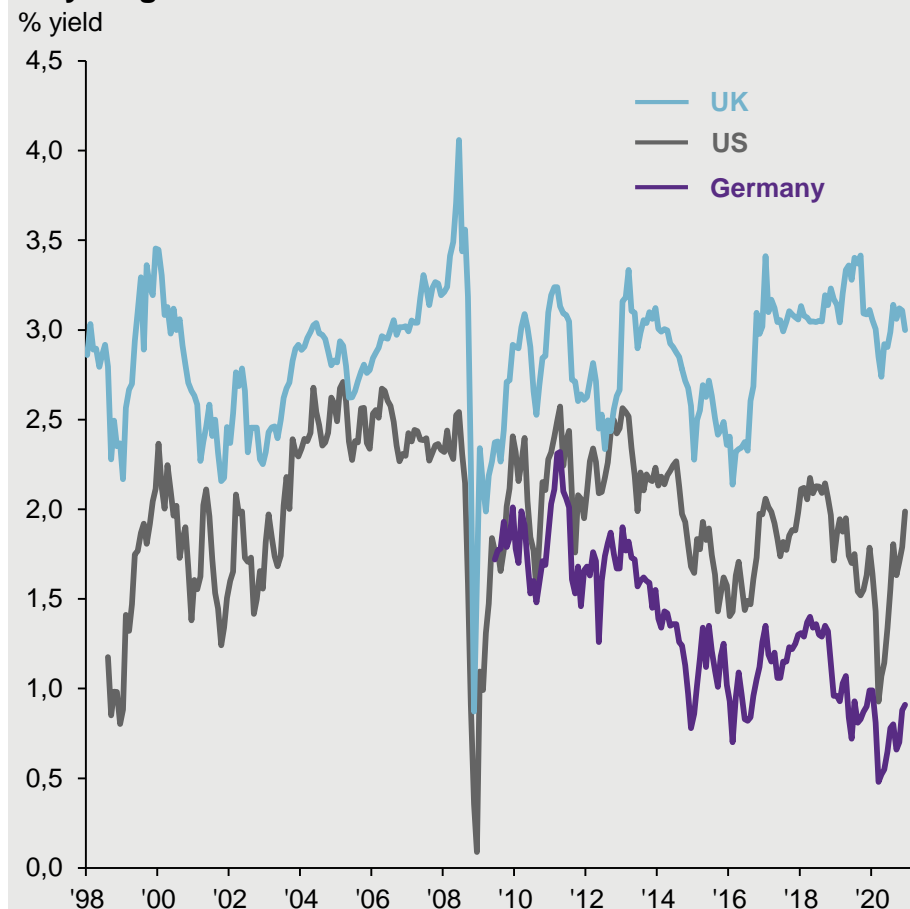


Source: Bloomberg, Bloomberg Barclays, ICE BofA, J.P. Morgan Economic Research, Refinitiv Datastream, J.P. Morgan Asset Management. Beta to MSCI World is calculated using monthly total returns since 2008. Indices used are as follows: Euro IG: Bloomberg Barclays Euro-Aggregate – Corporate; Global IG: Bloomberg Barclays Global Aggregate – Corporate; UK IG: Bloomberg Barclays Sterling Aggregate – Corporate; US IG: Bloomberg Barclays US Aggregate – Corporate; Euro HY: ICE BofA Euro Developed Markets Non-Financial High Yield Constrained Index; Global HY: ICE BofA Global High Yield Index; US HY: ICE BofA US High Yield Constrained Index; EMD corporate: CEMBI Broad Diversified; EMD local: GBI-EM Global Diversified; EMD local – China: GBI-EM China; EMD sovereign: EMBI Global Diversified; EMD sov. IG: EMBI Global Diversified IG; EMD sov. HY: EMBI Global Diversified HY. Past performance is not a reliable indicator of current and future results. *Guide to the Markets - Europe*. Data as of 31 December 2020.

Nominal 10-year government bond yields



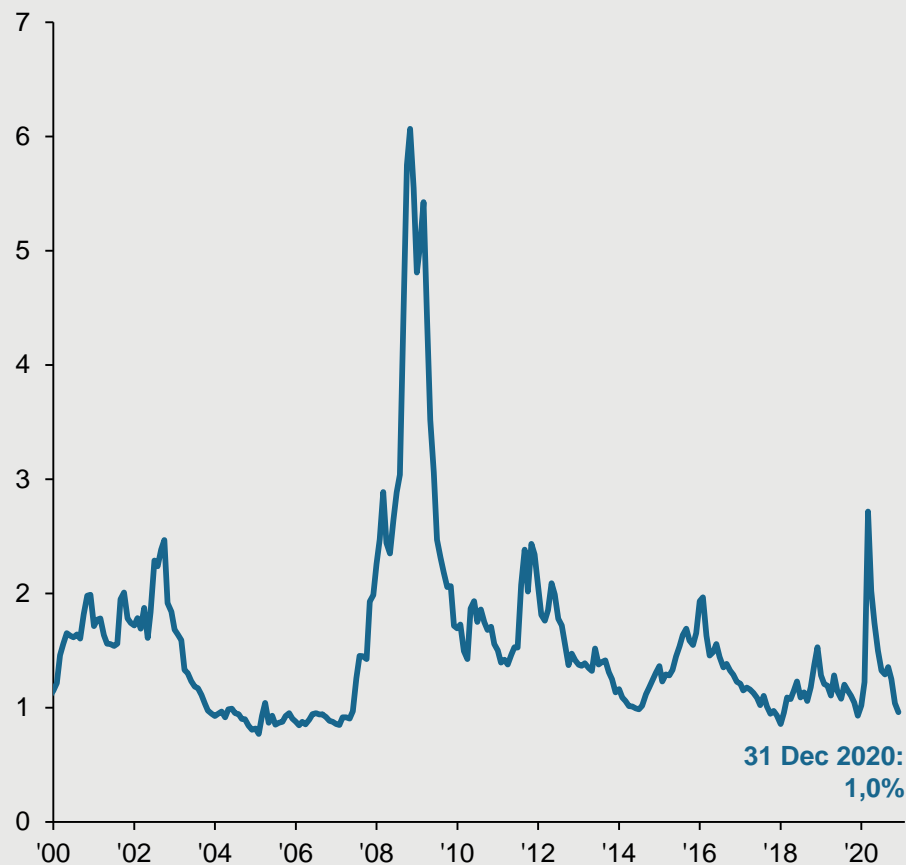
10-year government bond breakeven inflation rates



Source: (All charts) Bloomberg, J.P. Morgan Asset Management. 10-year government bond breakeven inflation rates are the difference in yield between nominal and inflation-protected government bonds, and are 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 2020.

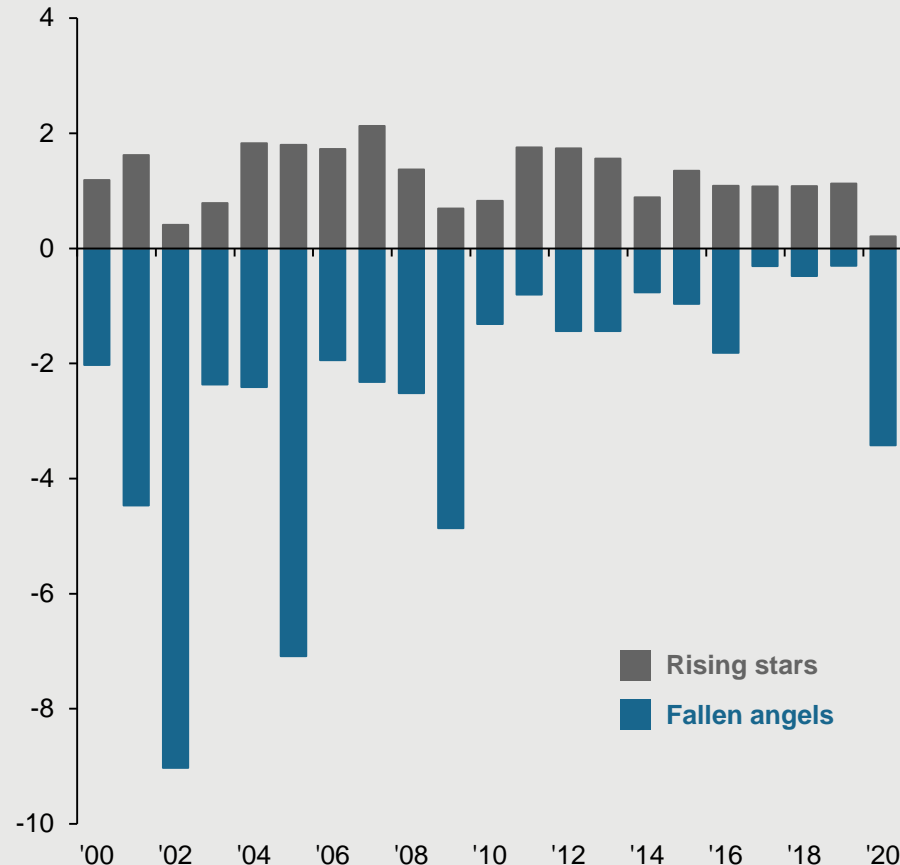
US investment-grade spread

%, option-adjusted spread over US government bond yield



US investment-grade fallen angels and rising stars

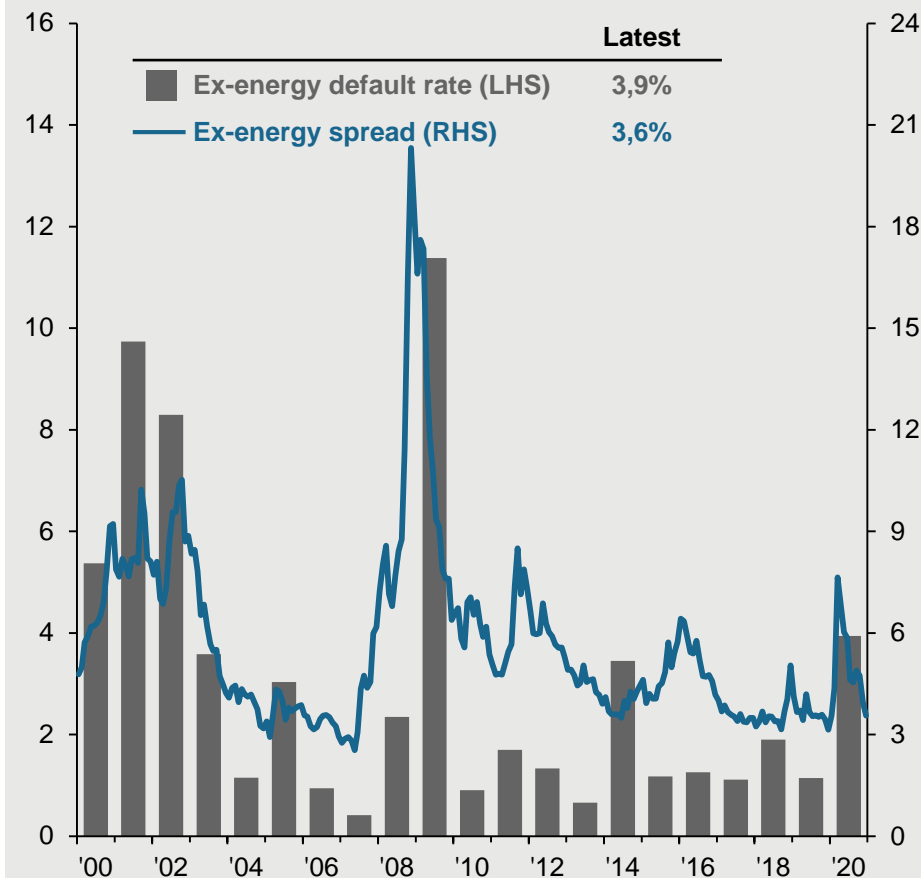
% of the index (par value, average for the year)



Source: (Left) Bloomberg Barclays, Refinitiv Datastream, J.P. Morgan Asset Management. Index is Bloomberg Barclays US Aggregate – Corporate. (Right) Bloomberg Barclays, J.P. Morgan Asset Management. Index used is Bloomberg Barclays US Aggregate – Corporate. Fallen angels are credit names that have been downgraded from investment-grade rating to high yield. Rising stars are credit names that have been upgraded from high yield status to investment grade. Past performance is not a reliable indicator of current and future results. *Guide to the Markets - Europe*. Data as of 31 December 2020.

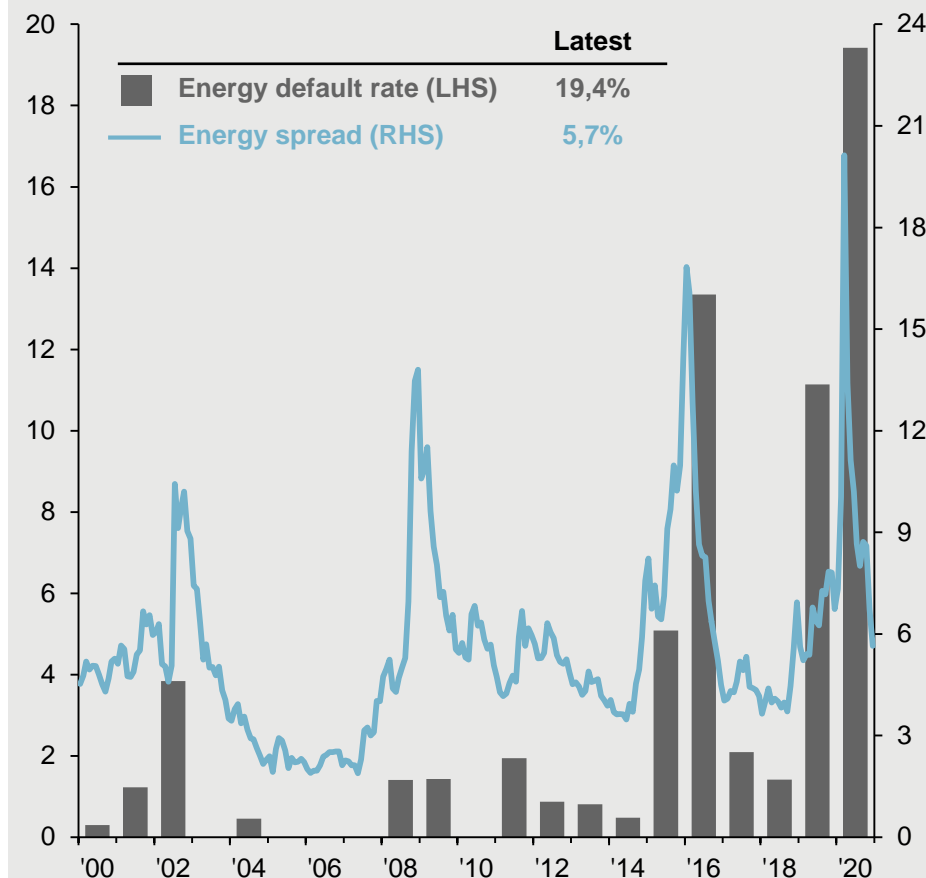
US high yield ex-energy spread and defaults

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



US high yield energy sector spread and defaults

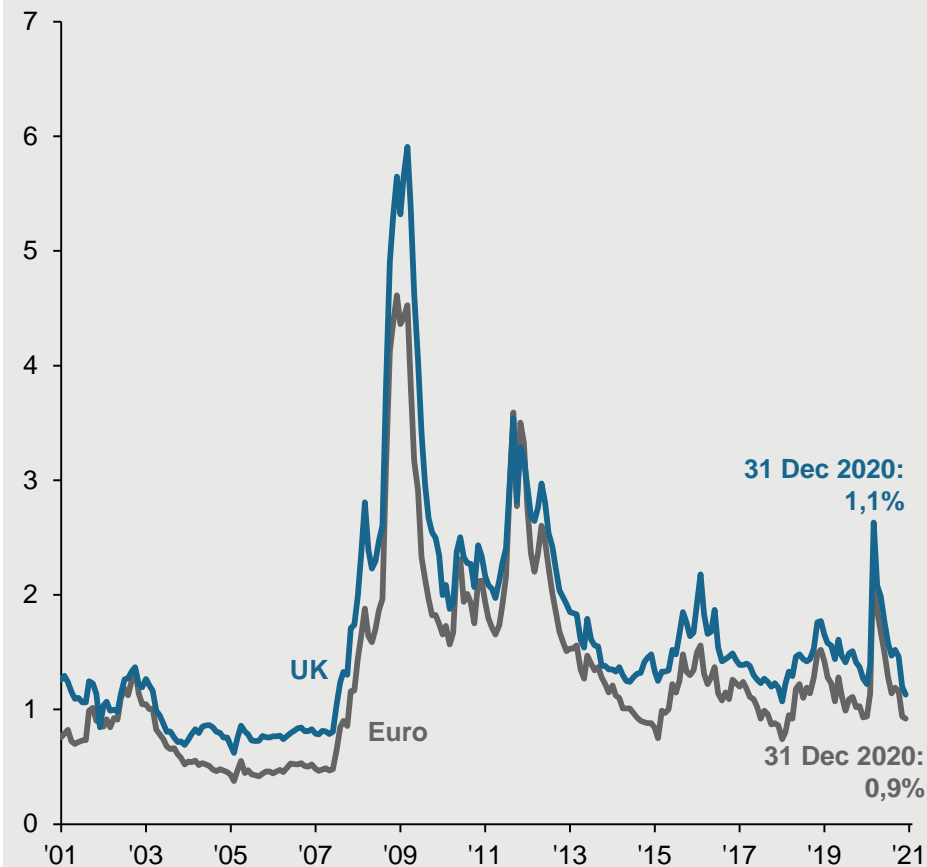
%, default rate (LHS); %, option-adjusted spread (RHS)



Source: (All charts) Bloomberg, ICE BofA, J.P. Morgan Securities Research, J.P. Morgan Asset Management. HY spreads are using the ICE BofA US High Yield Energy and ex-Energy, Metals & Mining indices. Default rates are defined as the par value percentage of the total market trading at or below 50% of par value and include any Chapter 11 filing, prepackaged filing or missed interest payments. Past performance is not a reliable indicator of current and future results.
Guide to the Markets - Europe. Data as of 31 December 2020.

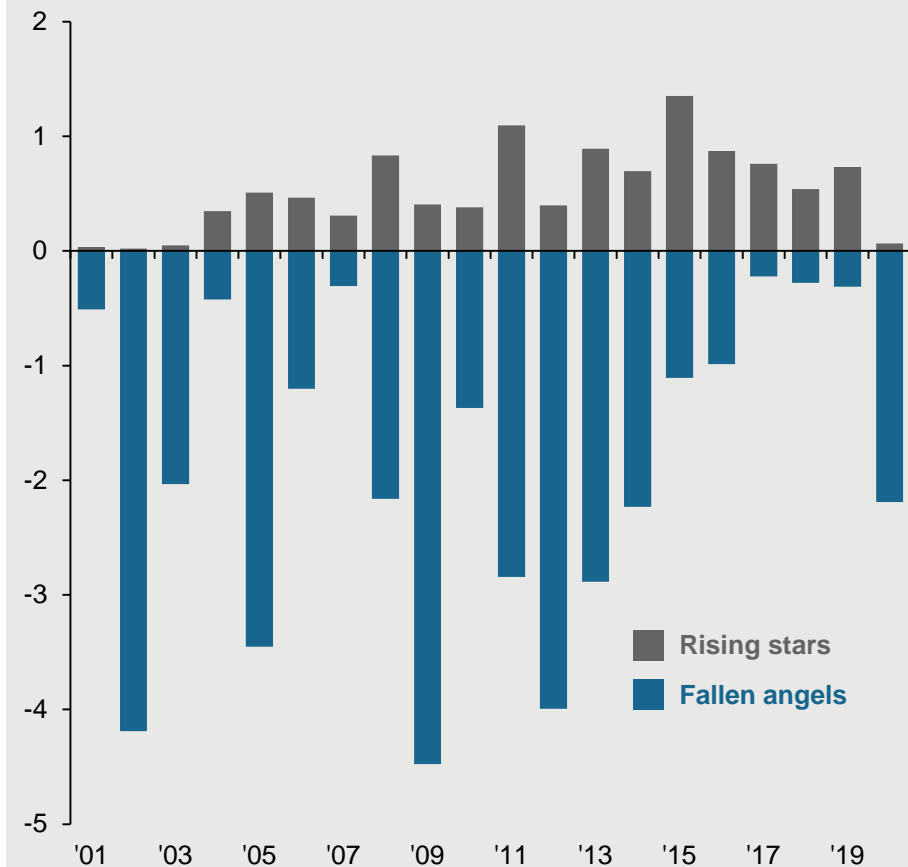
Euro and UK investment-grade spreads

%, option-adjusted spread over local government bond yield



Euro investment-grade fallen angels and rising stars

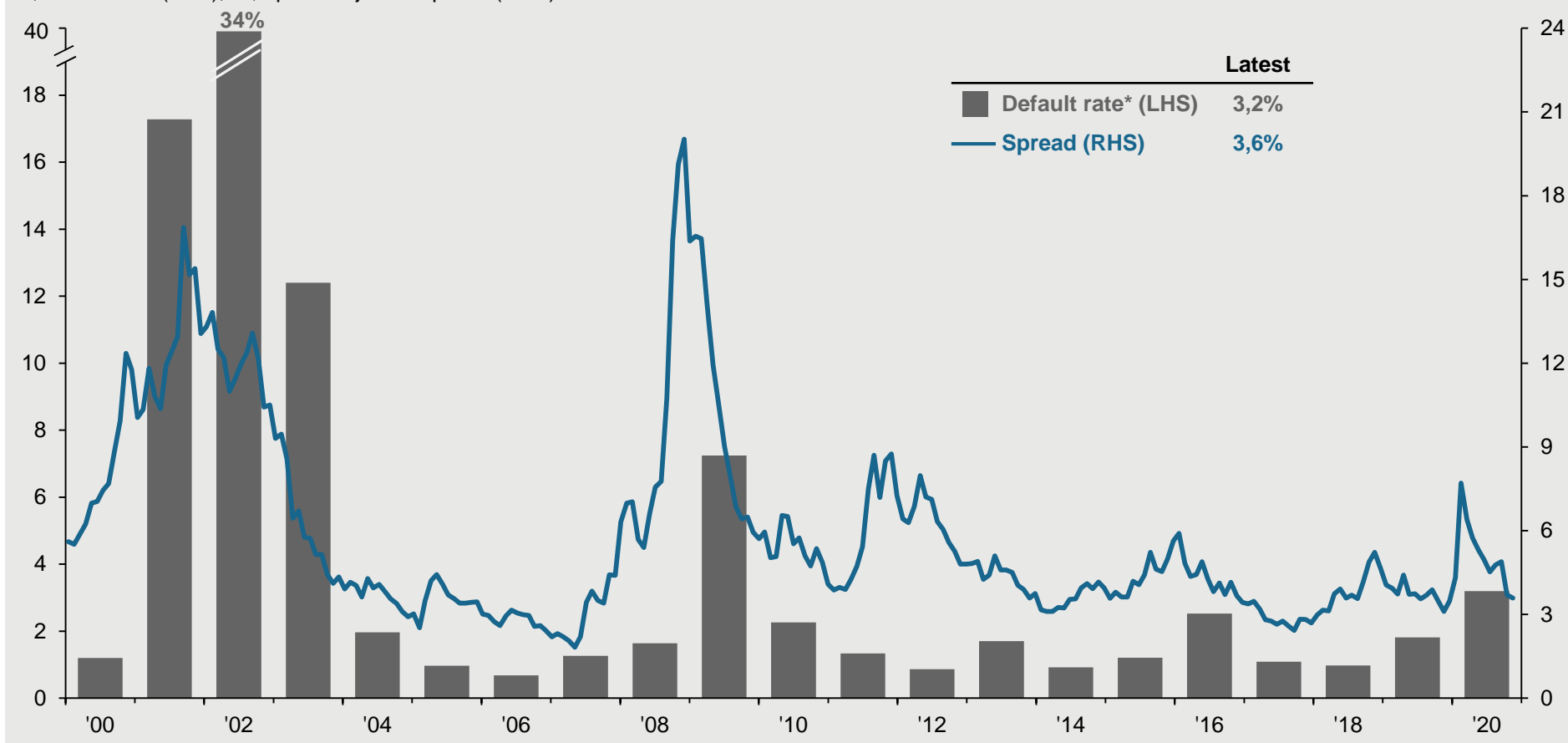
% of the index (par value, average for the year)



Source: (Left) Bloomberg Barclays, Refinitiv Datastream, J.P. Morgan Asset Management. Indices are Euro inv. grade: Bloomberg Barclays Euro Aggregate – Corporate; UK inv. grade: Bloomberg Barclays Sterling Aggregate – Corporate. (Right) Bloomberg Barclays, J.P. Morgan Asset Management. Index used is Bloomberg Barclays Euro Aggregate – Corporate. Fallen angels are credit names that have been downgraded from investment-grade rating to high yield. Rising stars are credit names that have been upgraded from high yield status to investment grade. Past performance is not a reliable indicator of current and future results. *Guide to the Markets - Europe*. Data as of 31 December 2020.

Euro high yield spread and defaults

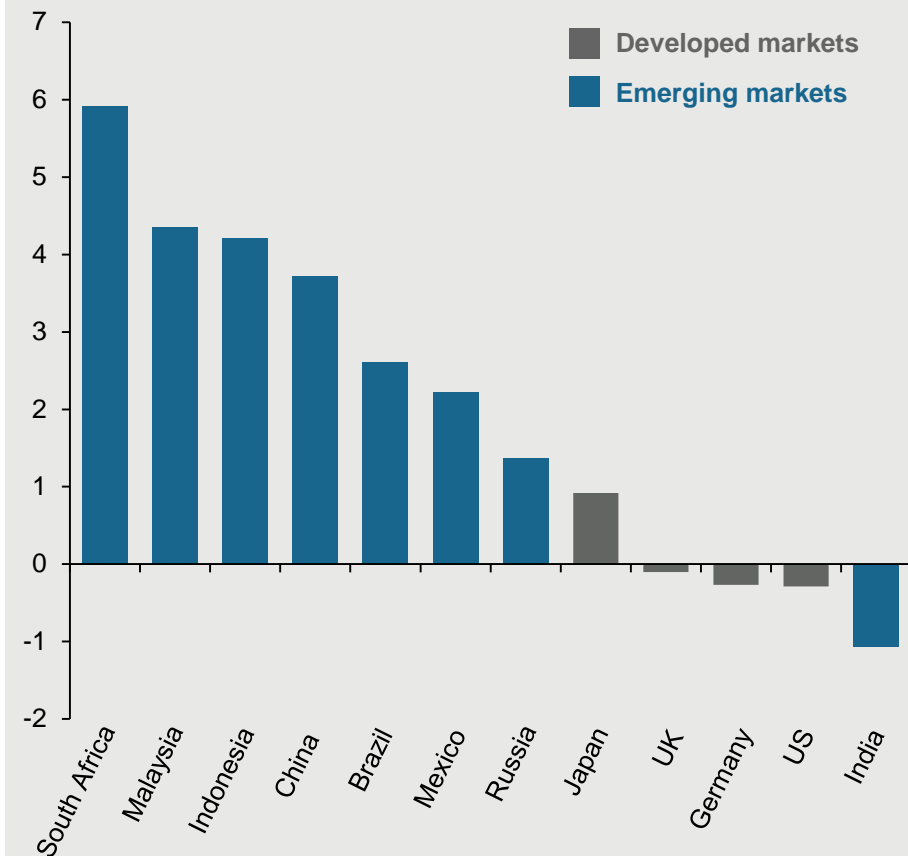
%, default rate (LHS); %, option-adjusted spread (RHS)



Source: Bloomberg, ICE BofA, Refinitiv Datastream, J.P. Morgan Securities Research, J.P. Morgan Asset Management. Option-adjusted spread shown for ICE BofA Euro Developed Markets Non-Financial High Yield Constrained Index. Defaults are defined as bonds downgraded to C rating. The calculation universe is based on par value percentage of the EUR and GBP HY Non-Financials Corporate bond universe. Defaults include missed coupon payments, restructuring and distressed exchanges. *2020 default rate is for the last 12 months as of end of November. Past performance is not a reliable indicator of current and future results.
 Guide to the Markets - Europe. Data as of 31 December 2020.

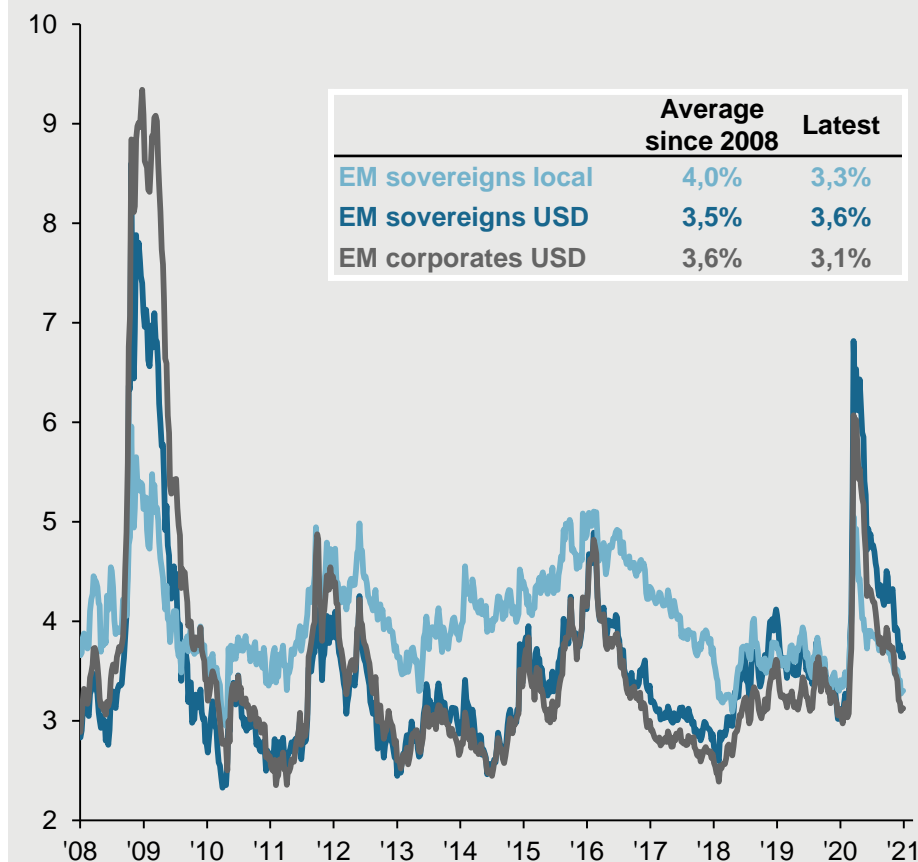
Real 10-year government bond yields

% yield, local currency



Corporate and sovereign EMD spreads

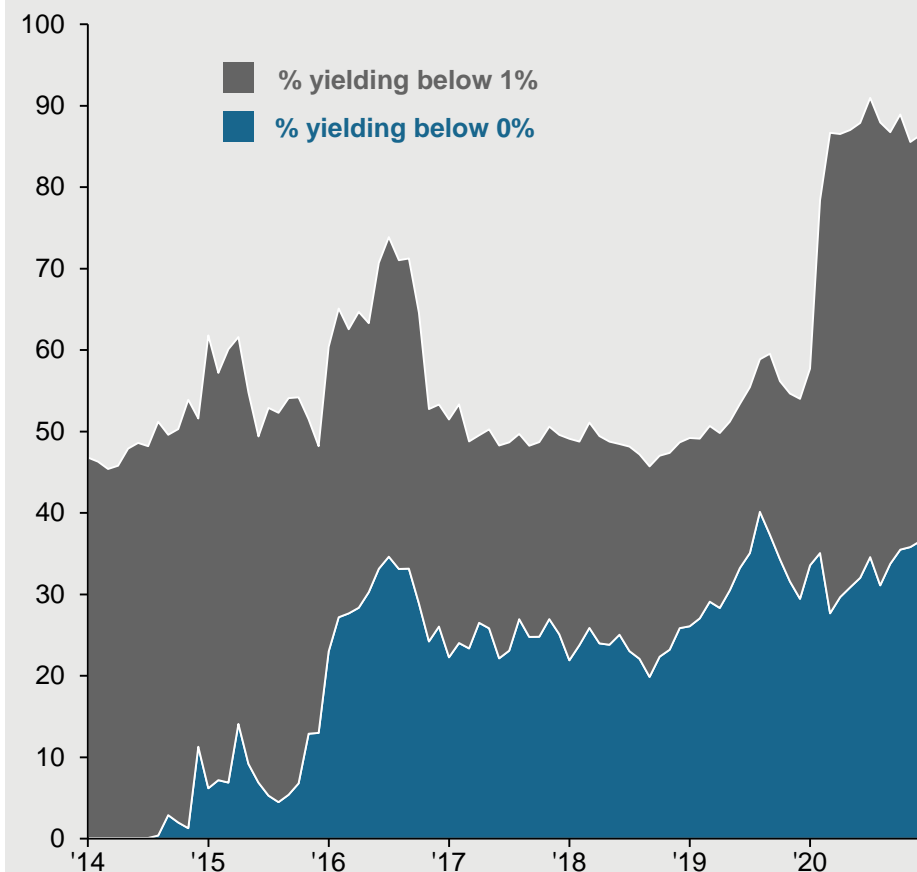
%, spread over 10-year US Treasury



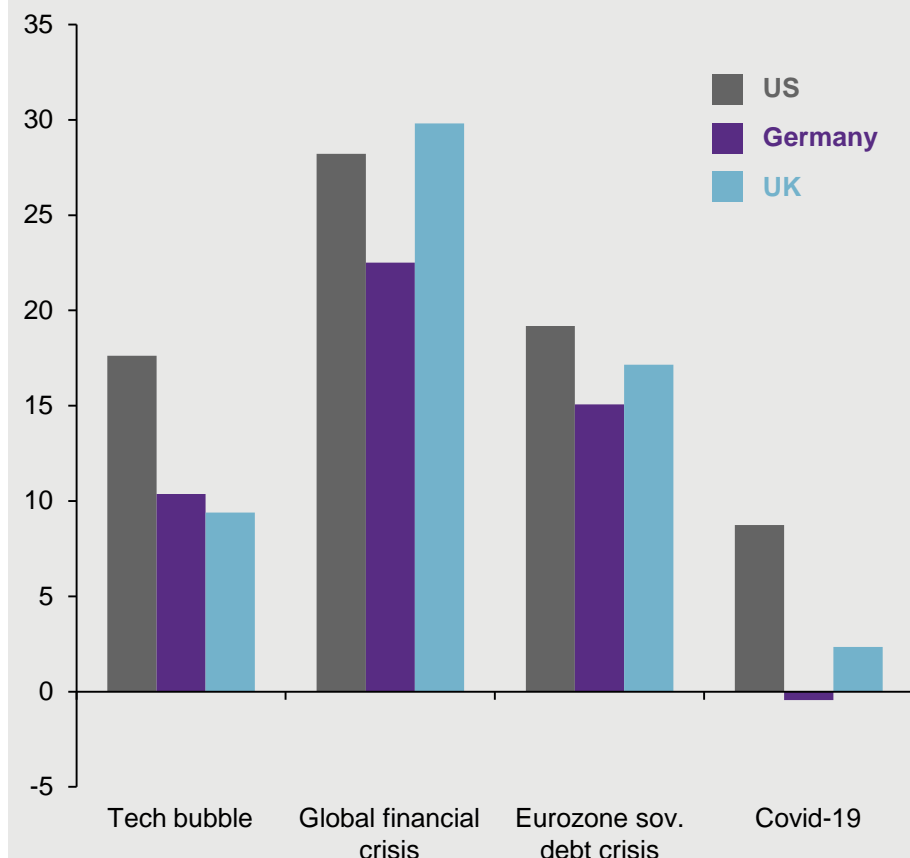
Source: (Left) Bloomberg, J.P. Morgan Asset Management. Real yield is calculated by using nominal yield less current CPI for the respective countries. (Right) Bloomberg, J.P. Morgan Asset Management. EM sovereigns local currency is the J.P. Morgan GBI-EM Global Diversified; EM sovereigns USD is the J.P. Morgan EMBIG Diversified; EM corporates USD is the J.P. Morgan CEMBI Broad Diversified. Past performance is not a reliable indicator of current and future results. Guide to the Markets - Europe. Data as of 31 December 2020.

Developed market government bond yields

% of ICE BofA Global Government Bond Index

**10-year government bond returns during equity market shocks**

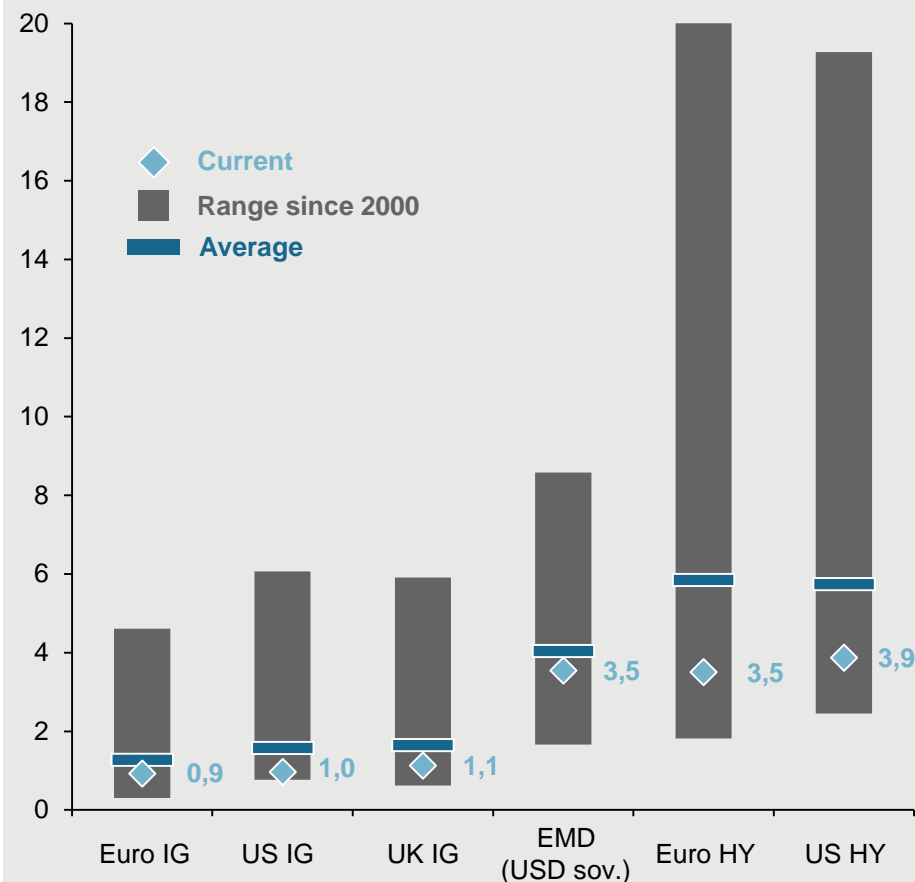
%, total return over the period



Source: (Left) Bloomberg, ICE BofA, J.P. Morgan Asset Management. Index shown is the ICE BofA Global Government Bond index. (Right) Refinitiv Datastream, J.P. Morgan Asset Management. Returns are shown over the period when MSCI World was falling in local currency terms. Tech bubble: 24 Mar '00 to 21 Sep '01; Global financial crisis: 13 Jul '07 to 9 Mar '09; Eurozone sovereign debt crisis: 18 Feb '11 to 3 Oct '11; Covid-19: 19 Feb '20 to 23 Mar '20. Past performance is not a reliable indicator of current and future results. *Guide to the Markets - Europe*. Data as of 31 December 2020.

Fixed income spreads

%, option-adjusted spread



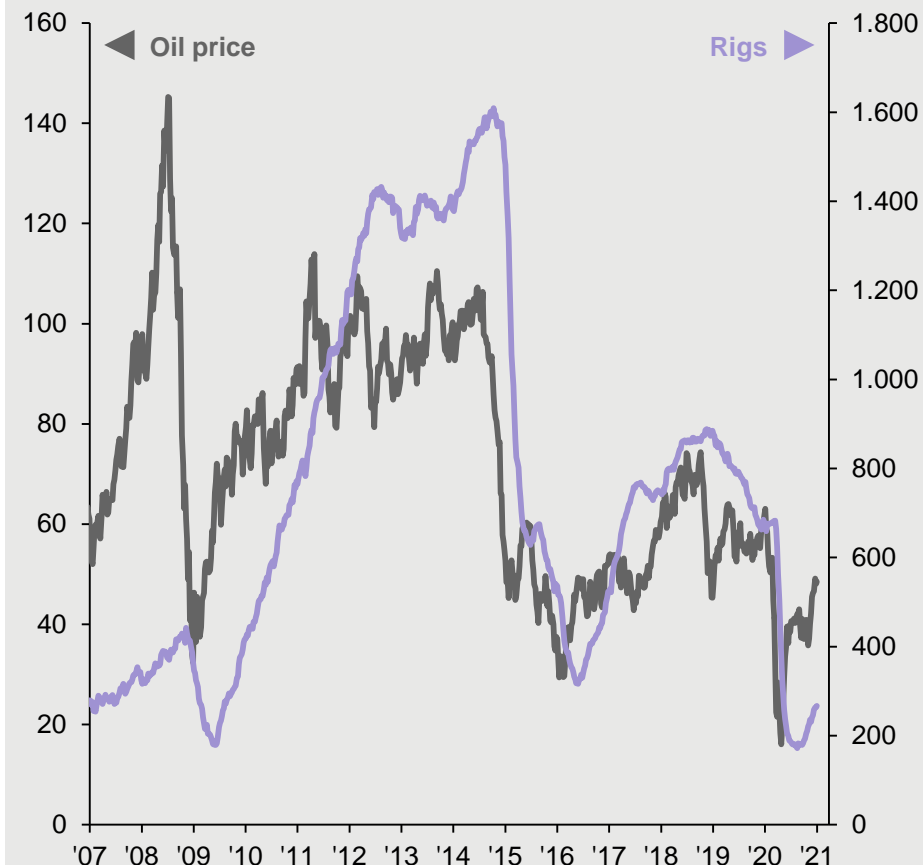
Fixed income returns

2016	2017	2018	2019	2020	4Q '20	10-year ann. return
€ 21,0% US HY LCL:17,5%	6,3% Euro HY 6,3%	5,9% US Treas. 0,9%	17,2% EM Debt 15,0%	5,0% Euro Gov 5,0%	5,3% Euro HY 5,3%	7,6% US HY 6,6%
13,5% EM Debt 10,2%	2,4% Euro IG 2,4%	2,7% US HY -2,3%	16,6% US IG 14,5%	3,1% Infl Linked 3,1%	3,1% Infl Linked 3,1%	7,2% EM Debt 6,2%
10,2% Euro HY 10,2%	1,4% Infl Linked 1,4%	2,4% US IG -2,5%	16,5% US HY 14,4%	2,8% Euro IG 2,8%	2,0% US HY 6,5%	6,6% US IG 5,6%
9,3% US IG 6,1%	0,2% Euro Gov 0,2%	1,3% Portfolio -1,4%	11,2% Portfolio 10,1%	2,2% Euro HY 2,2%	2,0% Euro IG 2,0%	6,1% Euro HY 6,1%
8,1% Portfolio 6,4%	-2,8% Portfolio 4,3%	1,0% Euro Gov 1,0%	10,9% Euro HY 10,9%	0,9% Portfolio 5,8%	1,4% EM Debt 5,8%	5,5% Portfolio 4,9%
4,7% Euro IG 4,7%	-3,2% EM Debt 10,3%	0,6% EM Debt -4,3%	8,8% US Treas. 6,9%	0,8% US IG 9,9%	1,2% Euro Gov 1,2%	4,7% Euro Gov 4,7%
4,1% US Treas. 1,0%	-5,6% US HY 7,5%	-1,3% Euro IG -1,3%	6,8% Euro Gov 6,8%	-0,9% US Treas. 8,0%	0,5% Portfolio 2,9%	4,3% US Treas. 3,3%
3,8% Infl Linked 3,8%	-6,5% US IG 6,4%	-1,5% Infl Linked -1,5%	6,6% Infl Linked 6,6%	-2,7% US HY 6,1%	-1,2% US IG 3,1%	3,9% Euro IG 3,9%
3,2% Euro Gov 3,2%	-10,1% US Treas. 2,3%	-4,0% Euro HY -4,0%	6,2% Euro IG 6,2%	-3,4% EM Debt 5,3%	-5,0% US Treas. -0,8%	2,5% Infl Linked 2,5%

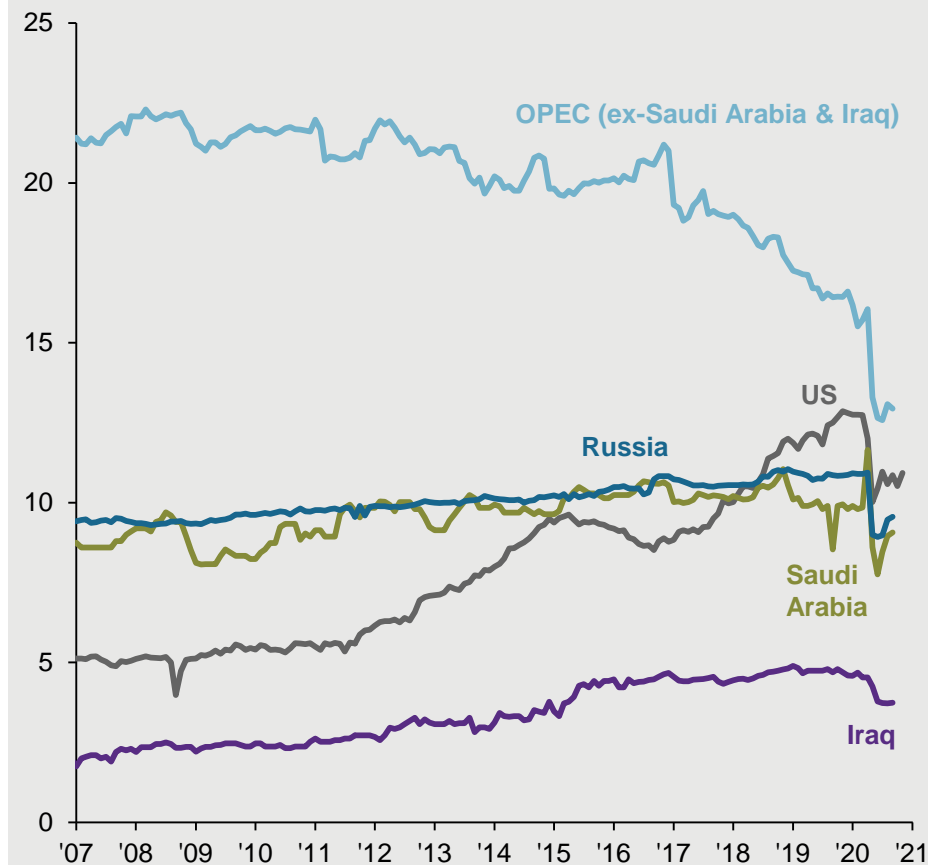
Source: (All charts) Bloomberg, Bloomberg Barclays, ICE BofA, J.P. Morgan Economic Research, Refinitiv Datastream, J.P. Morgan Asset Management. UK IG: Bloomberg Barclays Sterling Agg. – Corporates; US HY: ICE BofA US High Yield Constrained; EM Debt: J.P. Morgan EMBI Global Diversified; Euro HY: ICE BofA Euro Developed Markets Non-Financial High Yield Constrained; US IG: Bloomberg Barclays US Agg. – Corporate – Investment Grade; US Treasuries: Bloomberg Barclays US Agg. Gov. – Treasury; Euro IG: Bloomberg Barclays Euro Agg. – Corporate; Euro Gov.: Bloomberg Barclays Euro Agg. Government; Infl Linked: Bloomberg Barclays Euro Gov. Inflation-Linked. Hypothetical portfolio (for illustrative purposes only and should not be taken as a recommendation): 20% Euro Gov.; 15% US Treasuries; 10% Linkers; 15% US IG; 10% Euro IG; 10% US HY; 5% Euro HY; 15% EM Debt. Annualised return covers period 2011 to 2020. Returns are unhedged in euros and local currencies. Past performance is not a reliable indicator of current and future results. *Guide to the Markets - Europe*. Data as of 31 December 2020.

WTI crude oil price and US rig count

USD/barrel (LHS); number of rigs (RHS)

**Crude oil production by country**

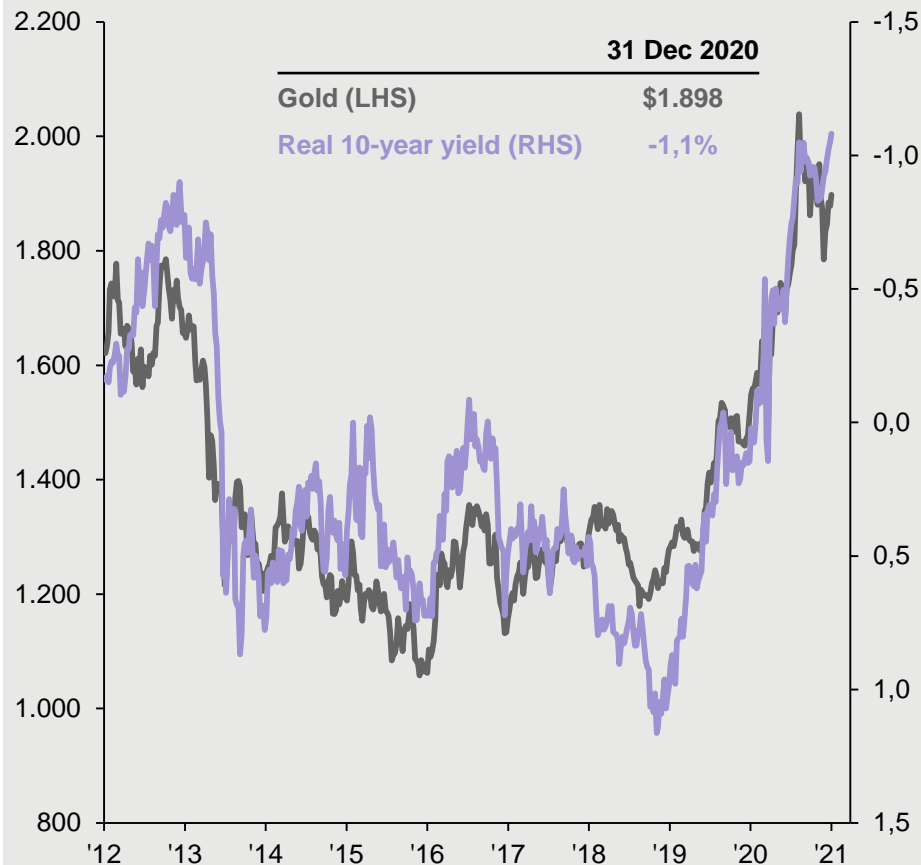
Million barrels per day



Source: (Left) Baker Hughes, Bloomberg, J.P. Morgan Asset Management. (Right) EIA, 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 2020.

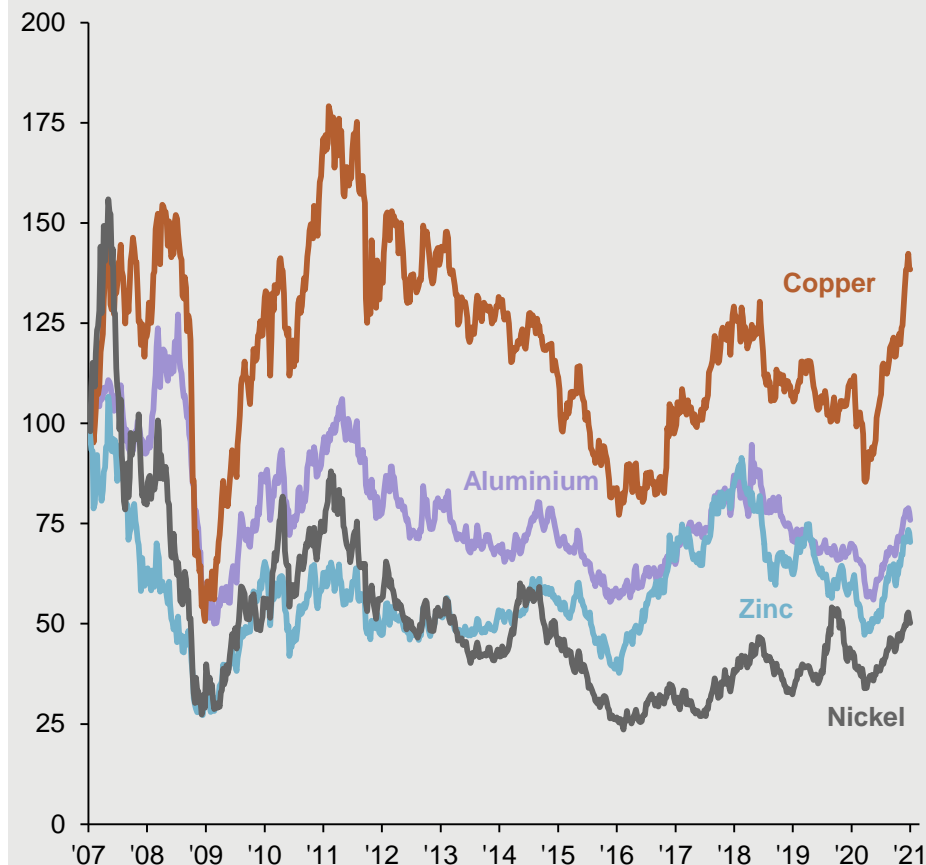
Gold vs. real US 10-year Treasury yield

\$ per Troy ounce (LHS); %, inverted (RHS)



Metal prices

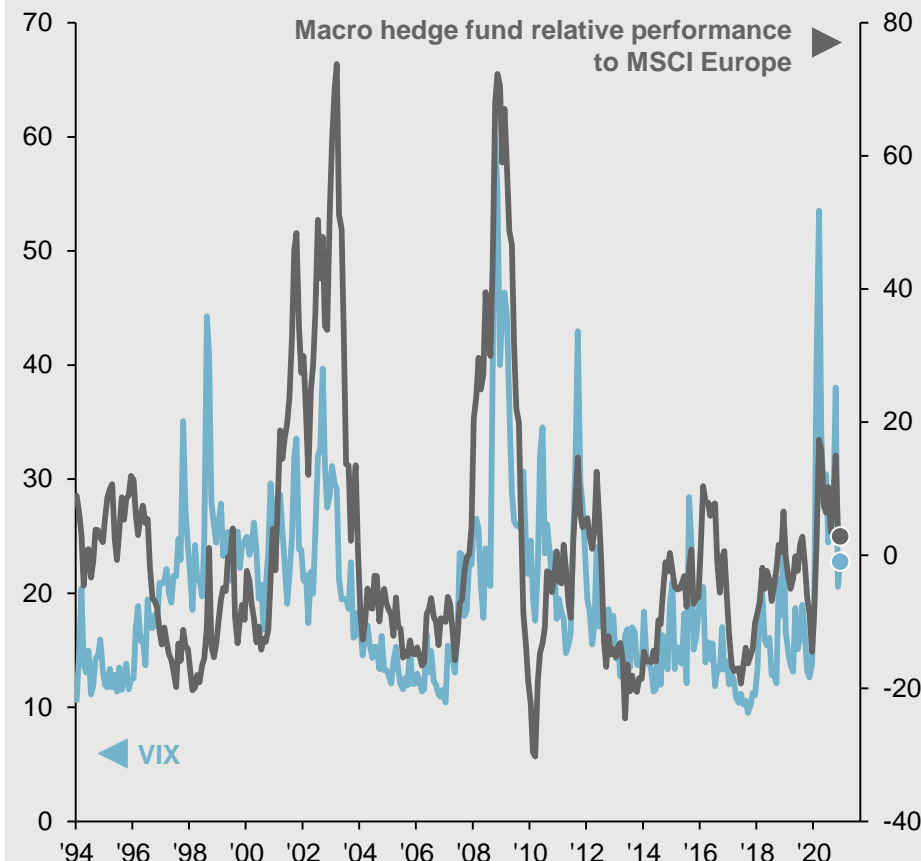
Index level, rebased to 100 in Jan 2007



Source: (Left) Refinitiv Datastream, J.P. Morgan Asset Management. Real yield is the US 10-year Treasury inflation-protected security yield. (Right) Bloomberg, 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 2020.

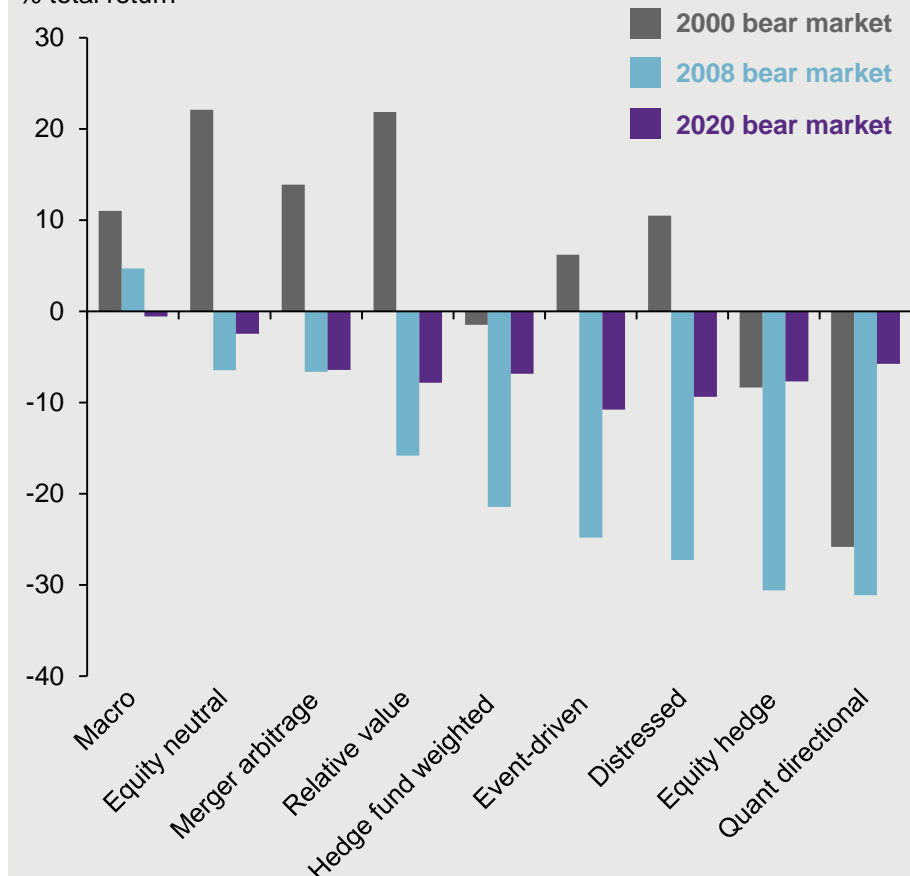
Macro hedge fund relative performance & volatility

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



Hedge fund style returns during bear markets

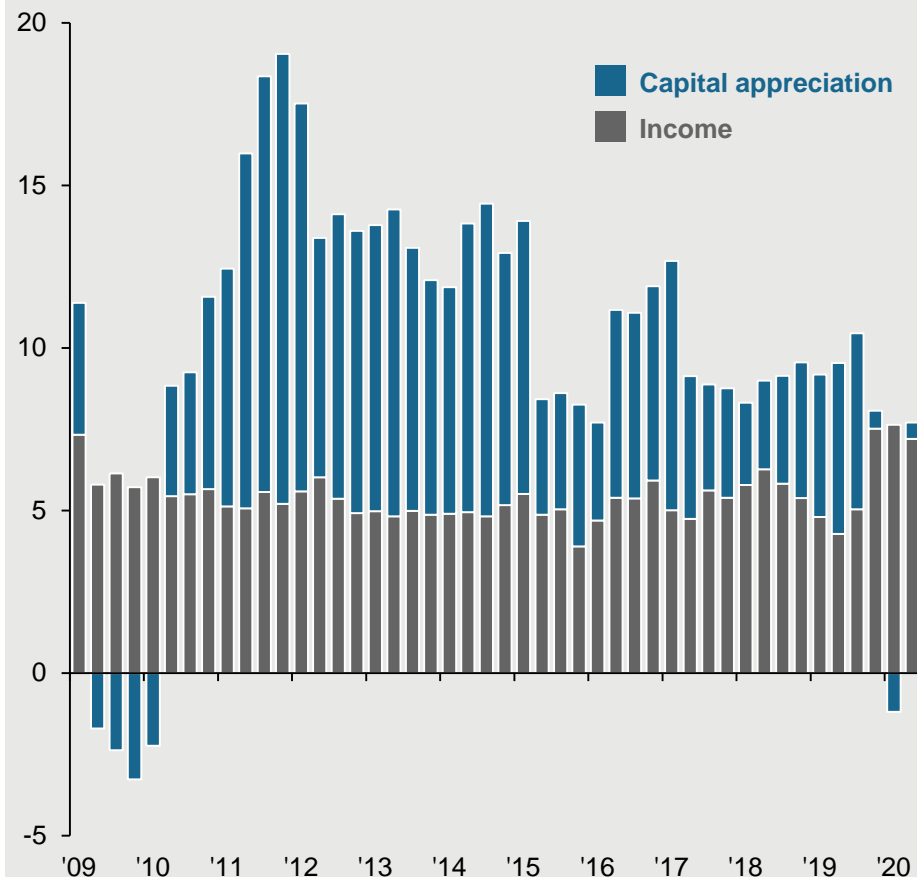
% total return



Source: (Left) CBOE, Hedge Fund Research Indices (HFRI), Refinitiv Datastream, J.P. Morgan Asset Management. Macro hedge fund (total return in USD) relative performance is calculated relative to MSCI Europe (total return in local currency). VIX is the implied volatility of S&P 500 Index based on options pricing. (Right) Hedge Fund Research Indices (HFRI), Refinitiv Datastream, J.P. Morgan Asset Management. 2000 bear market is from 31 March 2000 to 31 October 2002, 2008 bear market is from 31 October 2007 to 28 February 2009, 2020 bear market is from 31 January 2020 to 30 April 2020. Hedge fund strategies are defined in the HFRI hedge fund strategy classification system. Past performance is not a reliable indicator of current and future results. *Guide to the Markets - Europe*. Data as of 31 December 2020.

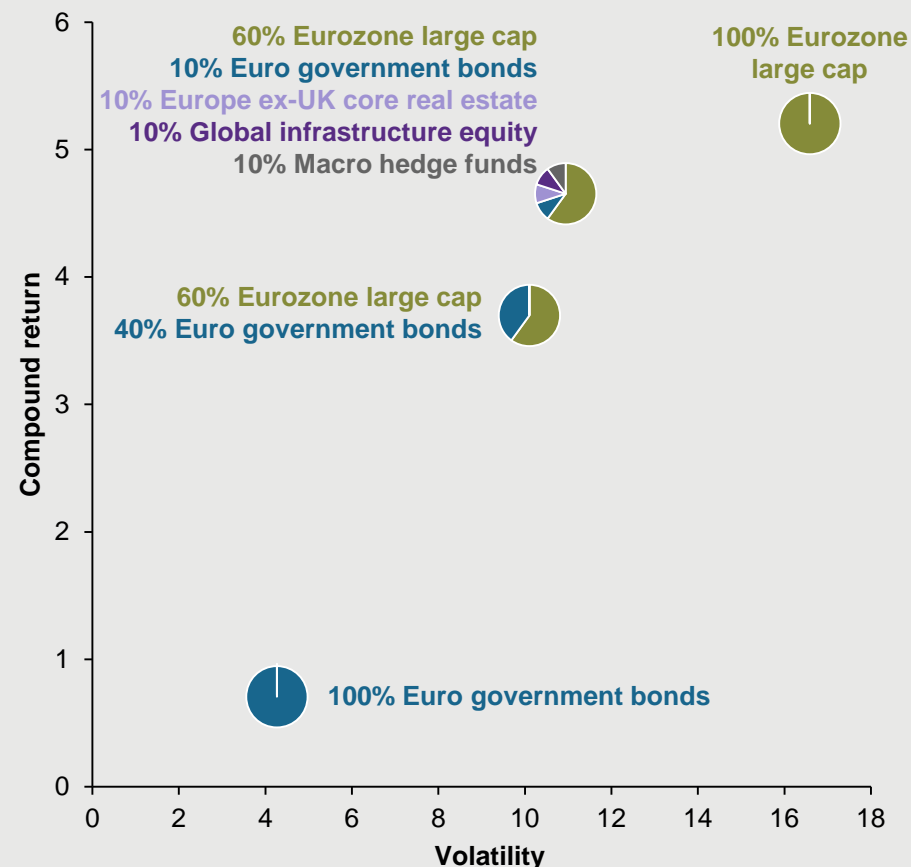
Global core infrastructure returns

%, rolling 4-quarter returns from income and capital appreciation



Expected returns and volatility in coming 10-15 years

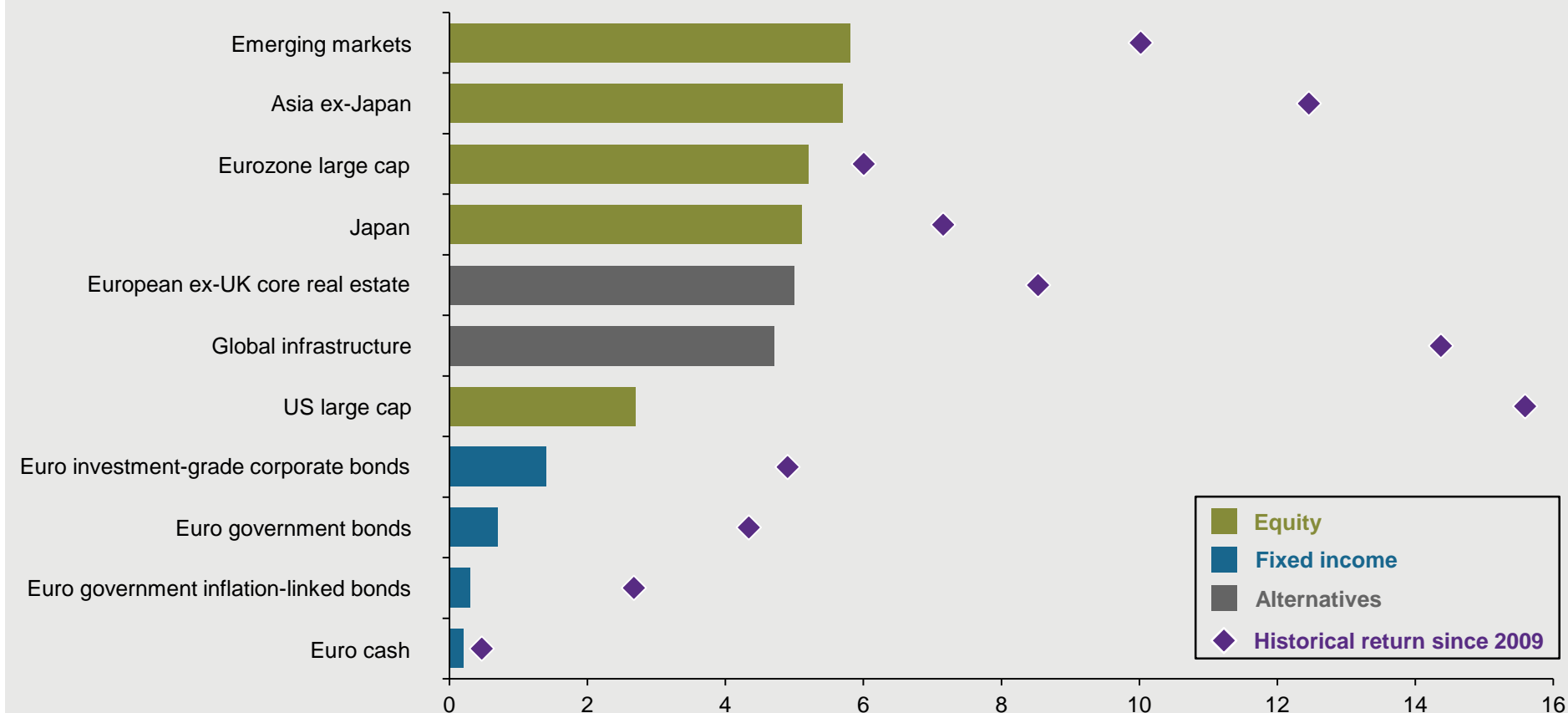
% annual compound return in EUR



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) 2021 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. *Guide to the Markets - Europe*. Data as of 31 December 2020.

2021 Long-Term Capital Market Assumptions expected returns in coming 10-15 years

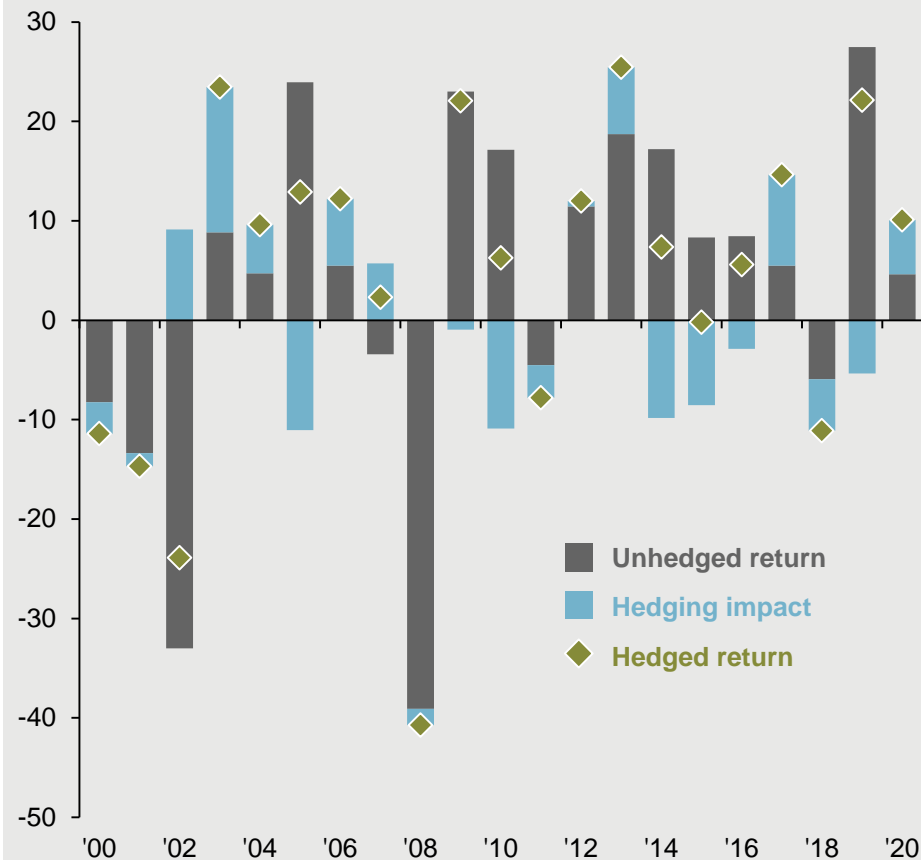
%, annualised return in EUR



Source: 2021 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 2020, 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 2020.

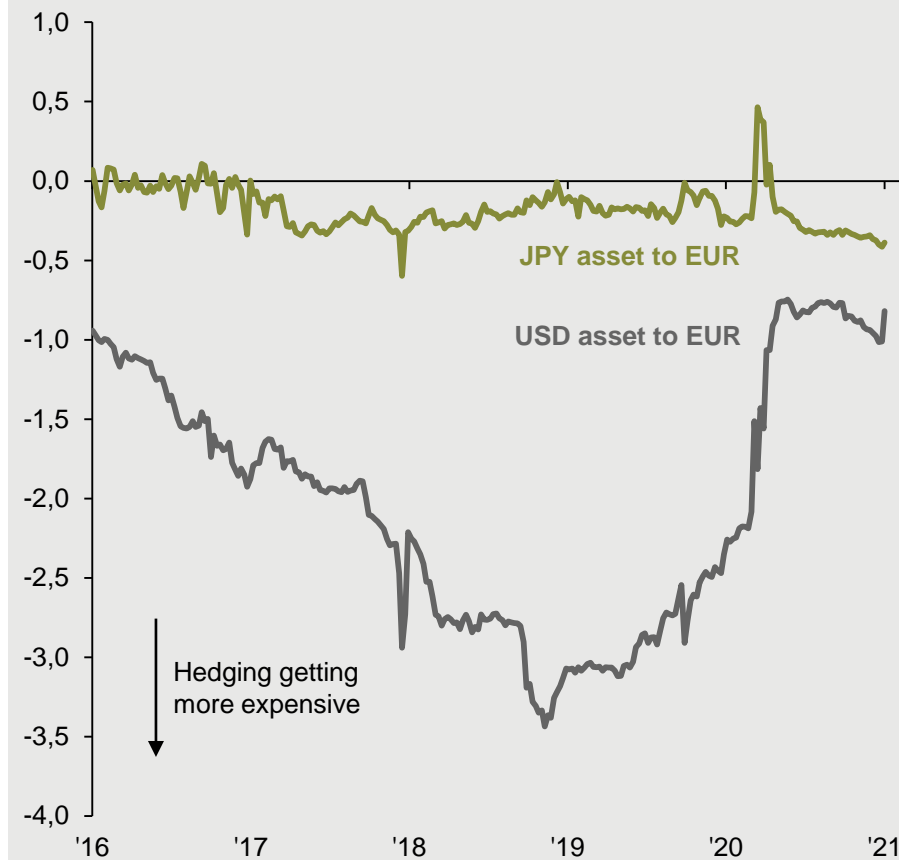
Developed market equity returns in EUR

%, annual price return



Rolling hedging costs

%, annualised hedging cost based on 3-month FX forwards



Source: (Left) MSCI, Refinitiv Datastream, J.P. Morgan Asset Management. The grey bar shows the EUR unhedged annual return for MSCI World, the blue bar shows the profit or loss that a EUR investor would experience from hedging their equity exposure and the green square shows the EUR hedged annual return for MSCI World. (Right) Bloomberg, J.P. Morgan Asset Management. A positive number implies that an investor gains a yield pickup when hedging currency risk, and a negative number implies that an investor pays to hedge currency risk, based on 3-month FX forward rates. Past performance is not a reliable indicator of current and future results. *Guide to the Markets - Europe*. Data as of 31 December 2020.

ESG INTEGRATION:

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



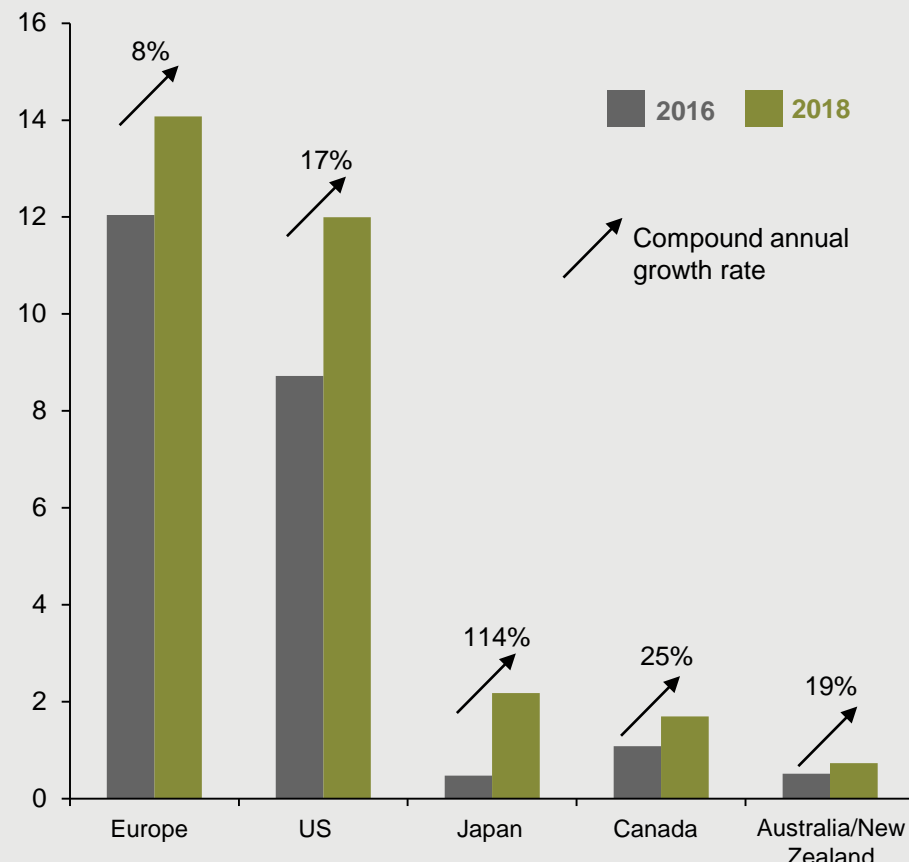
Source: J.P. Morgan Asset Management. *Guide to the Markets - Europe*. As of 31 December 2020.

MSCI World ESG performance

Index level in USD, rebased to 100 at Jan 2008

**Sustainable investment assets under management**

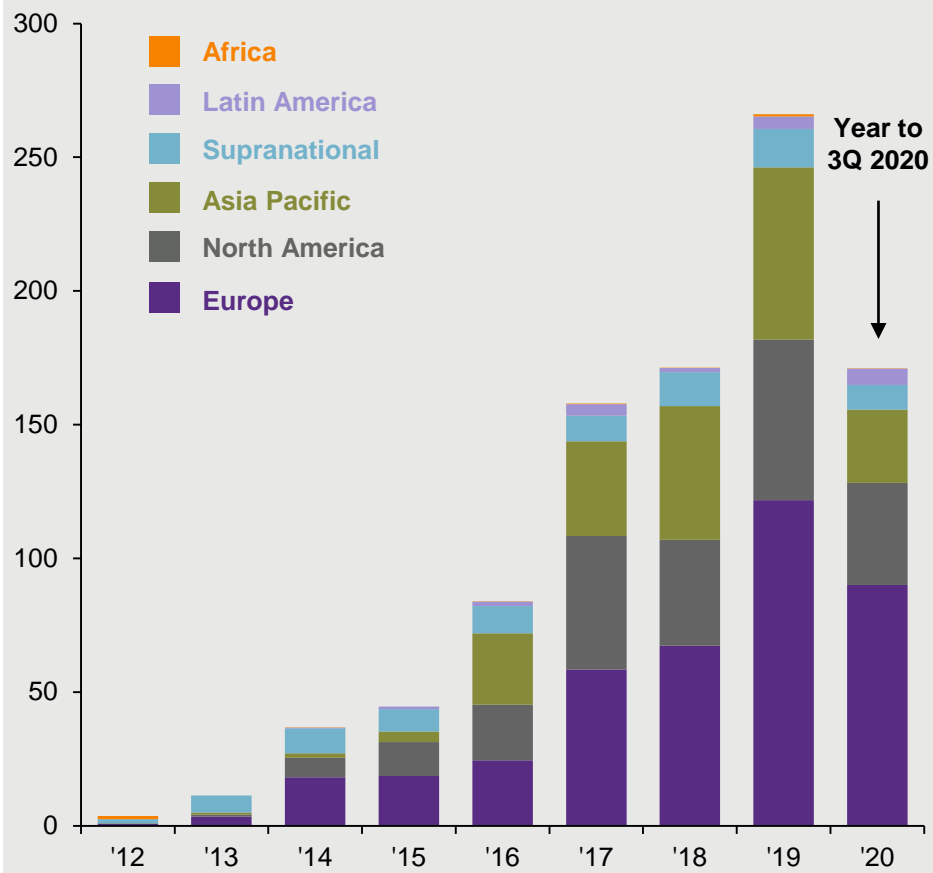
USD trillions



Source: (Left) MSCI, Refinitiv Datastream, J.P. Morgan Asset Management. The MSCI World ESG Leaders Index is a capitalisation-weighted index that provides exposure to companies with high Environmental, Social and Governance (ESG) performance relative to their sector peers. It aims by design to have a relatively low tracking error to MSCI World. (Right) Global Sustainable Investment Alliance (GSIA), 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 2020.

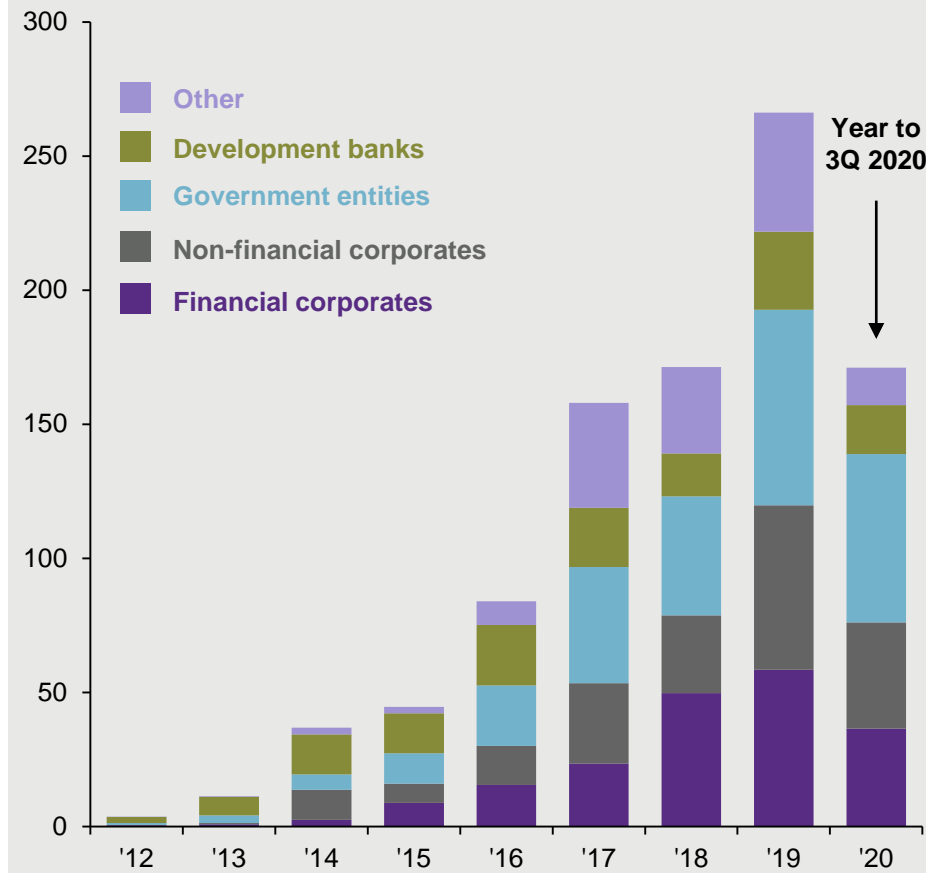
Green bond issuance by region

USD billions



Green bond issuance by issuer type

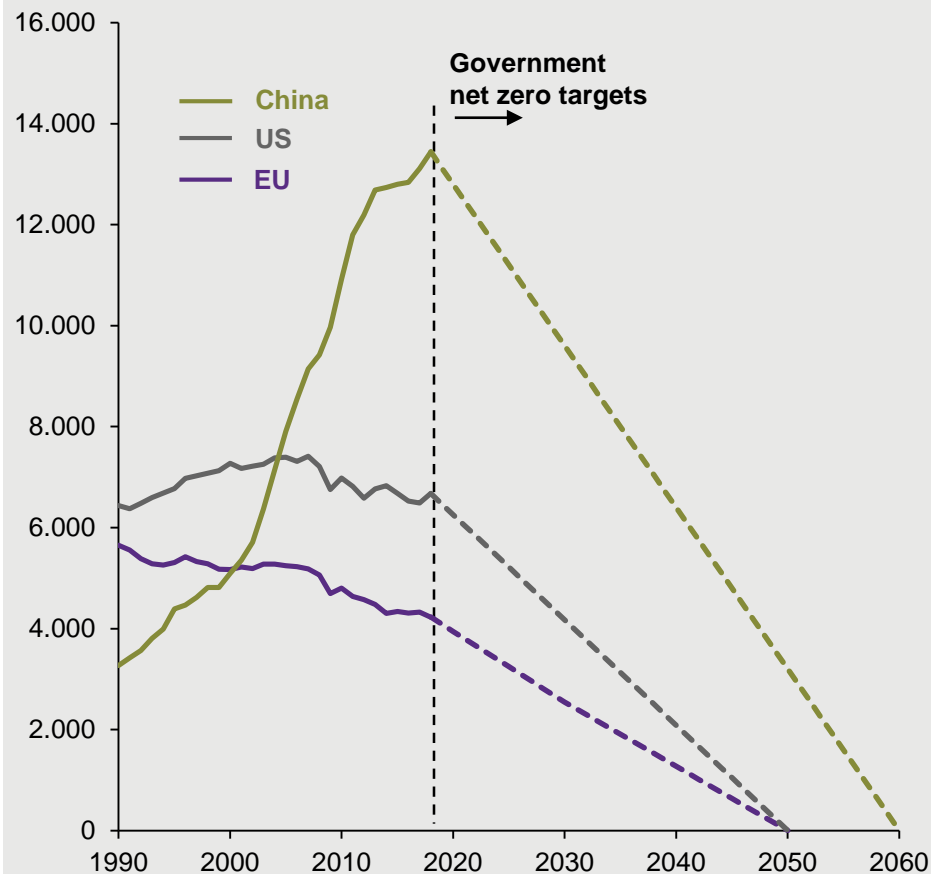
USD billions



Source: (All charts) Climate Bonds Initiative, 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 2020.

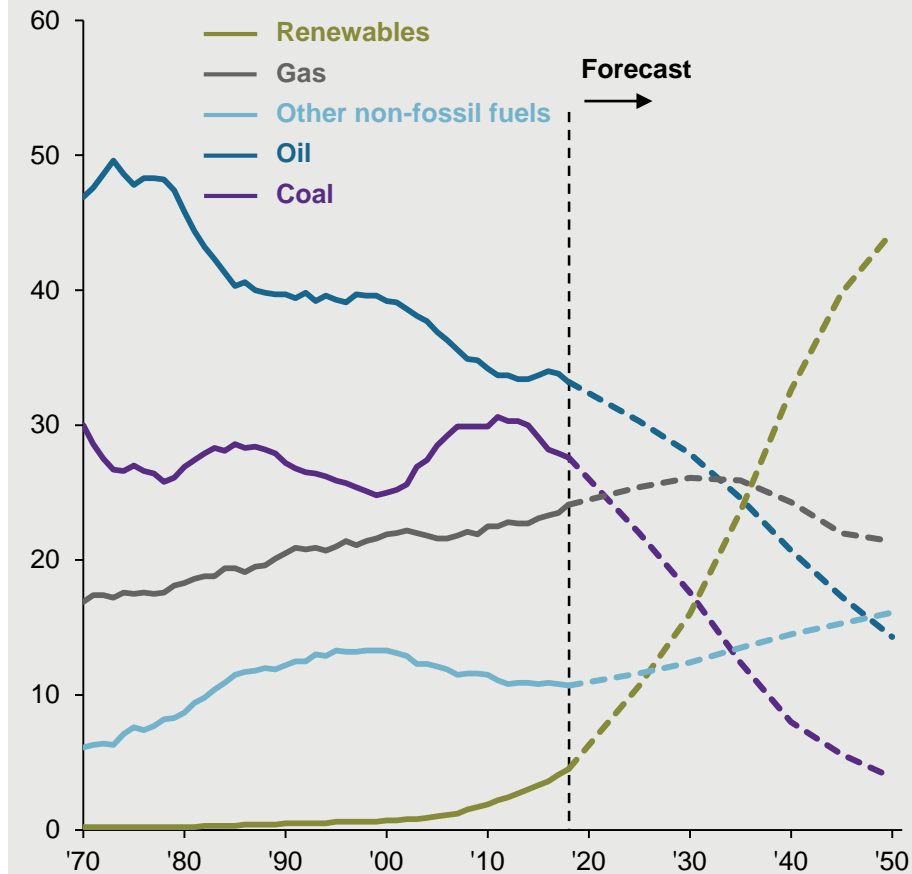
Emissions targets

MtCO₂e/year



Global energy mix

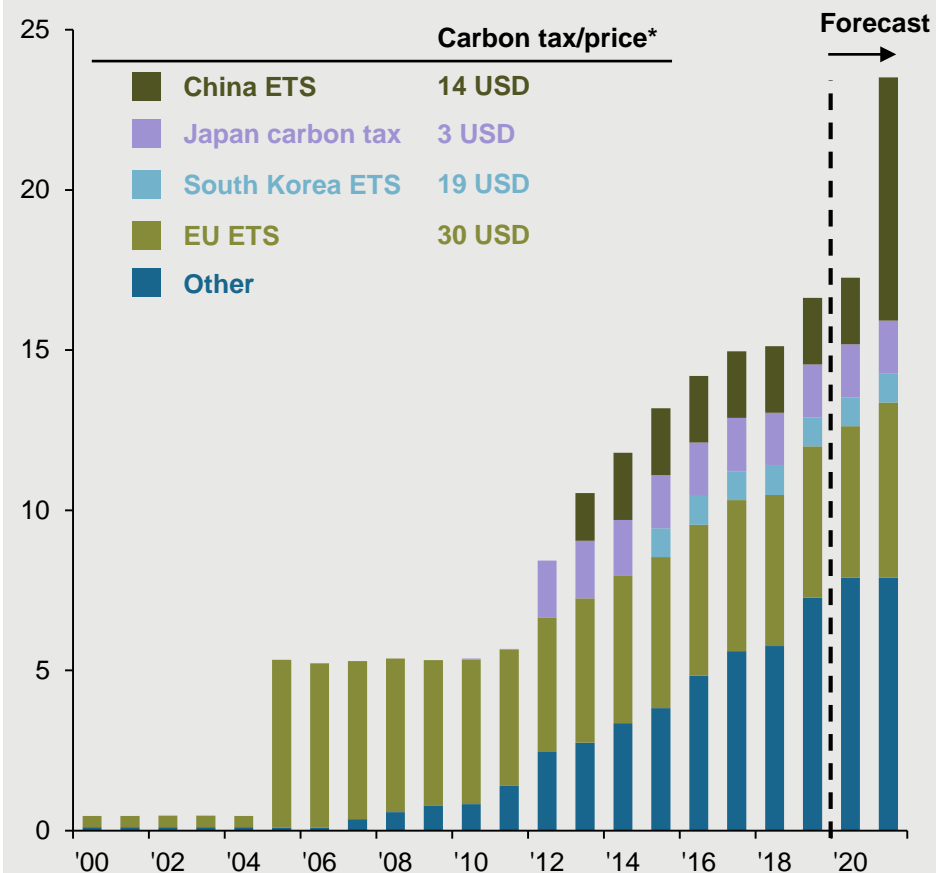
% of primary energy



Source: (Left) ClimateActionTracker, J.P. Morgan Asset Management. MtCO₂e is metric tons of carbon dioxide equivalent. US President-elect Joe Biden has committed to a net zero target by 2050, but this is not currently in US law. (Right) BP Energy Outlook 2020, 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 2020.

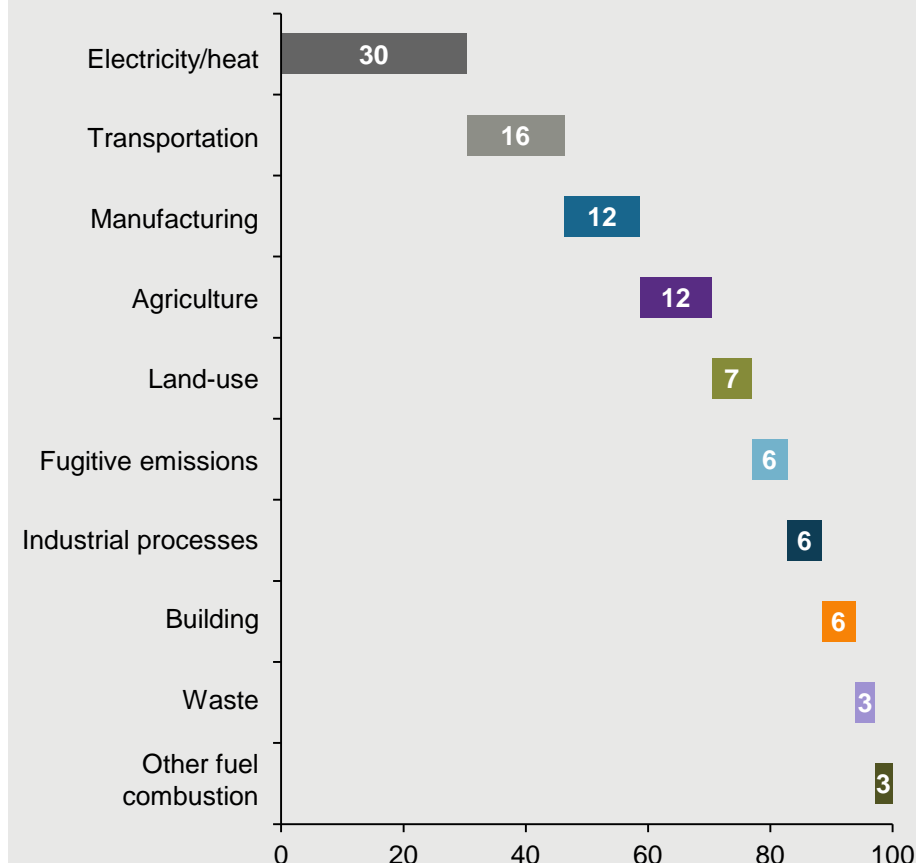
Global emissions covered by carbon pricing initiatives

% of global emissions



Global greenhouse gases emissions by sector

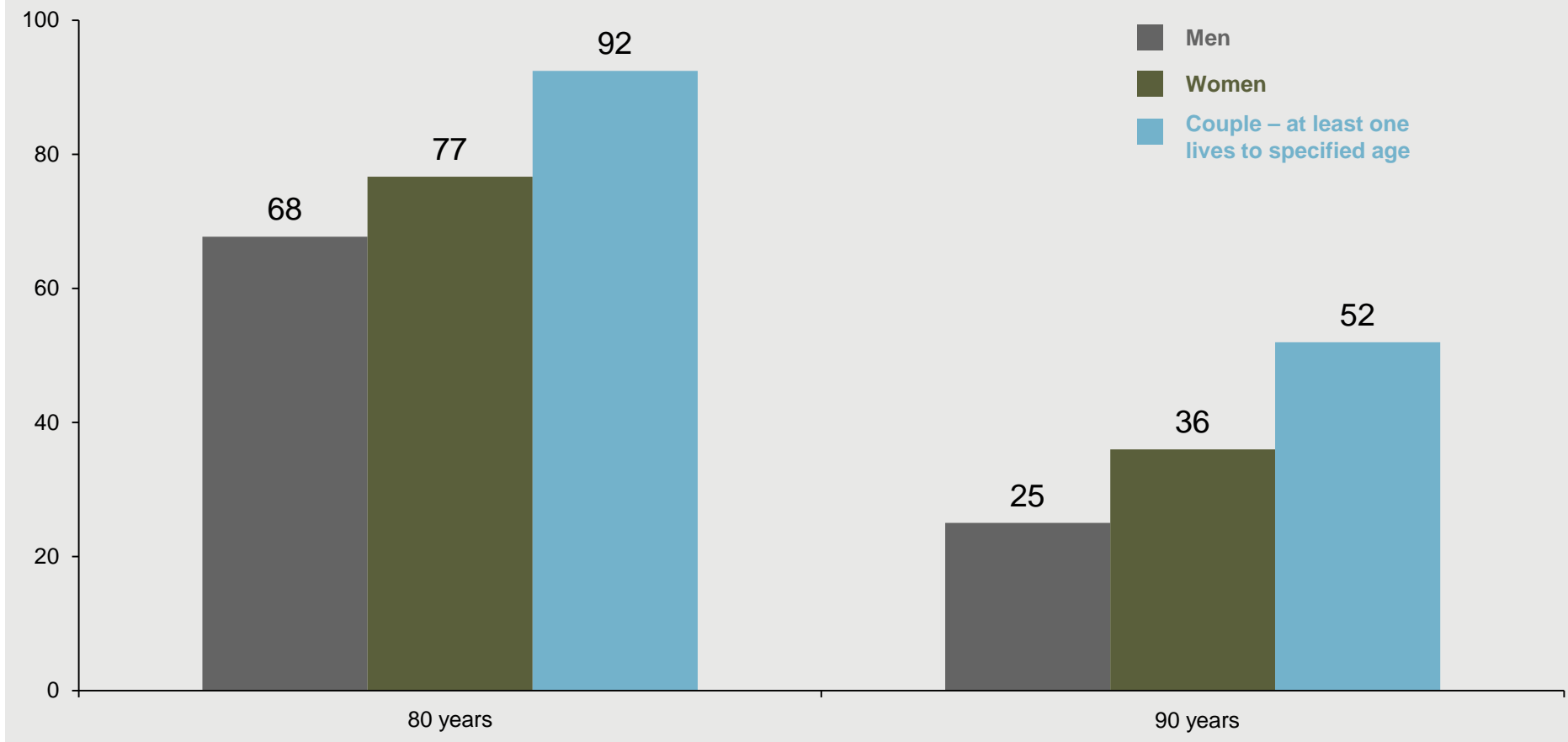
% share of total in 2016



Source: (Left) World Bank, J.P. Morgan Asset Management. ETS is emissions trading system. *Carbon price or tax is based on nominal prices from 1 November 2020. China ETS carbon price is based on the Beijing pilot ETS. Other notable carbon prices are; Switzerland ETS carbon price: 20 USD; UK carbon price floor: 23 USD; US California ETS: 17 USD. (Right) CAIT Climate Data Explorer, World Resources Institute, J.P. Morgan Asset Management. Manufacturing includes construction. Fugitive emissions are emissions not caught by a capture system which are often due to equipment leaks, evaporative processes and windblown disturbances. Past performance is not a reliable indicator of current and future results. *Guide to the Markets - Europe*. Data as of 31 December 2020.

Probability of reaching ages 80 and 90

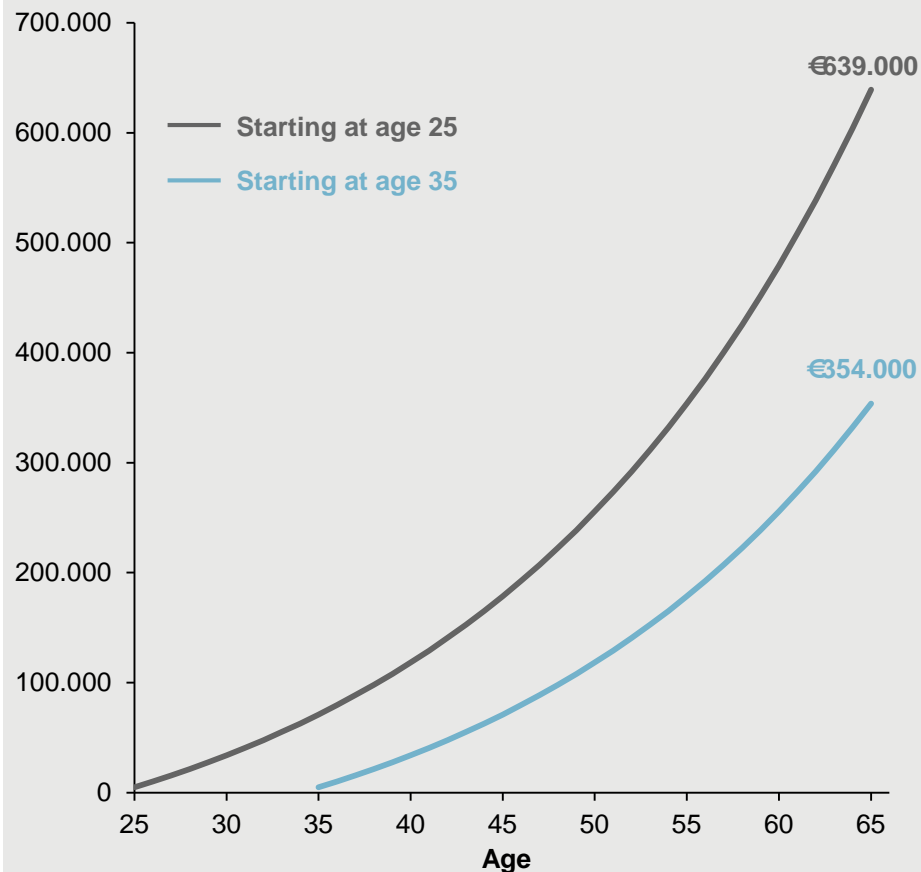
% probability, persons aged 65, by gender and combined couple



Source: ONS 2017-2019 Life Tables, 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 2020.

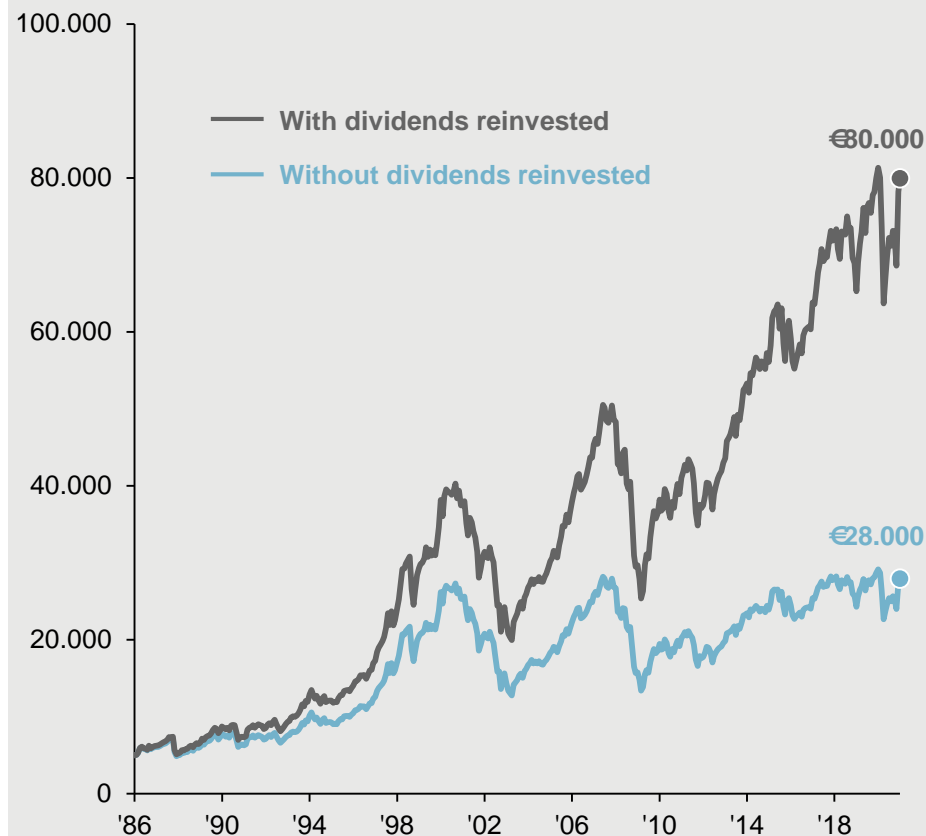
€5.000 invested annually with 5% growth per year

EUR



€5.000 investment with/without income reinvested

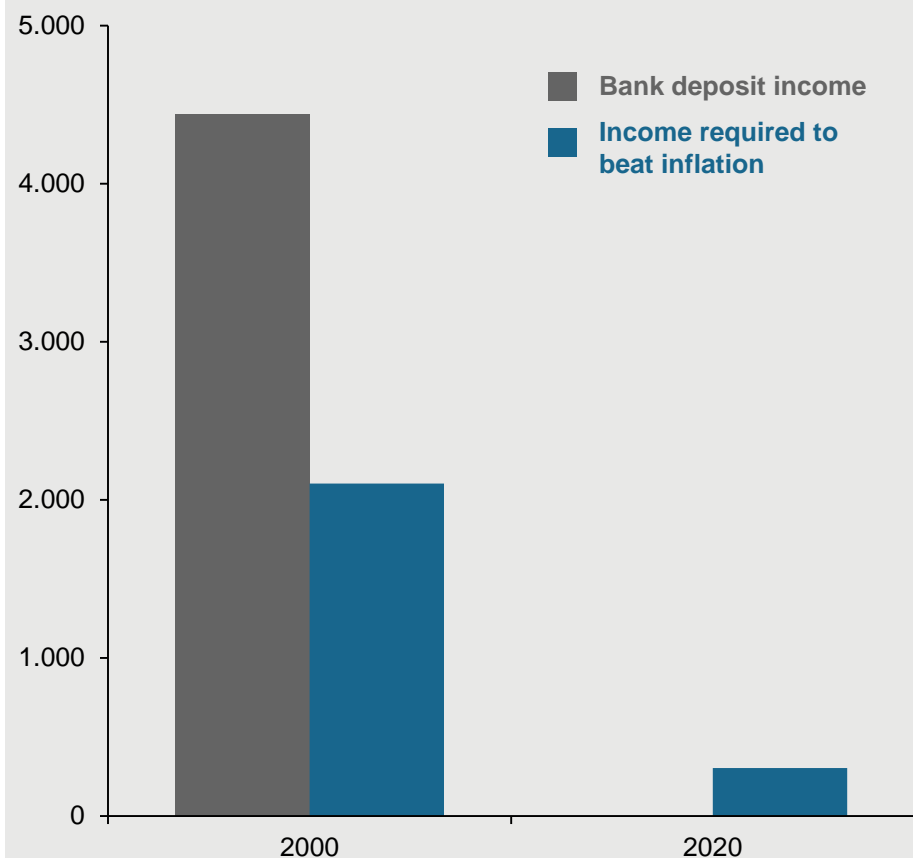
EUR, MSCI Europe returns



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 2020.

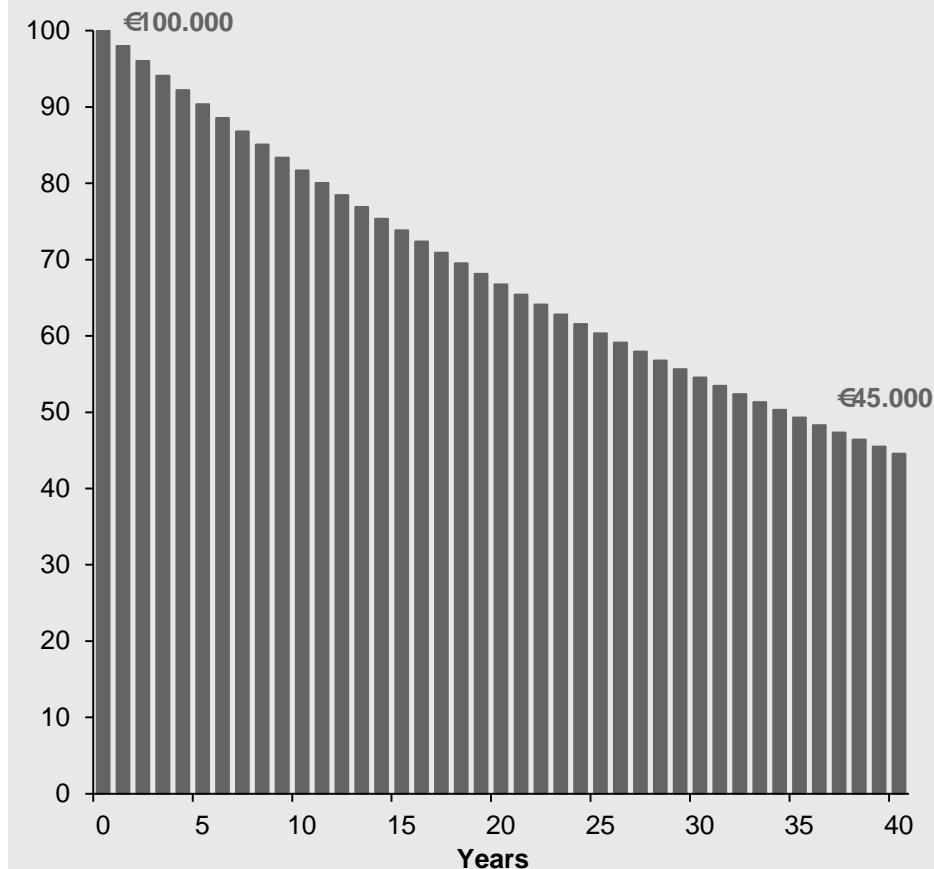
Income generated by €100.000 in a three-month bank deposit

EUR



Effect of 2% inflation on purchasing power of €100.000

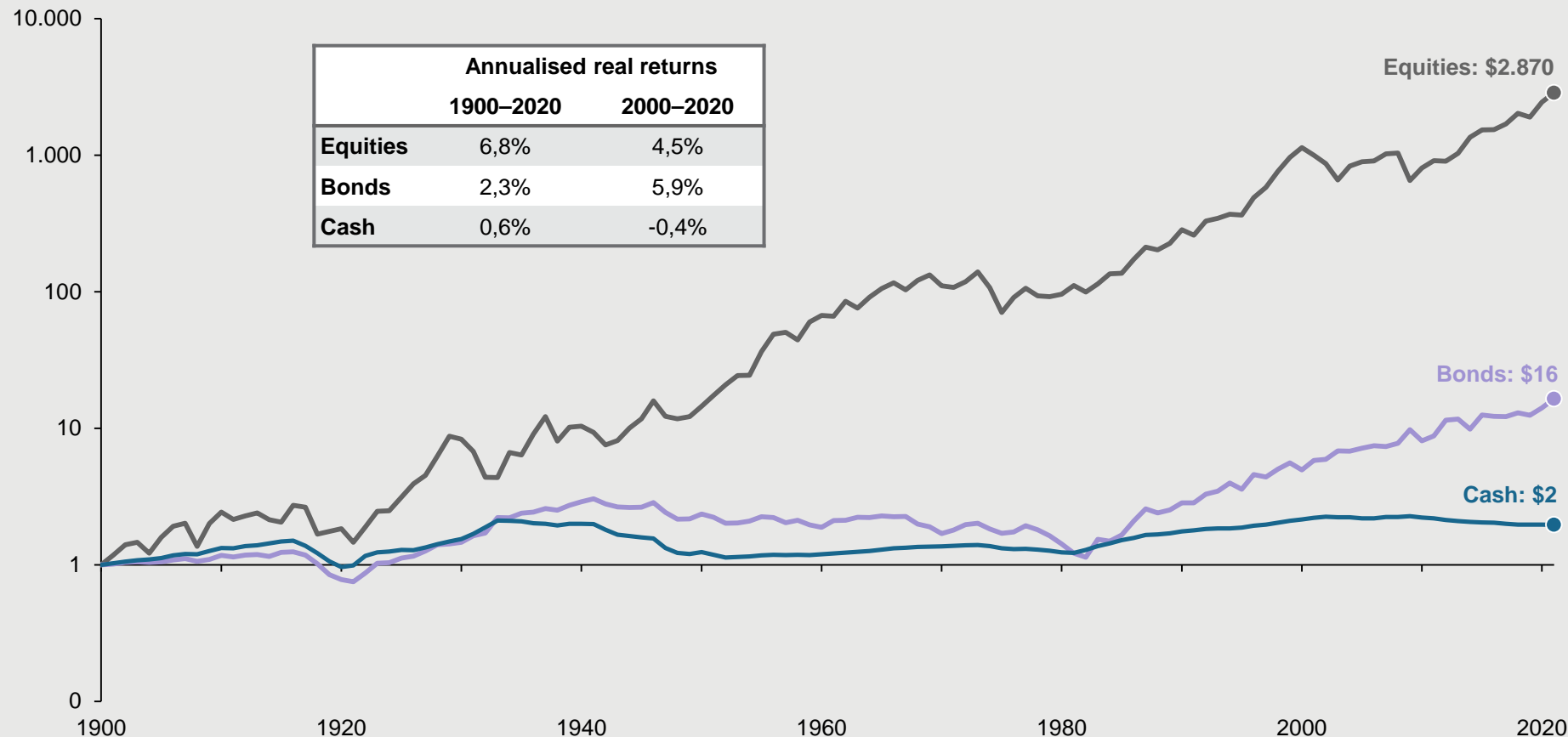
EUR, thousands



Source: (Left) Eurostat, Refinitiv Datastream, J.P. Morgan Asset Management. Data shown are averages over the course of the calendar year. (Right) J.P. Morgan Asset Management. For illustrative purposes only, assumes no return on cash and an inflation rate of 2%. Past performance is not a reliable indicator of current and future results. *Guide to the Markets - Europe*. Data as of 31 December 2020.

Total return of \$1 in real terms

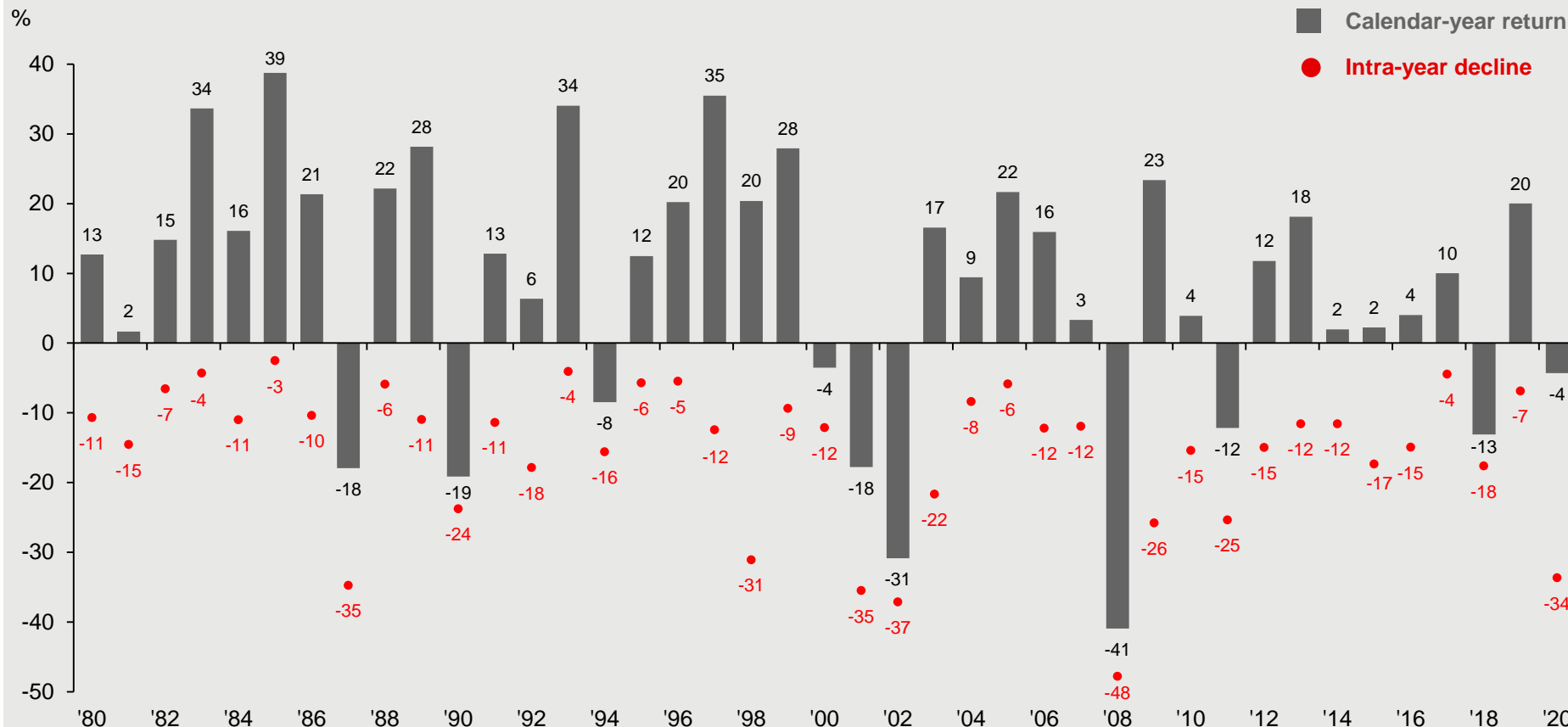
USD, log scale, total returns



Source: Bloomberg, Bloomberg Barclays, FactSet, Shiller, Siegel, Standard & Poor's, J.P. Morgan Asset Management. Pre-2010 returns: Shiller, Siegel; from 2010: Equities: S&P 500; Bonds: Bloomberg Barclays US Treasury 20+ year Total Return Index; Cash: Bloomberg Barclays US Treasury Bills Total Return Index. Latest point as of end of 2020. Past performance is not a reliable indicator of current and future results. *Guide to the Markets - Europe*. Data as of 31 December 2020.

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

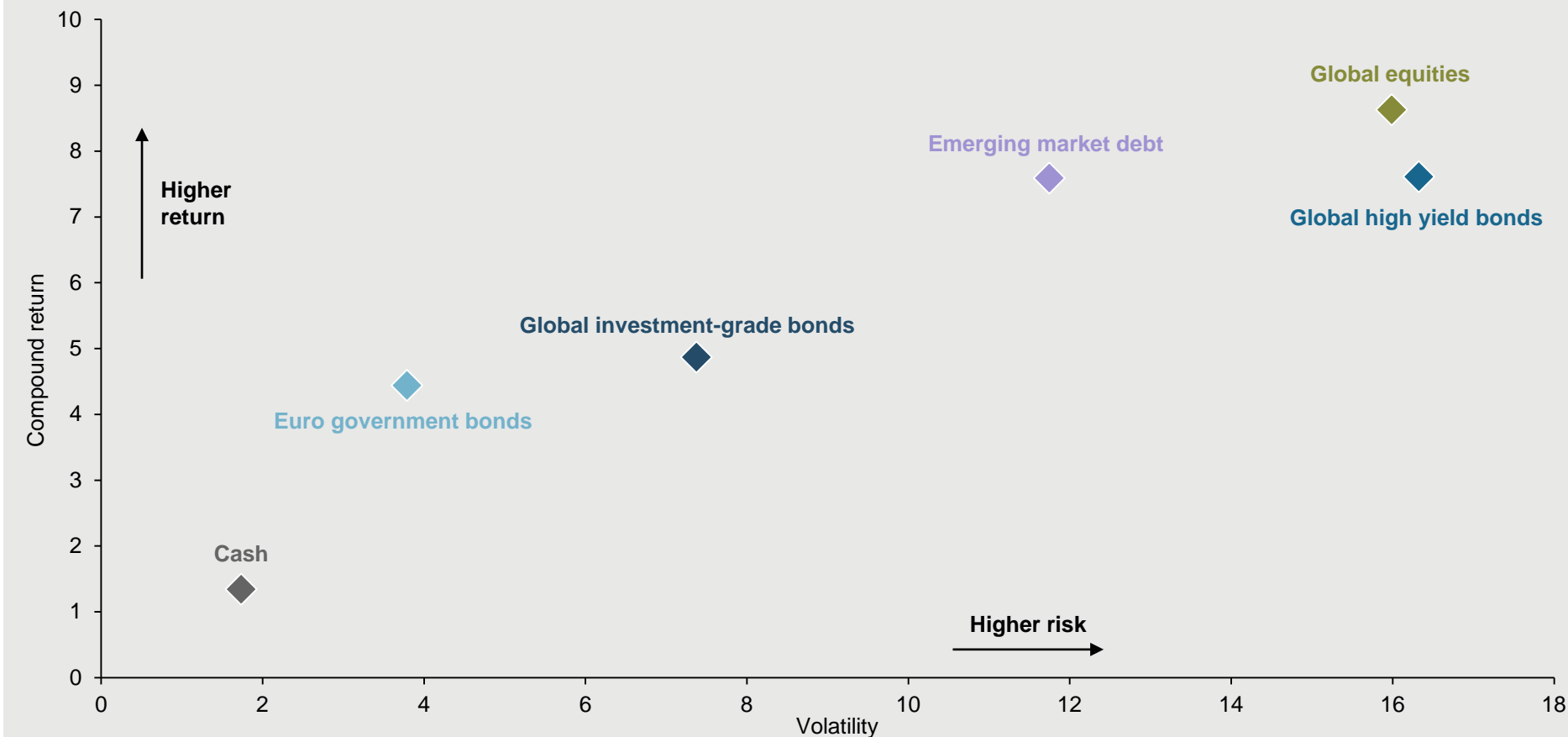
Despite average intra-year drops of 15,6% (median 12,1%), annual returns are positive in 31 of 41 years



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 2020. Past performance is not a reliable indicator of current and future results. *Guide to the Markets - Europe*. Data as of 31 December 2020.

Historic risk vs. return for selected asset classes

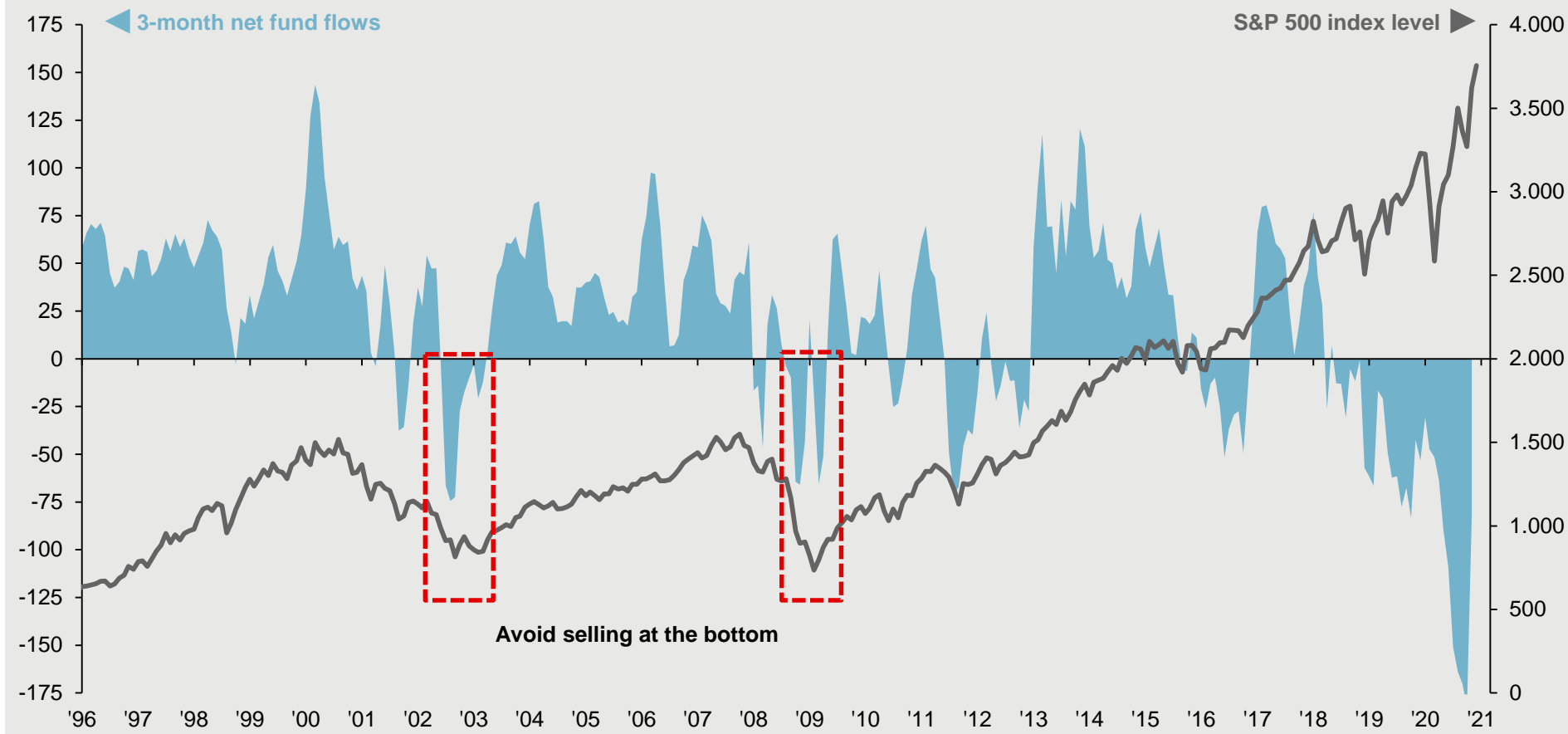
%, annualised return 2004 – 2020 in EUR



Source: Bloomberg Barclays, MSCI, Refinitiv Datastream, J.P. Morgan Asset Management. Volatility is the standard deviation of annual returns since 2004. Cash: JP Morgan Cash EUR (3M); Euro government bonds: Bloomberg Barclays Euro Aggregate - Treasury; Global investment-grade bonds: Bloomberg Barclays Global Aggregate – Corporate; Emerging market debt: J.P. Morgan EMBI Global Diversified; Global high yield bonds: ICE BofA Global High Yield; Global equities: MSCI All-Country World Index (includes developed and emerging markets). Past performance is not a reliable indicator of current and future results. *Guide to the Markets - Europe*. Data as of 31 December 2020.

US mutual fund and ETF flows and S&P 500

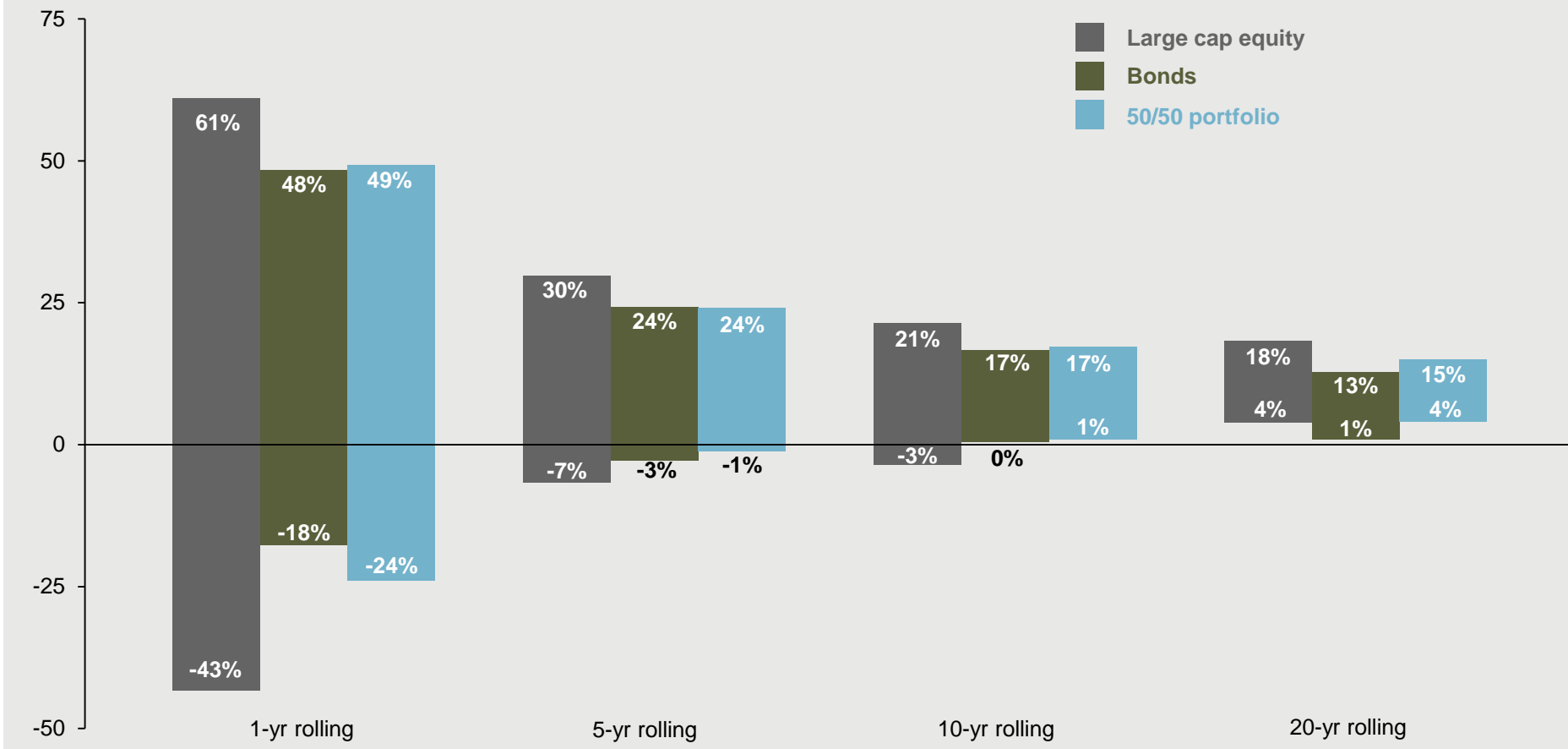
USD billions, three-month net flows (LHS); index level (RHS)



Source: FactSet, Investment Company Institute, Standard & Poor's, J.P. Morgan Asset Management. Fund flows are US long-term equity fund flows with ETF flows included from 2006 onwards. Past performance is not a reliable indicator of current and future results. *Guide to the Markets - Europe*. Data as of 31 December 2020.

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 31 December 2020.

Asset class returns (EUR)

GTM - Europe | 95

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	4Q '20	10-year ann. return	Vol.
	EMD 10,9%	REITs 18,3%	DM equities 21,9%	REITs 44,8%	REITs 13,9%	HY bonds 18,2%	EM equities 21,0%	Govt bonds 4,6%	DM equities 30,8%	EM equities 8,9%	EM equities 14,8%	DM equities 11,5%	REITs 16,3%
	REITs 10,9%	HY bonds 17,5%	Portfolio 3,4%	EMD 22,3%	EMD 12,7%	Cmdty 15,1%	DM equities 8,1%	HY bonds 1,5%	REITs 30,4%	DM equities 6,9%	DM equities 9,3%	REITs 10,1%	EM equities 13,0%
	Govt bonds 9,9%	EM equities 16,8%	HY bonds 3,3%	DM equities 20,1%	DM equities 11,0%	EM equities 14,9%	Portfolio 1,7%	IG bonds 1,3%	EM equities 21,1%	Portfolio 1,6%	Cmdty 5,6%	HY bonds 7,6%	EMD 10,1%
	IG bonds 7,8%	EMD 15,6%	Hedge funds 2,1%	IG bonds 17,5%	Govt bonds 7,7%	EMD 13,5%	Cash -0,3%	REITs 0,7%	Portfolio 18,9%	IG bonds 1,3%	Portfolio 5,0%	EMD 7,2%	DM equities 10,0%
	HY bonds 6,1%	DM equities 14,7%	Cash 0,2%	Portfolio 16,3%	IG bonds 7,4%	REITs 12,6%	EMD -3,2%	EMD 0,6%	EMD 17,1%	Govt bonds 0,5%	REITs 4,6%	Portfolio 6,7%	Cmdty 9,6%
	Cash 1,7%	Portfolio 10,6%	REITs -1,3%	HY bonds 13,8%	Hedge funds 7,3%	DM equities 11,4%	HY bonds -3,2%	Cash -0,3%	HY bonds 15,8%	Cash -0,3%	HY bonds 3,0%	IG bonds 5,5%	HY bonds 7,5%
	Portfolio 1,1%	IG bonds 9,5%	IG bonds -4,0%	Hedge funds 13,2%	HY bonds 6,7%	Portfolio 10,3%	REITs -4,0%	Portfolio -1,6%	IG bonds 13,6%	HY bonds -0,9%	EMD 1,4%	EM equities 5,0%	IG bonds 6,7%
	DM equities -1,8%	Hedge funds 1,9%	EM equities -6,5%	Govt bonds 13,0%	Portfolio 6,3%	IG bonds 7,4%	IG bonds -4,2%	Hedge funds -2,0%	Hedge funds 10,6%	Hedge funds -2,2%	Hedge funds 0,5%	Govt bonds 3,2%	Portfolio 6,5%
	Hedge funds -5,8%	Cash 1,2%	Govt bonds -8,4%	EM equities 11,8%	Cash 0,1%	Hedge funds 5,6%	Govt bonds -5,8%	DM equities -3,6%	Cmdty 9,7%	EMD -3,4%	IG bonds -0,1%	Hedge funds 2,2%	Govt bonds 6,4%
	Cmdty -10,4%	Govt bonds 0,3%	EMD -9,3%	Cash 0,3%	EM equities -4,9%	Govt bonds 4,7%	Hedge funds -6,9%	Cmdty -6,8%	Govt bonds 7,5%	Cmdty -11,1%	Cash -0,1%	Cash 0,2%	Hedge funds 6,4%
	EM equities -15,4%	Cmdty -2,6%	Cmdty -13,4%	Cmdty -5,5%	Cmdty -16,1%	Cash -0,2%	Cmdty -10,7%	EM equities -9,9%	Cash -0,3%	REITs -13,6%	Govt bonds -1,1%	Cmdty -5,6%	Cash 0,7%

Source: Bloomberg Barclays, FTSE, J.P. Morgan Economic Research, MSCI, Refinitiv Datastream, J.P. Morgan Asset Management. Annualised return covers the period from 2011 to 2020. 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; Cmdty: 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 2020.

J.P. Morgan Asset Management: Index definitions

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

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

The **Russell 1000 Index**® measures the performance of the 1,000 largest companies in the Russell 3000.

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

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

The **MSCI Emerging Markets Index**SM is a free float-adjusted market capitalization index that is designed to measure equity market performance in the global emerging markets. As of June 2007, the MSCI Emerging Markets Index consisted of the following 25 emerging market country indices: Argentina, Brazil, Chile, China, Colombia, Czech Republic, Egypt, Hungary, India, Indonesia, Israel, Jordan, Korea, Malaysia, Mexico, Morocco, Pakistan, Peru, Philippines, Poland, Russia, South Africa, Taiwan, Thailand, and Turkey.

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

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

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

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

The **MSCI Value and Growth Indices**SM cover the full range of developed, emerging and All Country MSCI Equity Indexes.

As of the close of May 30, 2003, MSCI implemented an enhanced methodology for the MSCI Global Value and Growth Indices, adopting a two dimensional framework for style segmentation in which value and growth securities are categorized using different attributes - three for value and five for growth including forward-looking variables. The objective of the index design is to divide constituents of an underlying MSCI Standard Country Index into a value index and a growth index, each targeting 50% of the free float adjusted market capitalization of the underlying country index. Country Value/Growth indices are then aggregated into regional Value/Growth indices. Prior to May 30, 2003, the indices used Price/Book Value (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**SM 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**SM 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.

West Texas Intermediate (WTI) is underlying commodity in the New York Mercantile Exchange's oil futures contracts.

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-EMG countries are included.

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

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

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

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Unless otherwise stated, all data as of 31 December 2020 or most recently available.

Guide to the Markets - Europe

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