



Guide to the Markets[®]

U.S. | 1Q 2023

As of January 20, 2023





Agenda

GTA

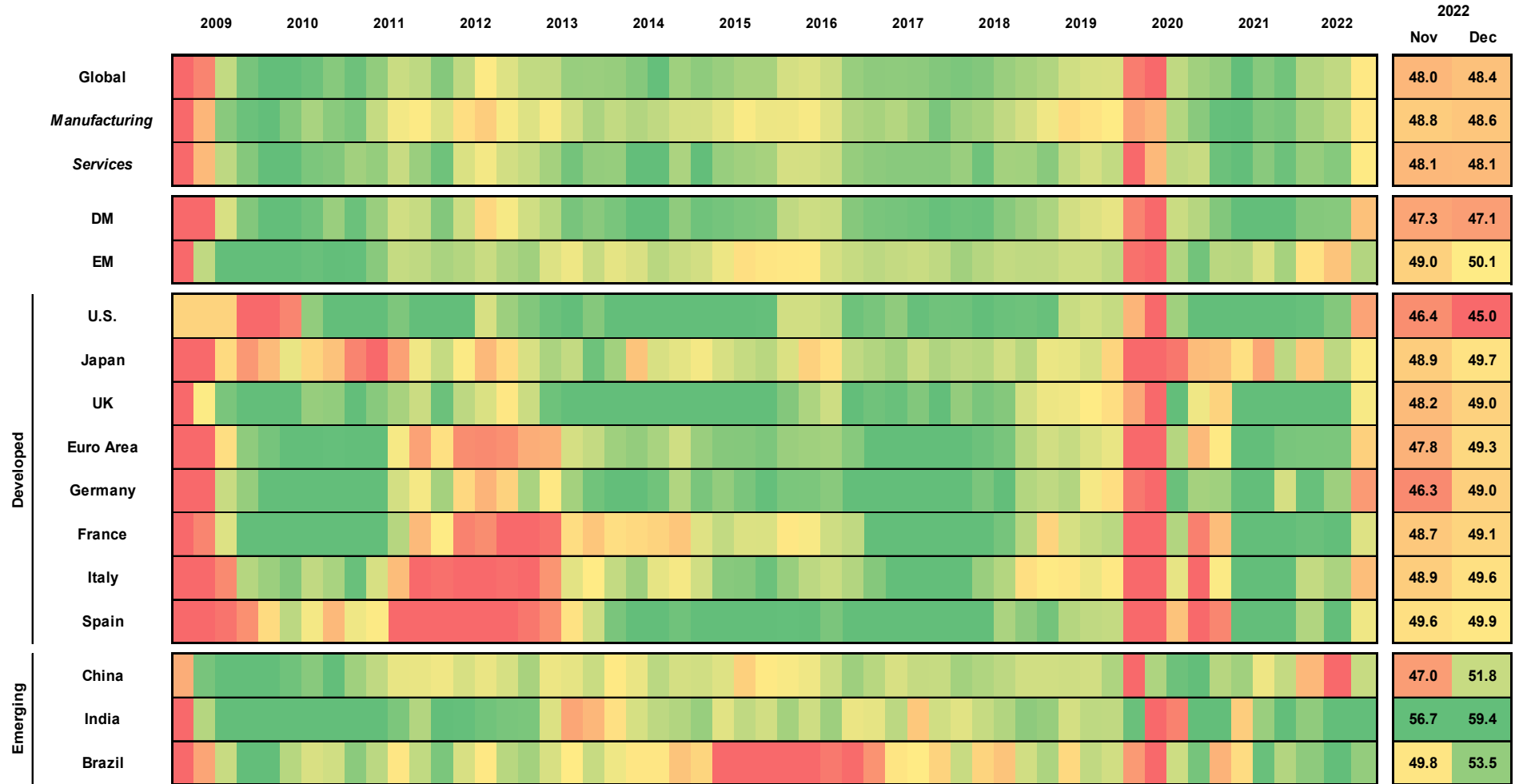
U.S.

- **2023 macro outlook**
- **Higher rates, cooling inflation and real estate**
- **Infrastructure, transportation and the energy transition**
- **Private equity valuations and the denominator effect**
- **Hedge funds and the outlook for volatility**
- **Private credit against a tighter monetary backdrop**



Global economic activity momentum

Global Composite (manufacturing & services combined) Purchasing Managers' Index, quarterly



International

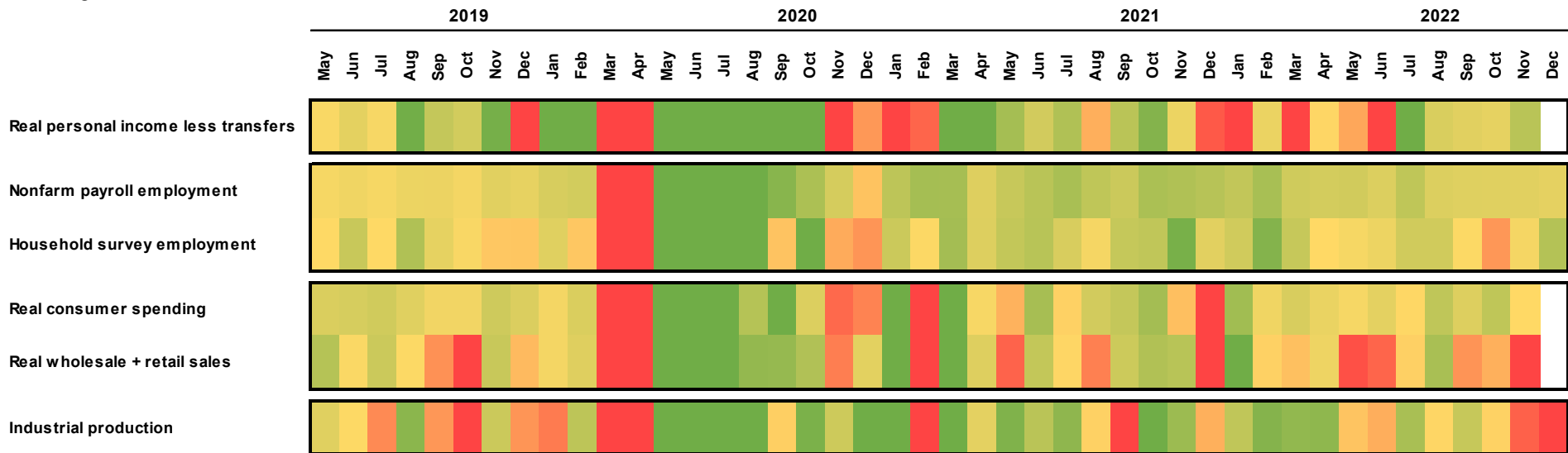
Source: Standard & Poor's, J.P. Morgan Asset Management.
 The Composite PMI includes both manufacturing and services sub-indices. Heatmap colors are based on PMI relative to the 50 level, which indicates acceleration or deceleration of the sector, for the time period shown. Heatmap is based on quarterly averages, with the exception of the two most recent figures, which are single month readings. Data for the U.S. are back-tested and filled in from December 2007 to September 2009 due to lack of existing PMI figures. DM and EM represent developed markets and emerging markets, respectively.
Guide to the Markets – U.S. Data are as of January 20, 2023.



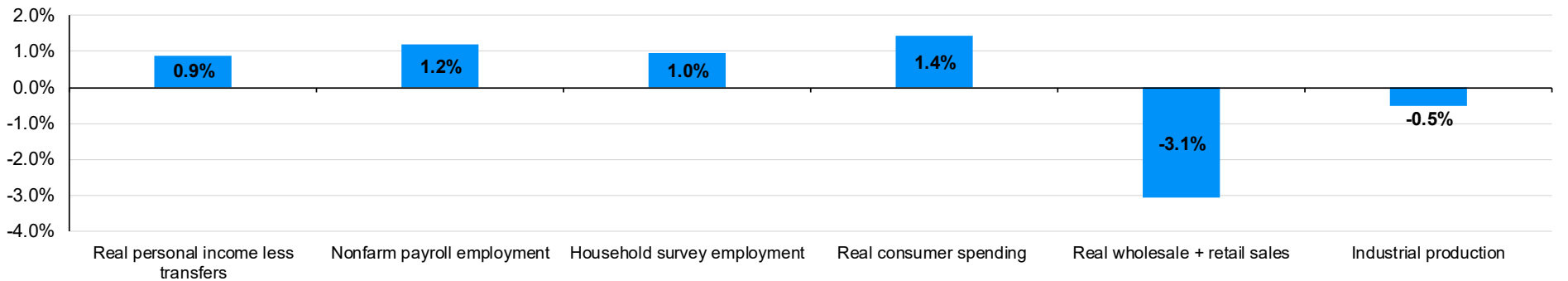
Recession determinants

Variables used by the NBER in making recession determination*

% change month-over-month



% change, last six months



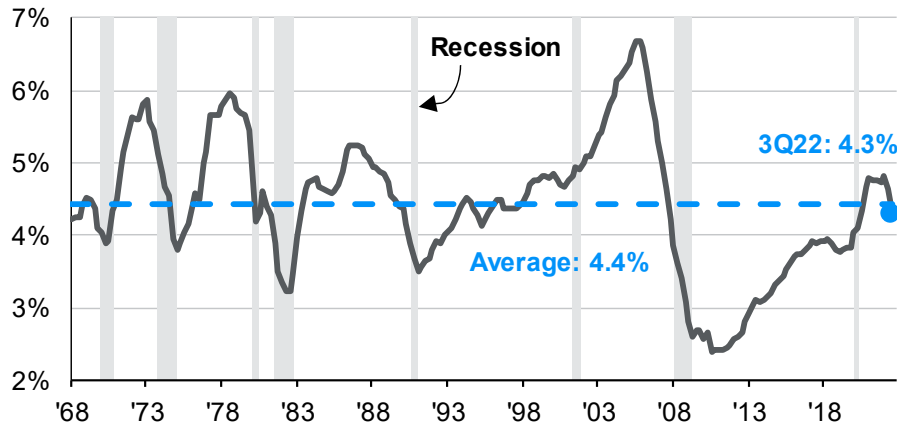
Source: Bureau of Economic Analysis, Bureau of Labor Statistics, Census Bureau, Federal Reserve of St. Louis, NBER, J.P. Morgan Asset Management. Heatmap shading reflects 10 years of data, with green and red reflecting a range of +/- 0.5 standard deviations from a baseline of 0% monthly growth. *The NBER's definition of a recession involves a significant decline in economic activity that is spread across the economy and lasts more than a few months. Because a recession must influence the economy broadly and not be confined to one sector, the committee emphasizes economy-wide measures of economic activity. Specifically, they consider real personal income less transfers, nonfarm payroll employment, employment as measured by the household survey, real personal consumption expenditures, wholesale-retail sales adjusted for price changes and industrial production. There is no fixed rule about which measures contribute to the process or how they are weighted, but the committee notes that "in recent decades, the two measures we have put the most weight on are real personal income less transfers and nonfarm payroll employment."
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Cyclical sectors

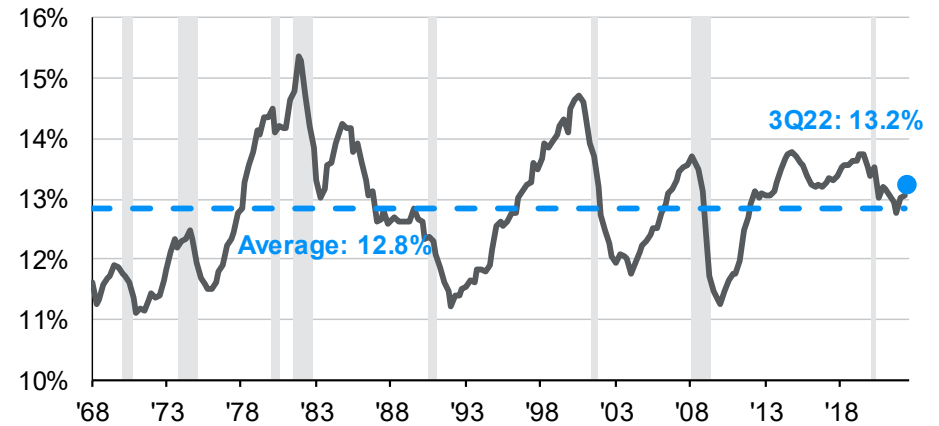
Residential investment as a % of GDP

Quarterly, seasonally adjusted



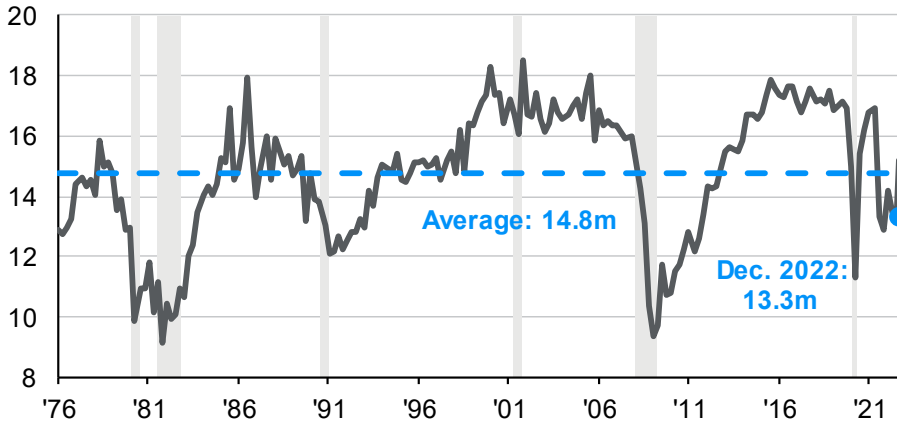
Business fixed investment as a % of GDP

Quarterly, seasonally adjusted



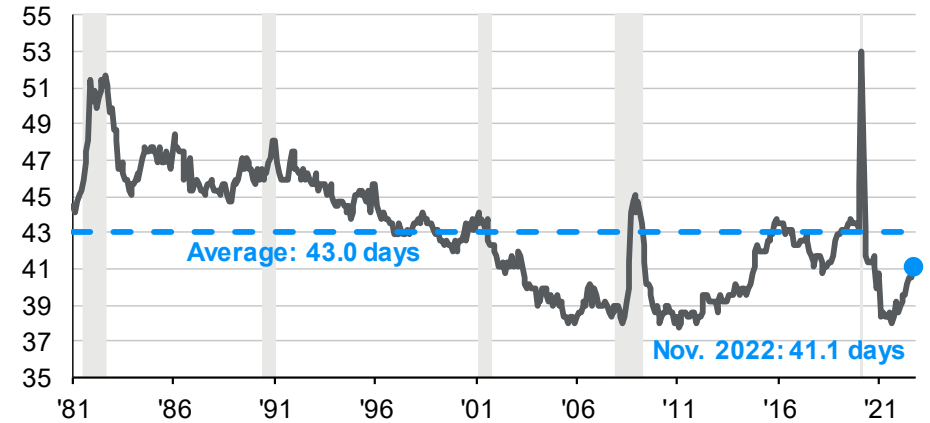
Light vehicle sales

Mil vehicles, seasonally adjusted ann. rate



Total business inventory/sales ratio

Days of sales, monthly, seasonally adjusted

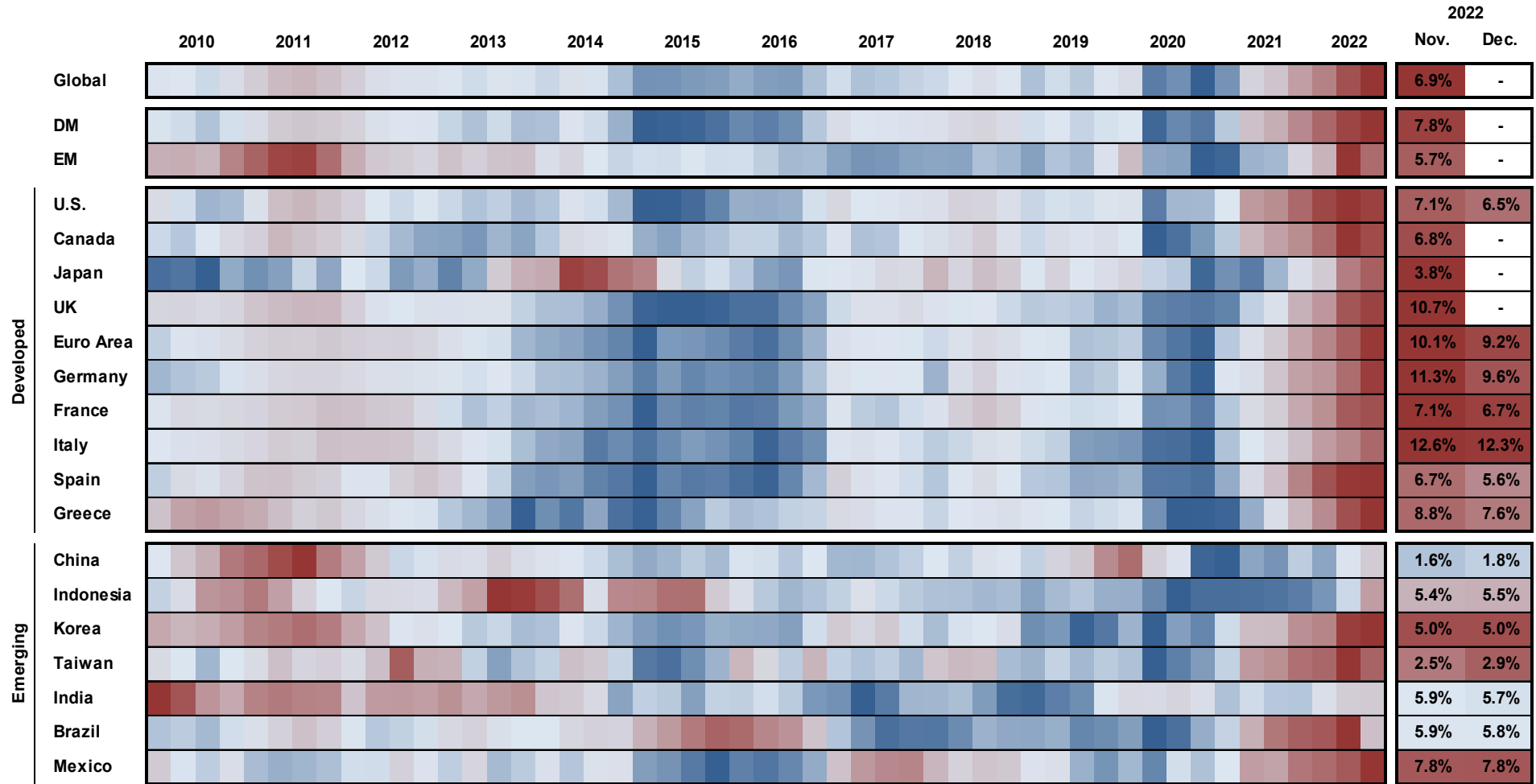


Source: BEA, Census Bureau, FactSet, J.P. Morgan Asset Management. Data for light vehicle sales is quarterly apart from the latest monthly data point. Guide to the Markets – U.S. Data are as of January 20, 2023.



Global inflation

Year-over-year headline inflation by country and region, quarterly



International

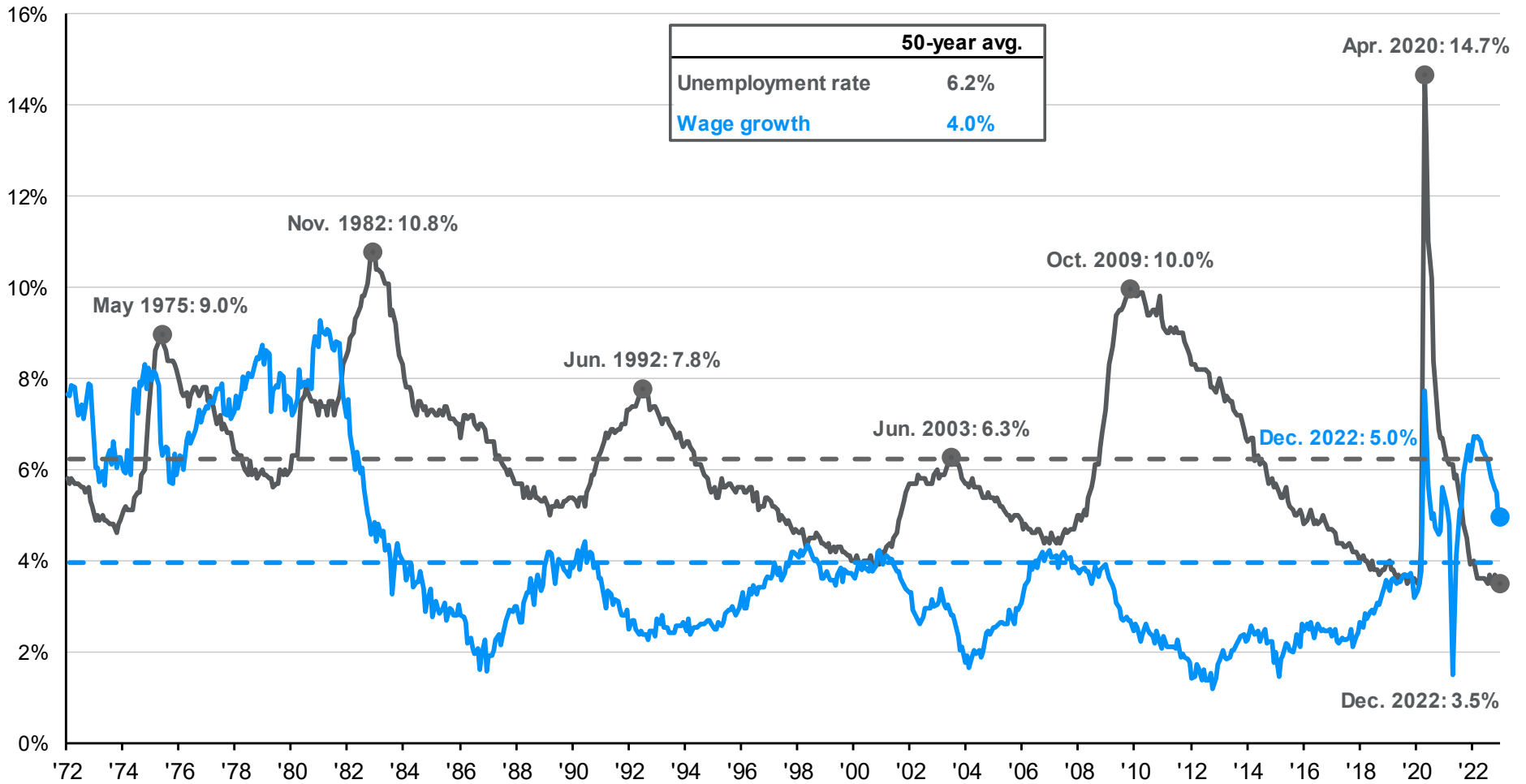
Source: Bank of Mexico, DGBAS, Eurostat, FactSet, Federal Reserve, Goskomstat of Russia, IBGE, India Ministry of Statistics & Programme Implementation, Japan Ministry of Internal Affairs & Communications, Korean National Statistical Office, Melbourne Institute, National Bureau of Statistics China, Statistics Canada, Statistics Indonesia, UK Office for National Statistics (ONS), J.P. Morgan Asset Management. Heatmap is based on quarterly averages, with the exception of the two most recent figures, which are single month readings. Colors determined by percentiles of inflation values over the time period shown. Deep blue = lowest value, light blue = median, deep red = highest value. DM and EM represent developed markets and emerging markets, respectively. *Guide to the Markets – U.S.* Data are as of January 20, 2023.



Unemployment and wages

Civilian unemployment rate and year-over-year wage growth

Private production and non-supervisory workers, seasonally adjusted, percent



Source: BLS, FactSet, J.P. Morgan Asset Management. Guide to the Markets – U.S. Data are as of January 20, 2023.



Inflation heatmap

GTM

U.S.

29

Consumer Price Index, components

m/m % change, seasonally adjusted

Economy

| | Weight | 2021 | | | | | | | | | | | | 2022 | | | | | | | | | | | |
|--------------------------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|-------|-------|-------|-------|-------|------|-------|-------|--------|-------|-------|-------|-------|
| | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
| Headline CPI, y/y | 100.0 | 1.4% | 1.7% | 2.7% | 4.2% | 4.9% | 5.3% | 5.3% | 5.2% | 5.4% | 6.2% | 6.8% | 7.1% | 7.5% | 7.9% | 8.6% | 8.2% | 8.5% | 9.0% | 8.5% | 8.2% | 8.2% | 7.8% | 7.1% | 6.4% |
| Core CPI, y/y | 78.2 | 1.4% | 1.3% | 1.7% | 3.0% | 3.8% | 4.4% | 4.2% | 4.0% | 4.0% | 4.6% | 5.0% | 5.5% | 6.0% | 6.4% | 6.4% | 6.1% | 6.0% | 5.9% | 5.9% | 6.3% | 6.7% | 6.3% | 6.0% | 5.7% |
| Headline CPI, m/m | 100.0 | 0.2% | 0.4% | 0.6% | 0.6% | 0.7% | 0.9% | 0.5% | 0.3% | 0.4% | 0.9% | 0.7% | 0.6% | 0.6% | 0.8% | 1.2% | 0.3% | 1.0% | 1.3% | 0.0% | 0.1% | 0.4% | 0.4% | 0.1% | -0.1% |
| Core CPI, m/m | 78.2 | 0.0% | 0.2% | 0.3% | 0.9% | 0.7% | 0.8% | 0.3% | 0.2% | 0.3% | 0.6% | 0.5% | 0.6% | 0.6% | 0.5% | 0.3% | 0.6% | 0.6% | 0.7% | 0.3% | 0.6% | 0.6% | 0.3% | 0.2% | 0.3% |
| Energy | 8.1 | 2.8% | 4.6% | 5.6% | -1.2% | 0.7% | 2.1% | 1.6% | 1.9% | 1.2% | 3.7% | 2.4% | 0.9% | 0.9% | 3.5% | 11.0% | -2.7% | 3.9% | 7.5% | -4.6% | -5.0% | -2.1% | 1.8% | -1.6% | -4.5% |
| Gasoline | 4.1 | 5.8% | 8.2% | 10.3% | -3.3% | 0.6% | 3.3% | 2.5% | 2.5% | 1.1% | 4.6% | 4.5% | 1.3% | -0.8% | 6.6% | 18.3% | -6.1% | 4.1% | 11.2% | -7.7% | -10.6% | -4.9% | 4.0% | -2.0% | -9.4% |
| Electricity | 2.6 | 0.0% | 0.5% | 0.2% | 0.7% | 0.5% | 0.2% | 0.2% | 1.0% | 0.6% | 1.4% | 0.2% | 0.5% | 4.2% | -1.1% | 2.2% | 0.7% | 1.3% | 1.7% | 1.6% | 1.5% | 0.4% | 0.1% | -0.2% | 1.0% |
| Utility Gas | 1.0 | -0.4% | 1.7% | 2.4% | 2.2% | 1.8% | 1.8% | 2.2% | 1.6% | 2.9% | 5.9% | 0.3% | -0.3% | -0.5% | 1.5% | 0.6% | 3.1% | 8.0% | 8.2% | -3.6% | 3.5% | 2.9% | -4.6% | -3.5% | 3.0% |
| Food | 13.7 | 0.2% | 0.1% | 0.2% | 0.4% | 0.5% | 0.7% | 0.7% | 0.4% | 0.9% | 0.9% | 0.8% | 0.5% | 0.9% | 1.0% | 1.0% | 0.9% | 1.2% | 1.0% | 1.1% | 0.8% | 0.8% | 0.6% | 0.5% | 0.3% |
| Food at home | 8.5 | 0.1% | 0.2% | 0.2% | 0.4% | 0.4% | 0.7% | 0.6% | 0.4% | 1.2% | 0.9% | 0.9% | 0.4% | 1.0% | 1.4% | 1.5% | 1.0% | 1.4% | 1.0% | 1.3% | 0.7% | 0.7% | 0.4% | 0.5% | 0.2% |
| Food away from home | 5.2 | 0.3% | 0.1% | 0.1% | 0.3% | 0.6% | 0.7% | 0.8% | 0.4% | 0.5% | 0.8% | 0.6% | 0.6% | 0.7% | 0.4% | 0.3% | 0.6% | 0.7% | 0.9% | 0.7% | 0.9% | 0.9% | 0.9% | 0.5% | 0.4% |
| Core goods | 21.0 | 0.1% | -0.1% | 0.2% | 2.0% | 1.8% | 2.1% | 0.4% | 0.4% | 0.3% | 1.1% | 0.9% | 1.2% | 1.0% | 0.4% | -0.4% | 0.2% | 0.7% | 0.8% | 0.2% | 0.5% | 0.0% | -0.4% | -0.5% | -0.3% |
| Apparel | 2.5 | 1.4% | -0.5% | 0.4% | 0.6% | 1.1% | 0.5% | 0.1% | 0.3% | -0.7% | 0.6% | 0.7% | 1.1% | 1.1% | 0.7% | 0.6% | -0.8% | 0.7% | 0.8% | -0.1% | 0.2% | -0.3% | -0.7% | 0.2% | 0.5% |
| New vehicles | 4.1 | -0.4% | 0.1% | 0.0% | 0.5% | 1.5% | 1.7% | 1.5% | 1.2% | 1.3% | 1.3% | 1.2% | 1.2% | 0.0% | 0.3% | 0.2% | 1.1% | 1.0% | 0.7% | 0.6% | 0.8% | 0.7% | 0.4% | 0.0% | -0.1% |
| Used cars | 3.7 | -0.9% | -0.7% | 0.3% | 9.8% | 7.7% | 10.1% | 0.0% | -1.2% | -0.5% | 2.5% | 2.4% | 3.3% | 1.5% | -0.2% | -3.8% | -0.4% | 1.8% | 1.6% | -0.4% | -0.1% | -1.1% | -2.4% | -2.9% | -2.5% |
| Medical care commod | 1.5 | -0.1% | -0.7% | 0.1% | 0.6% | 0.0% | -0.4% | 0.2% | -0.2% | 0.3% | 0.6% | 0.1% | 0.0% | 0.9% | 0.3% | 0.2% | 0.1% | 0.3% | 0.4% | 0.6% | 0.2% | -0.1% | 0.0% | 0.2% | 0.1% |
| Core services | 57.2 | 0.1% | 0.2% | 0.3% | 0.5% | 0.4% | 0.4% | 0.3% | 0.1% | 0.2% | 0.4% | 0.4% | 0.3% | 0.4% | 0.5% | 0.6% | 0.7% | 0.6% | 0.7% | 0.4% | 0.6% | 0.8% | 0.5% | 0.4% | 0.5% |
| Shelter | 32.7 | 0.1% | 0.2% | 0.3% | 0.4% | 0.3% | 0.4% | 0.4% | 0.2% | 0.4% | 0.5% | 0.5% | 0.4% | 0.3% | 0.5% | 0.5% | 0.5% | 0.6% | 0.6% | 0.5% | 0.7% | 0.7% | 0.8% | 0.6% | 0.8% |
| Rent of primary res. | 7.4 | 0.1% | 0.2% | 0.2% | 0.2% | 0.3% | 0.2% | 0.2% | 0.3% | 0.4% | 0.4% | 0.4% | 0.4% | 0.5% | 0.6% | 0.4% | 0.6% | 0.6% | 0.8% | 0.7% | 0.7% | 0.8% | 0.7% | 0.8% | 0.8% |
| OER | 24.0 | 0.1% | 0.2% | 0.2% | 0.2% | 0.3% | 0.3% | 0.3% | 0.3% | 0.4% | 0.4% | 0.4% | 0.4% | 0.4% | 0.4% | 0.4% | 0.5% | 0.6% | 0.7% | 0.6% | 0.7% | 0.8% | 0.6% | 0.7% | 0.8% |
| Medical care services | 6.8 | 0.5% | 0.4% | 0.1% | 0.0% | -0.1% | 0.0% | 0.2% | 0.2% | 0.2% | 0.4% | 0.3% | 0.3% | 0.6% | 0.1% | 0.6% | 0.5% | 0.4% | 0.7% | 0.4% | 0.8% | 1.0% | -0.6% | -0.7% | 0.1% |
| Transportation services | 6.0 | -0.3% | 0.4% | 1.0% | 2.2% | 1.7% | 1.1% | -0.9% | -1.2% | -1.0% | 0.2% | 0.7% | 0.0% | 1.0% | 1.4% | 2.0% | 3.1% | 1.3% | 2.1% | -0.5% | 0.5% | 1.9% | 0.8% | -0.1% | 0.2% |

Source: BLS, FactSet, J.P. Morgan Asset Management. Heatmap shading is relative to the two-year period shown. Component weights may not add to 100. OER refers to owner's equivalent rent.
Guide to the Markets – U.S. Data are as of January 20, 2023.

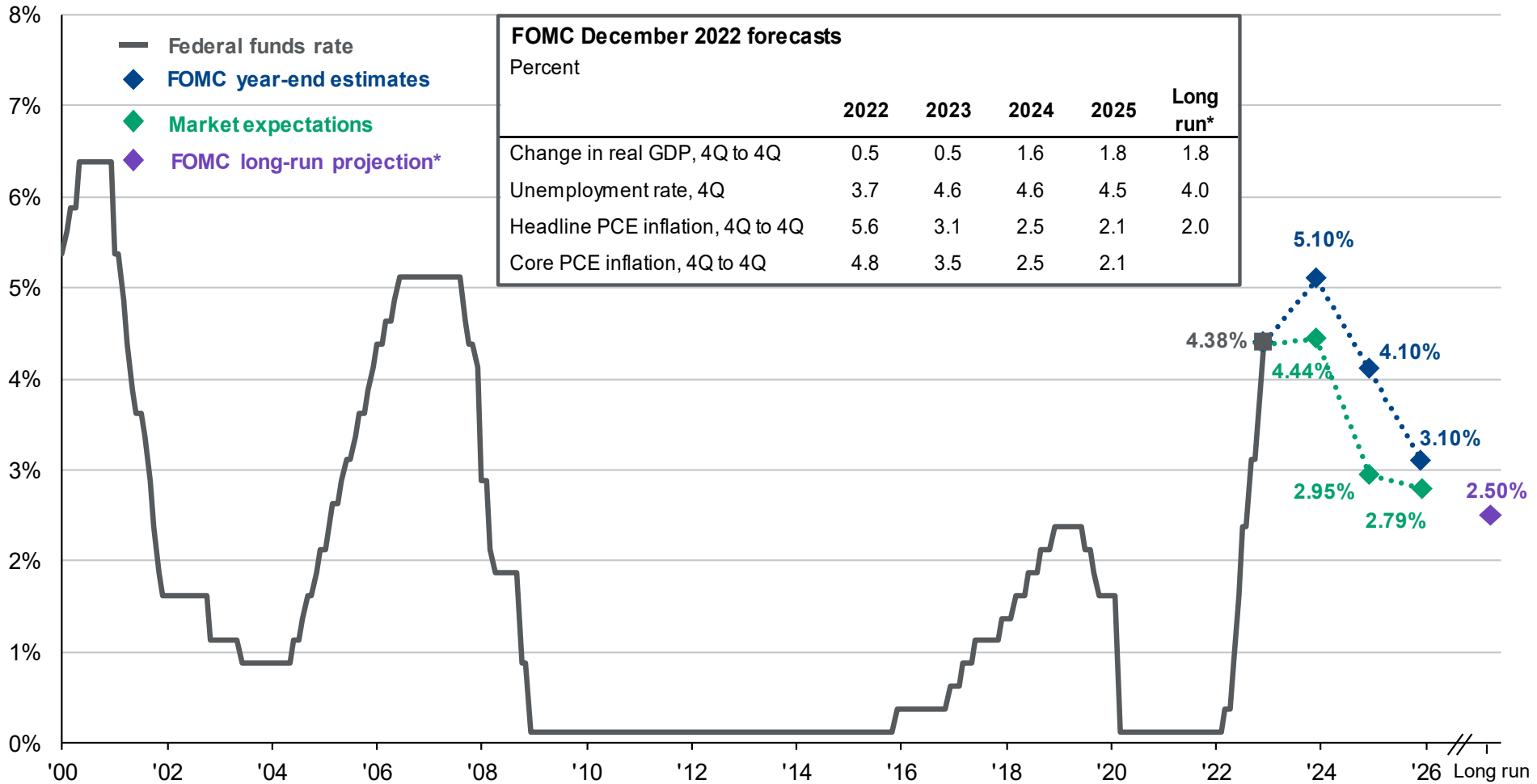


The Fed and interest rates

Fixed Income

Federal funds rate expectations

FOMC and market expectations for the federal funds rate



Source: Bloomberg, FactSet, Federal Reserve, J.P. Morgan Asset Management.

Market expectations are based off of the respective Federal Funds Futures contracts for December expiry. *Long-run projections are the rates of growth, unemployment and inflation to which a policymaker expects the economy to converge over the next five to six years in absence of further shocks and under appropriate monetary policy. Forecasts are not a reliable indicator of future performance. Forecasts, projections and other forward-looking statements are based upon current beliefs and expectations. They are for illustrative purposes only and serve as an indication of what may occur. Given the inherent uncertainties and risks associated with forecasts, projections or other forward-looking statements, actual events, results or performance may differ materially from those reflected or contemplated.

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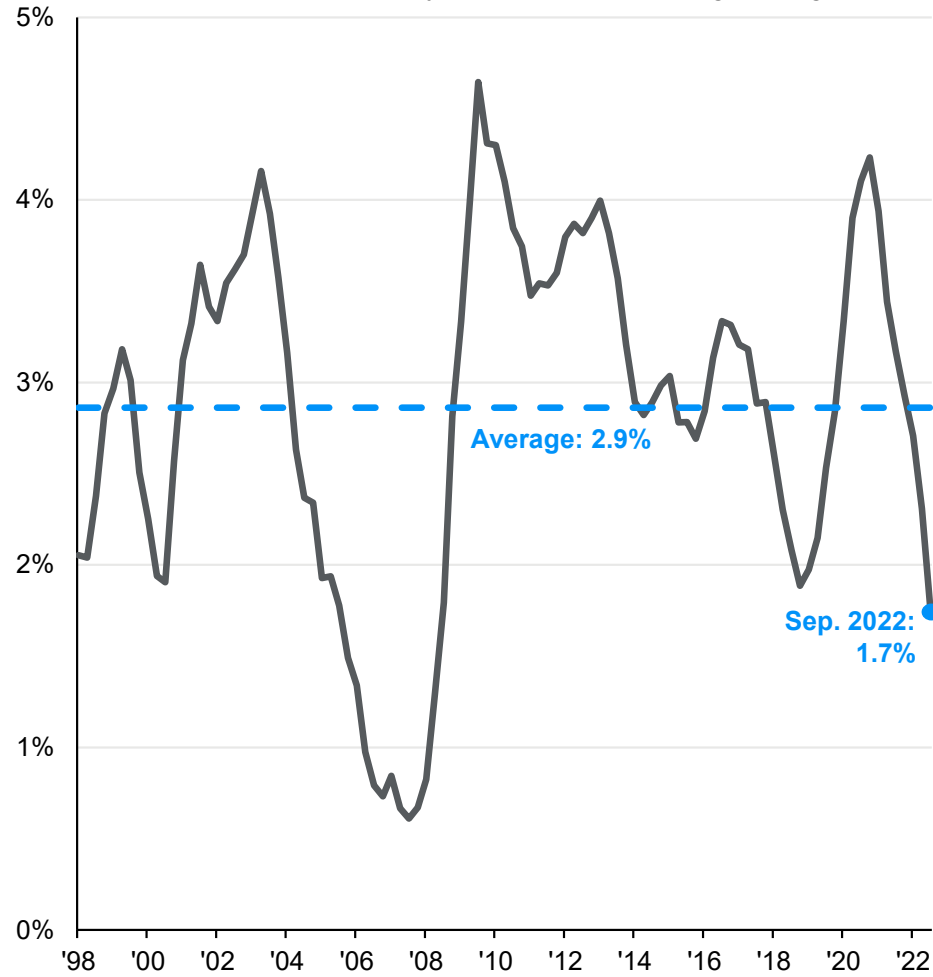


U.S. real estate dynamics

Real estate

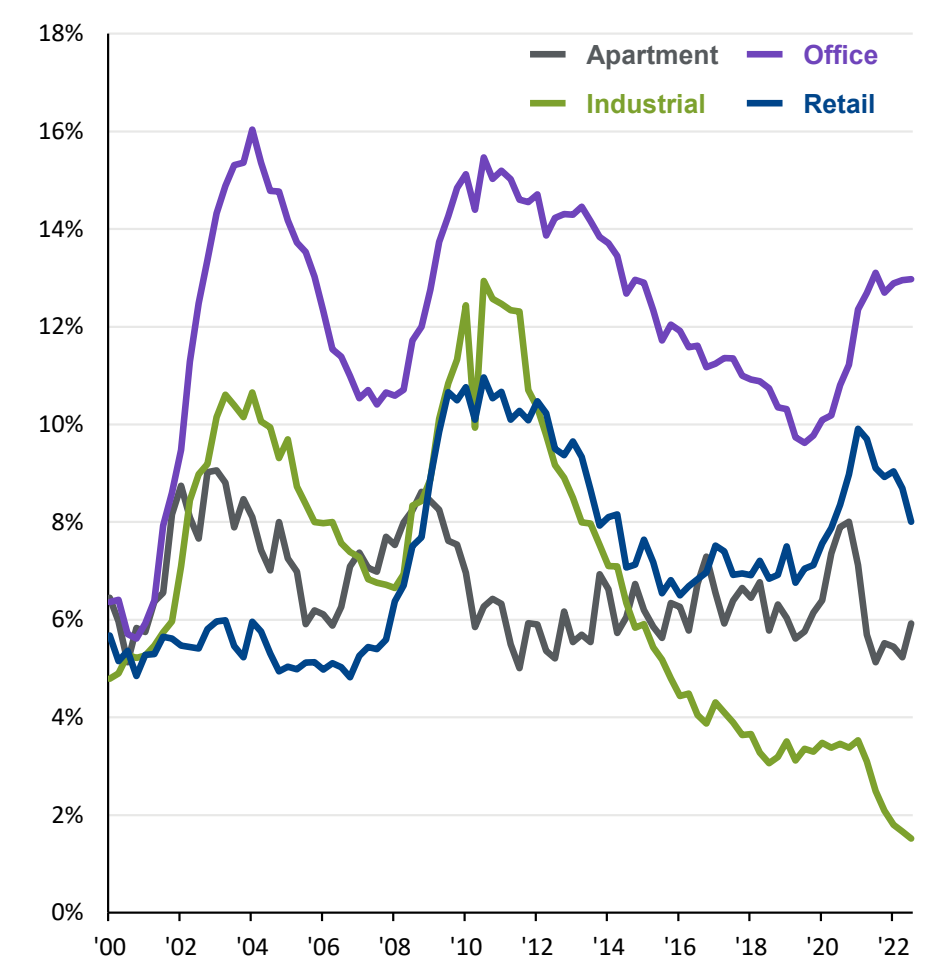
U.S. real estate cap rate spreads

Transaction based, spread to 10y UST, 4-quarter rolling average



U.S. vacancy rates by property type

Percent



Source: NCREIF, NAREIT, Statista, J.P. Morgan Asset Management.

The cap rate, which is computed as the net operating income over sales price, is the rate of return on a real estate investment property. Vacancy rate data is as of September 30, 2022.

Data is based on availability as of November 30, 2022.

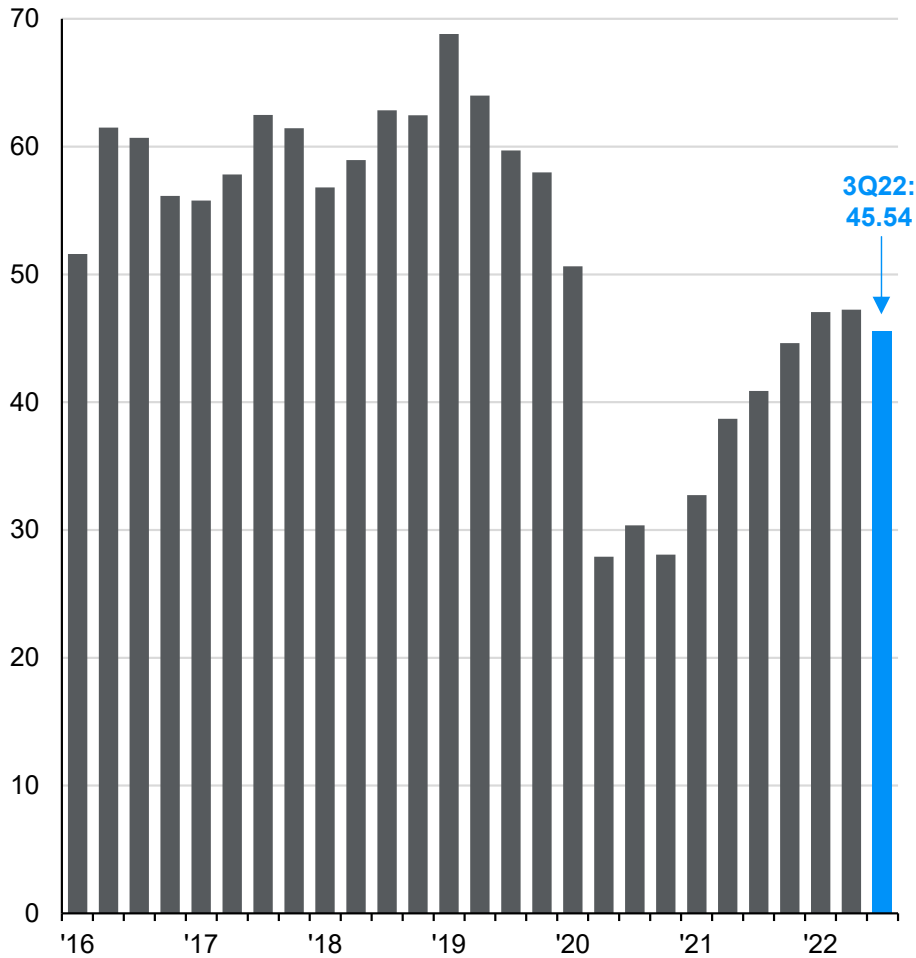


U.S. real estate: Office

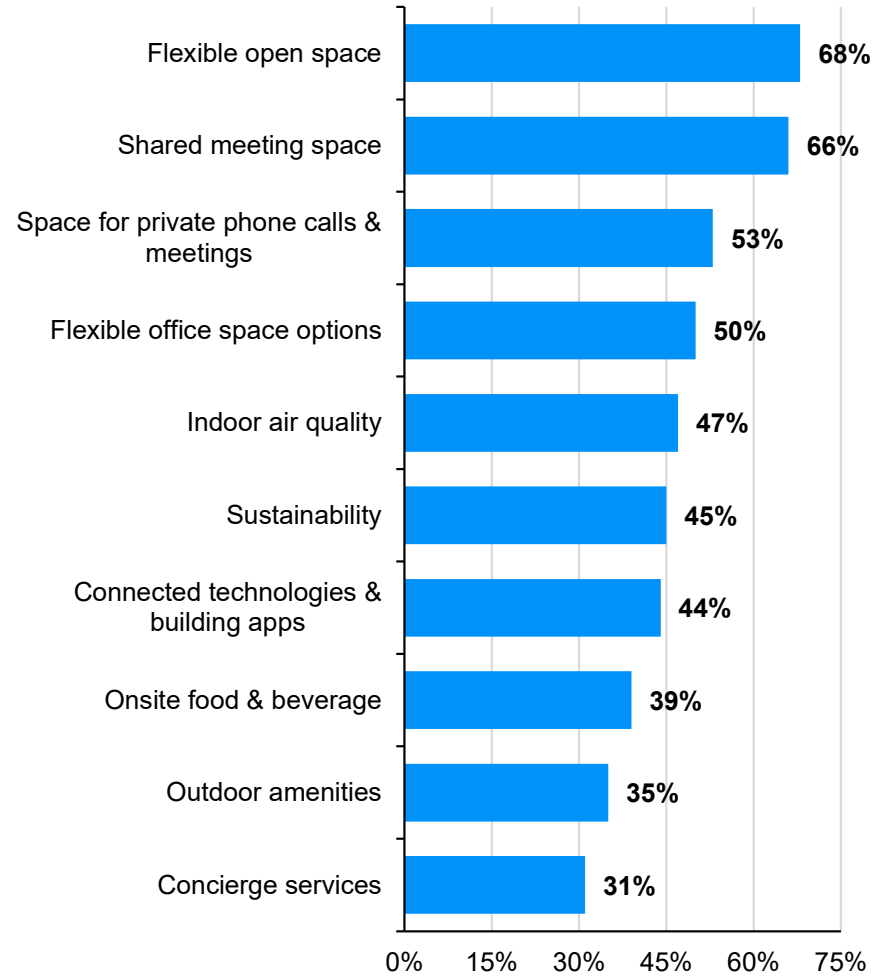
Real estate

U.S. office leasing activity

In million square feet, quarterly



Most sought-after building attributes by large companies



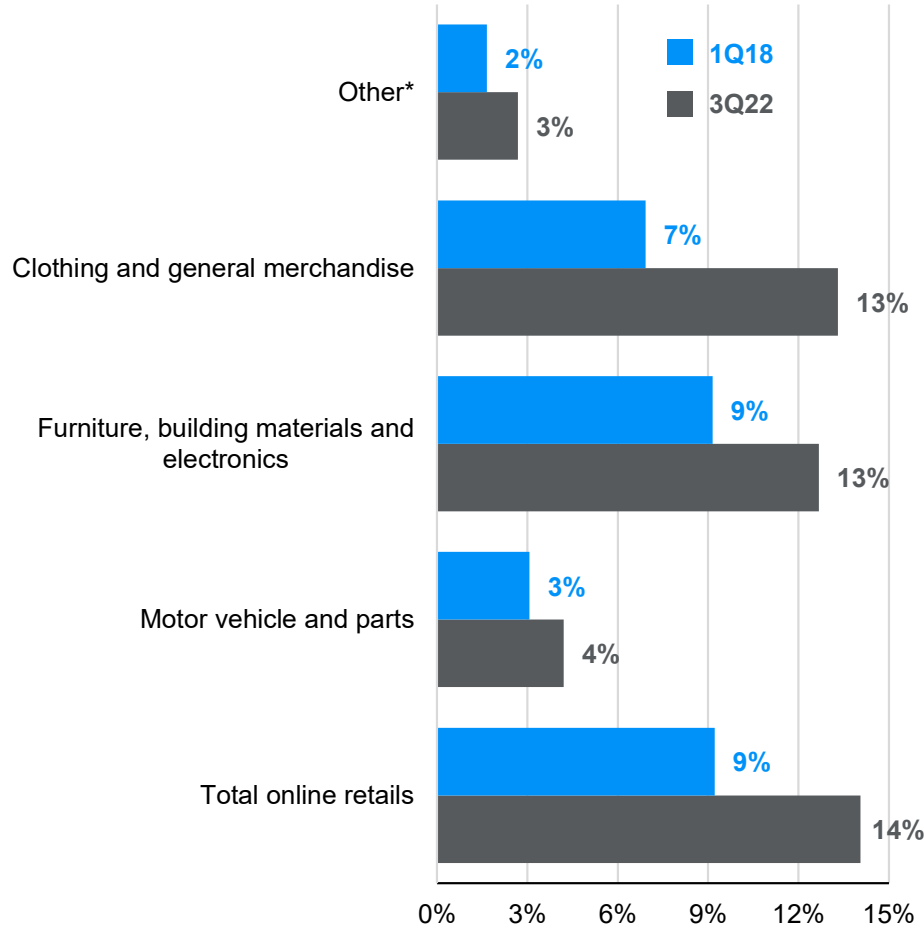
Source: JLL, CBRE, J.P. Morgan Asset Management. "U.S. Office Outlook – Q3 2022," JLL, October 2022. "Spring 2022 U.S. Office Occupier Sentiment Survey," CBRE, April 2022. The right-hand side illustrates survey responses to the question "What will be the most in-demand building attributes in the future?" Data is based on availability as of November 30, 2022.



U.S. real estate: Retail

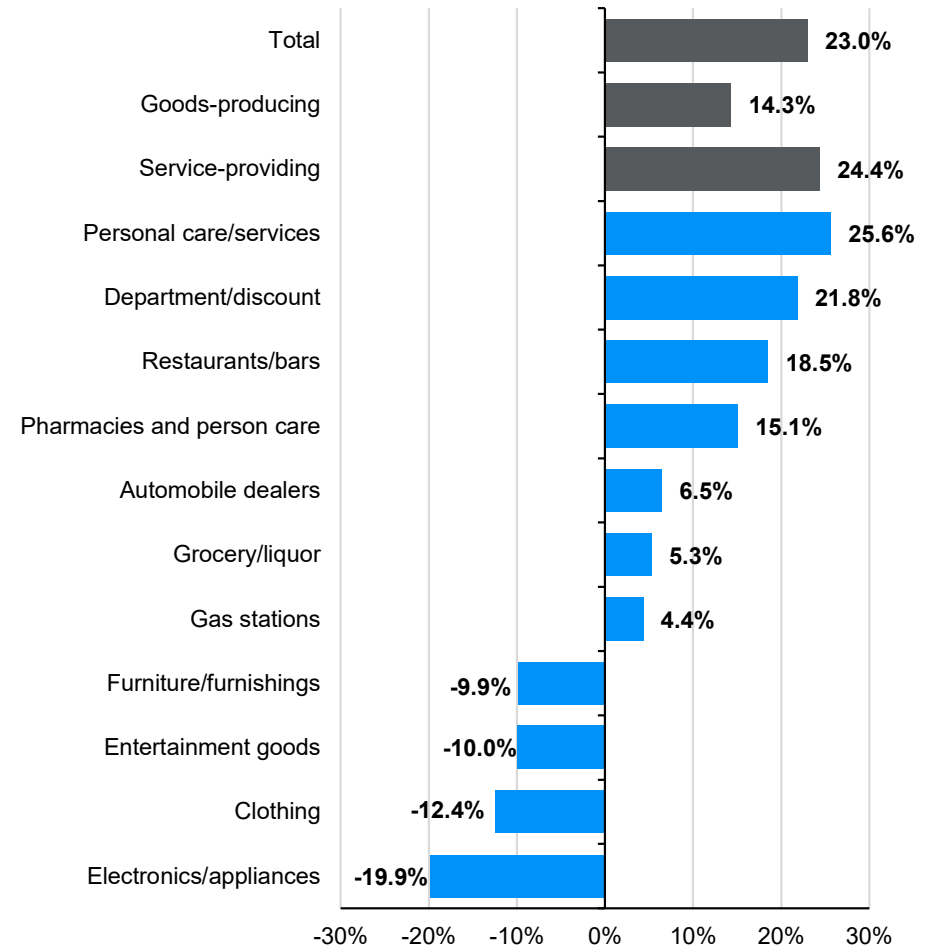
U.S. online retails sales by segment

% of total retail sales by segment, NSA



Change in number of retail establishments

4Q11 – 4Q21, percent



Source: Bureau of Labor Statistics, U.S. Census Bureau, J.P. Morgan Asset Management. Retail establishment data is through 4Q21. *Other includes food, health and entertainment. Data is based on availability as of November 30, 2022.

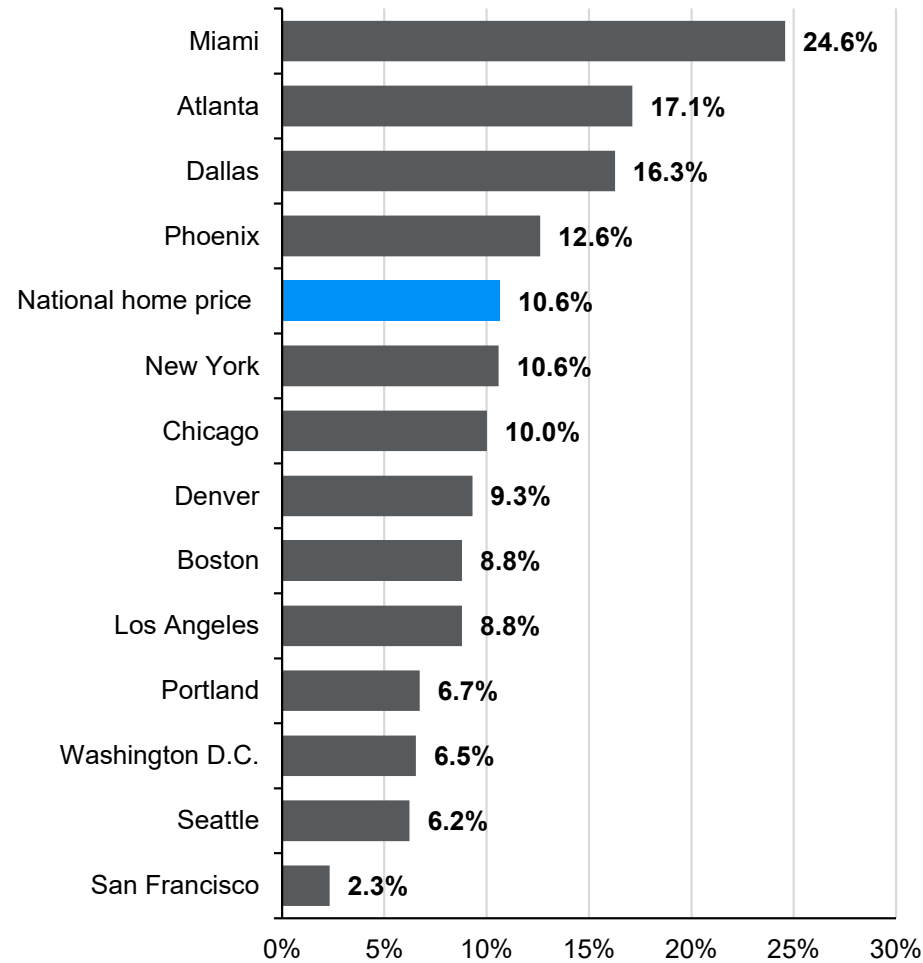


U.S. real estate: Residential

Real estate

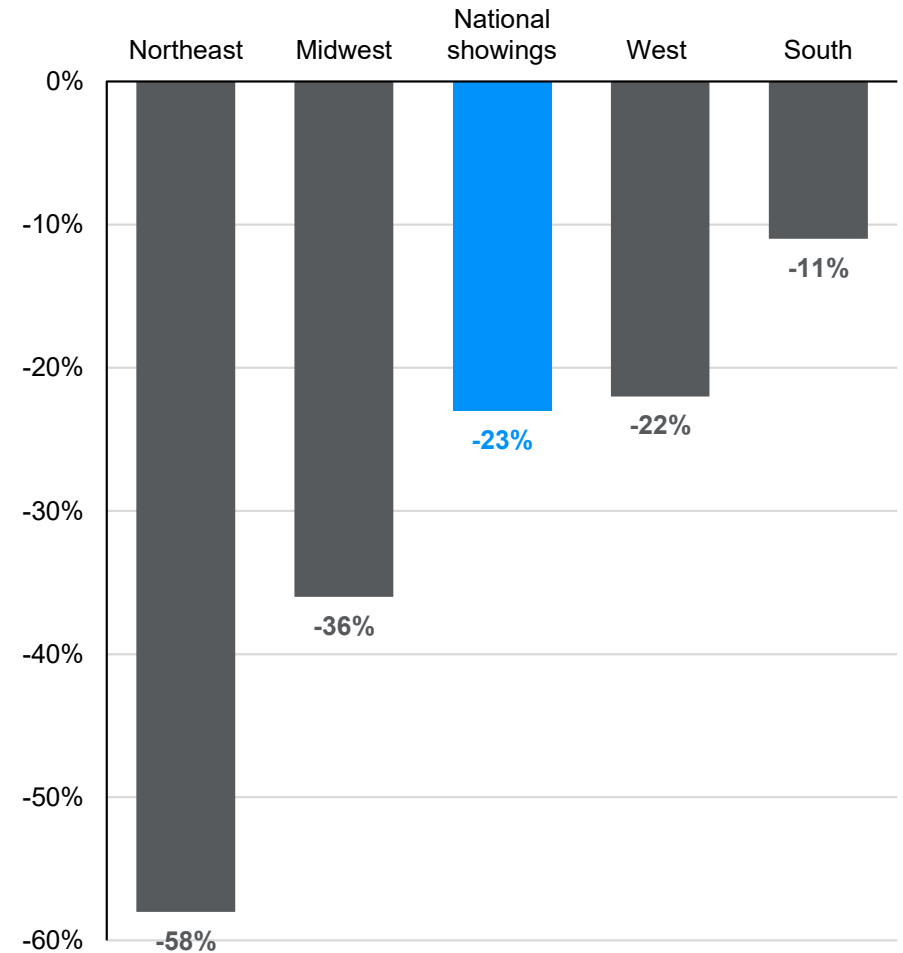
U.S. home price growth by city

S&P Case-Shiller Home Price Index, September 2022, y/y% change



U.S. residential foot traffic by region

Sentrilock home showings*, y/y% change, October 2022



Source: FactSet, National Association of Realtors, Standard & Poor's, Robert Shiller, J.P. Morgan Asset Management. *Sentrilock is the official lockbox used by the National Association of Realtors for foot traffic data. Lockboxes are used in roughly a third of home showing across the nation. Data is based on availability as of November 30, 2022.



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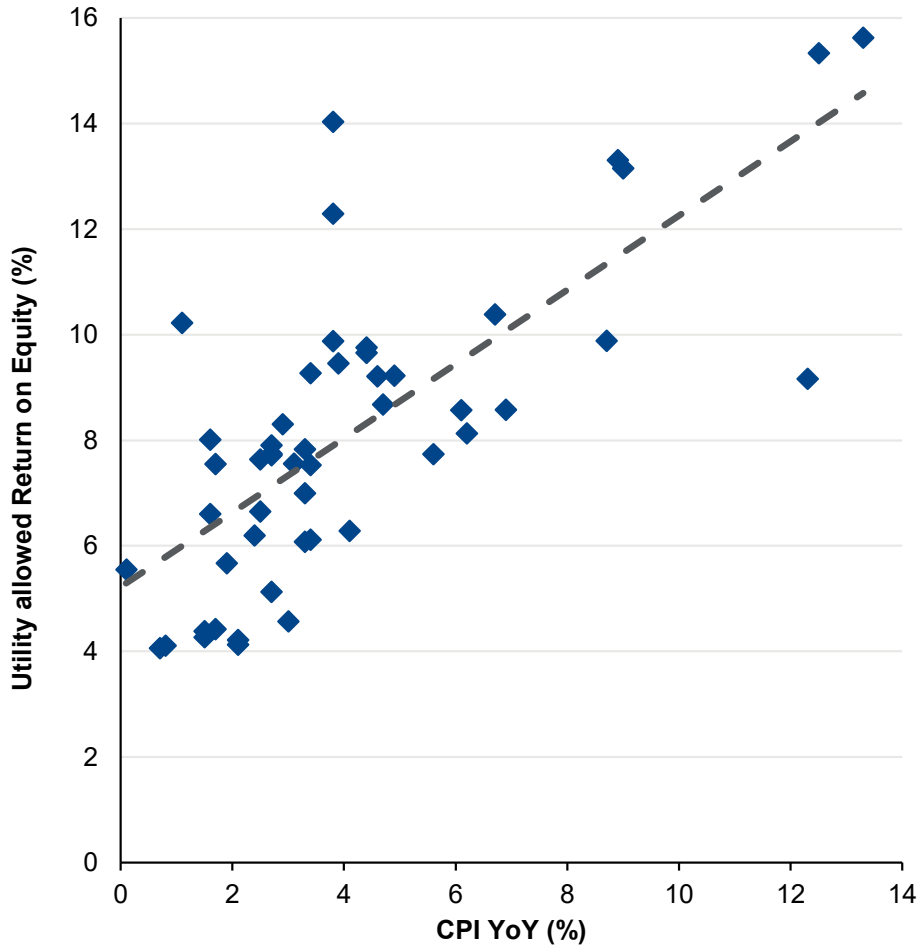


Utility profitability and household spending

Infrastructure

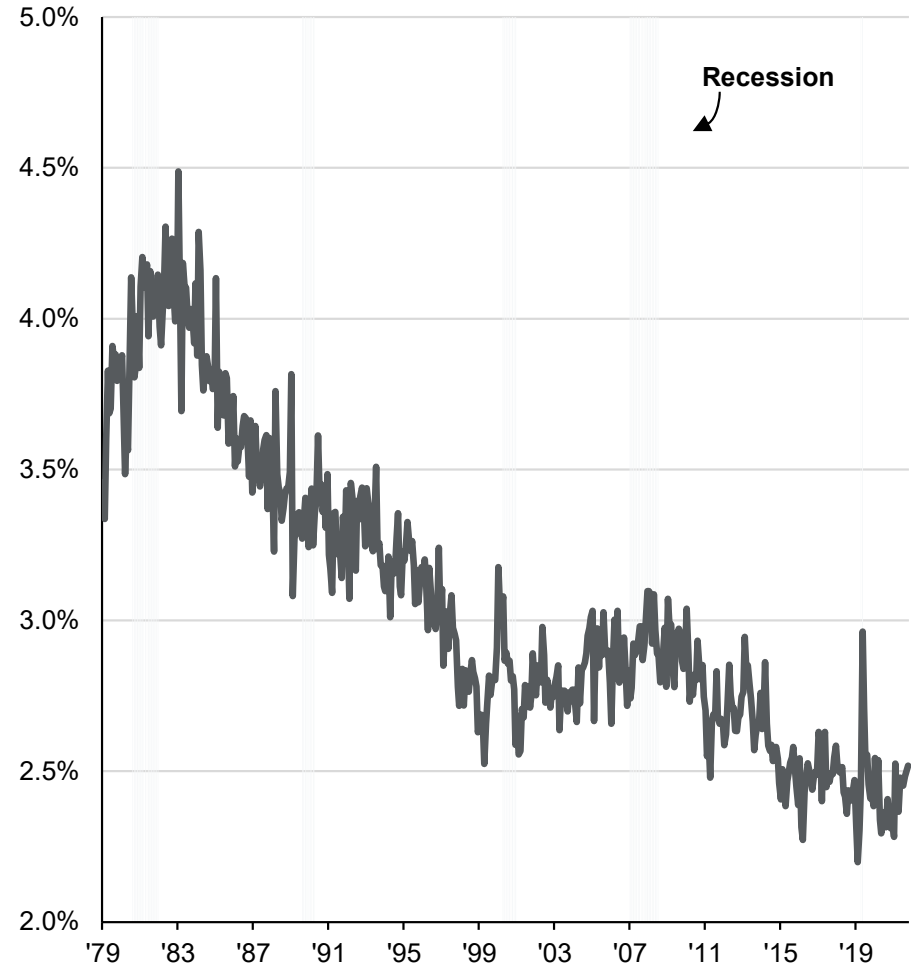
U.S. utilities allowed returns versus inflation

Average allowed return on equity*



Household utility spending

Household utility spending % of personal consumption expenditures



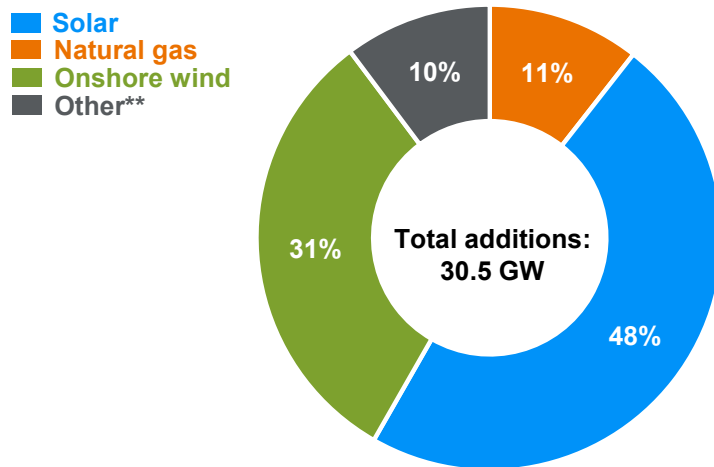
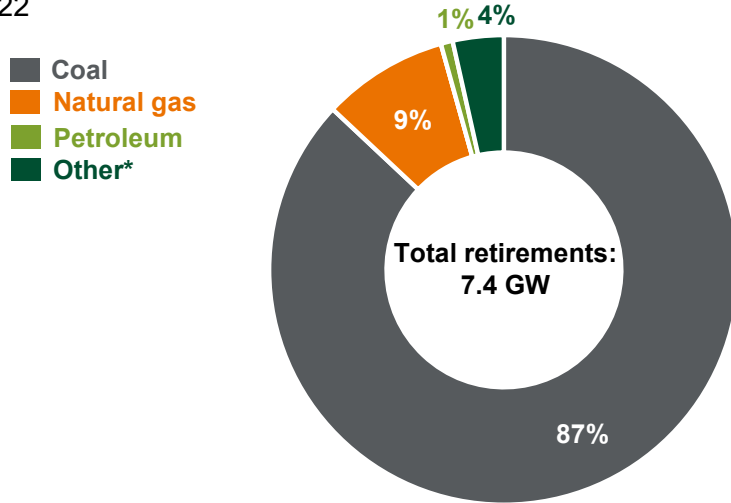
Source: Bloomberg, Bureau of Economic Analysis, SNL, AEU, J.P. Morgan Asset Management. Data represent average allowed return on equities (RoEs) for Electricity and Natural Gas Utilities, from 1970 through December 2020, and annual inflation from 1968 through 2018. *Return on equity is lagged by 2 years. Utility spending is as of March 2022. Data is based on availability as of November 30, 2022.



Global renewable energy

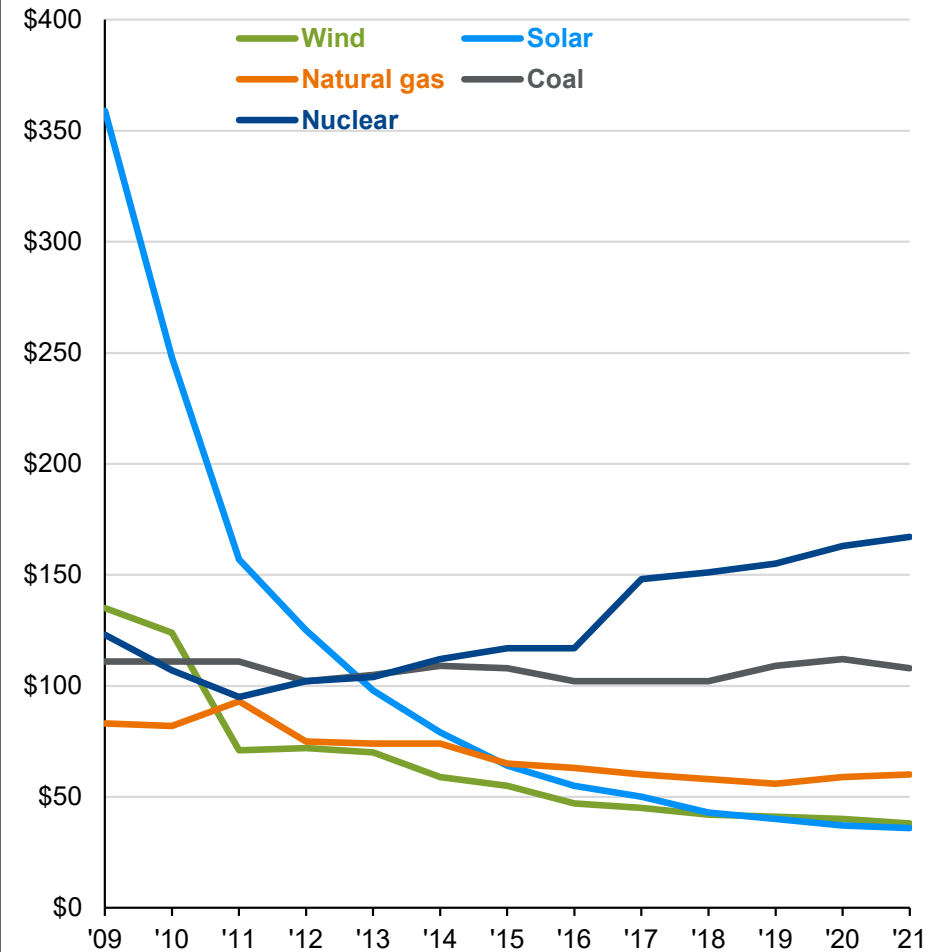
Infrastructure

Planned U.S. electricity generating capacity 2022



Cost of wind, solar, natural gas and coal

Mean LCOE*, 2021, dollar per megawatt hour



Source: EIA, Lazard, Eurostat, METI, BP Statistical, J.P. Morgan Asset Management.
 2022 planned capacity retirements and additions are from the October 2022 Monthly Electric Generator Inventory report published by the EIA.
 *Other retirements include conventional hydroelectric, wood/ wood/ waste biomass, landfill gas, onshore wind turbine and other gases. **Other additions include batteries, geothermal, conventional hydroelectric, petroleum, biomass and landfill gas. **LCOE is levelized cost of energy, the net present value of the unit-cost of electricity over the lifetime of a generating asset. It is often taken as a proxy for the average price that the generating asset must receive in a market to break even over its lifetime. Data is based on availability as of November 30, 2022.

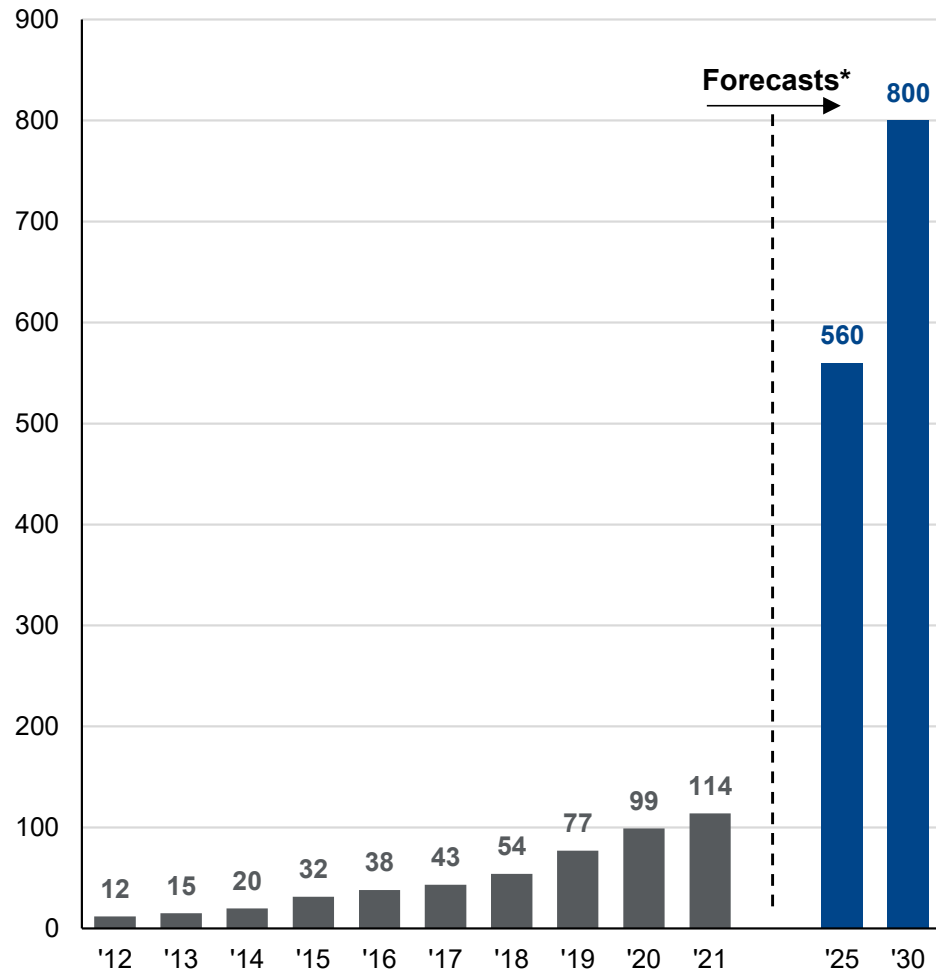


Renewable energy infrastructure

Infrastructure

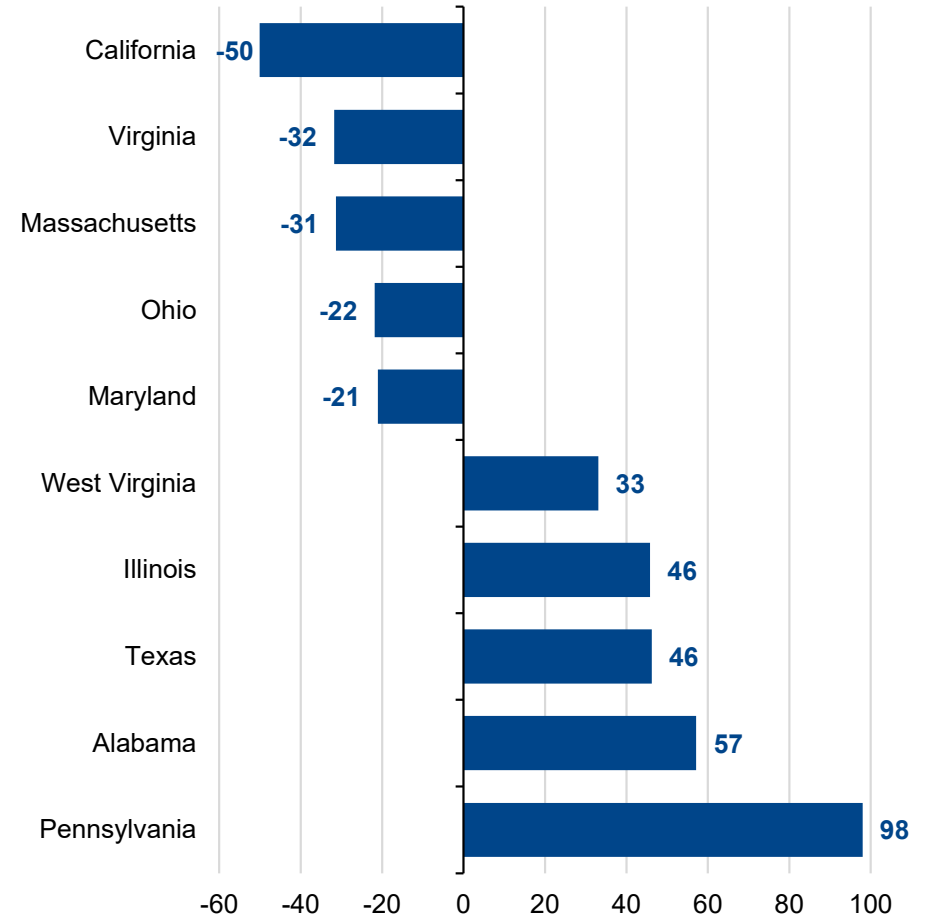
Number of electricity vehicle charging points

In thousands, U.S.



State power balances

Net electricity generation**, in million MWh, 2021



Source: EIA, J.P. Morgan Asset Management. *Forecasts are from the IEA and are made assuming their "STEPS" outlook. The State Policies Scenario (STEPS) outlook from the IEA does not assume governments will meet announced policy goals and instead looks at what the IEA considers feasible given current progress. **Net electricity generation is calculation as total electricity generation minus total retail sales of electricity.

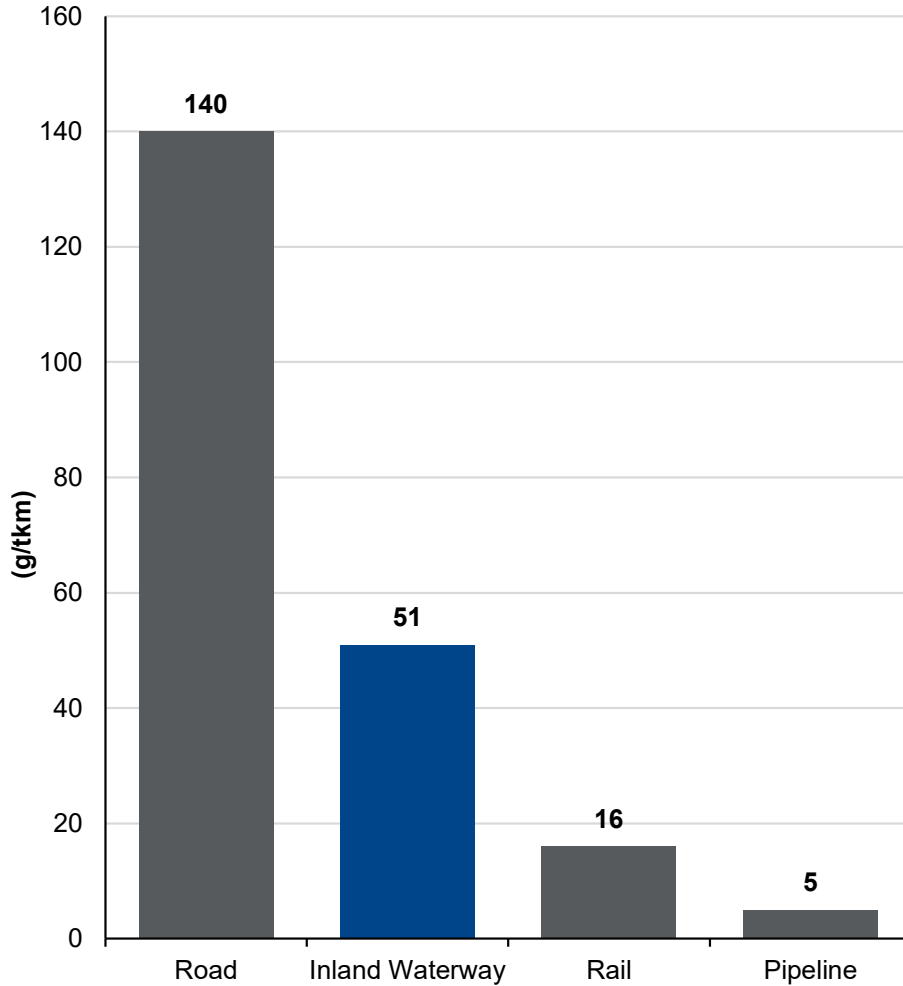
Data is based on availability as of November 30, 2022.



Natural gas trends

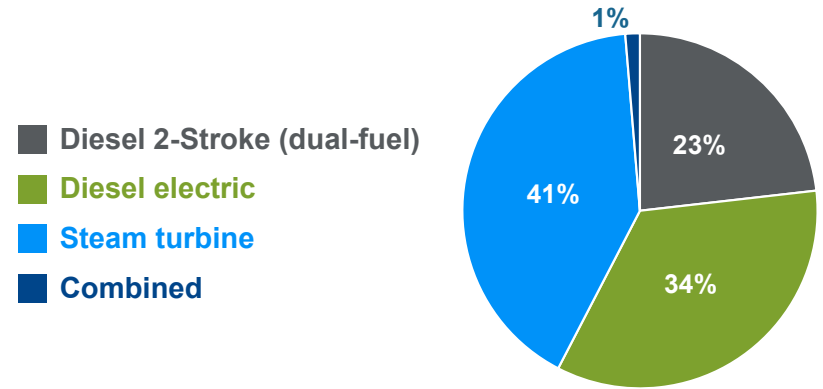
Transport

Average CO2 emissions by mode of transportation



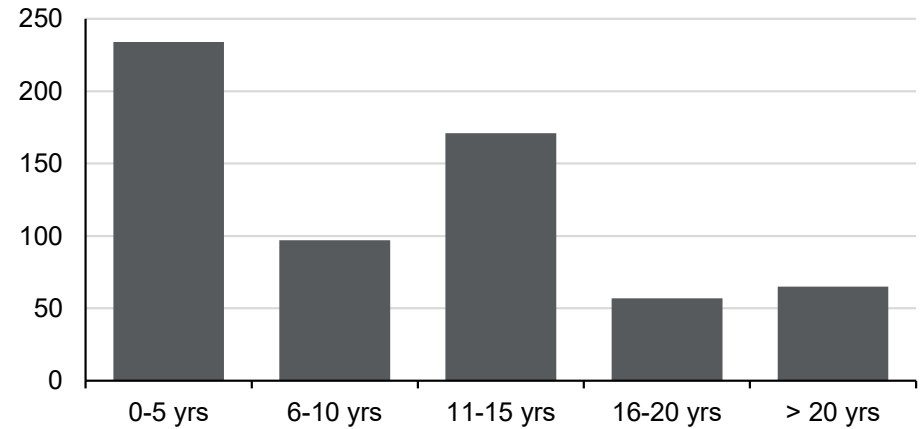
LNG carrier engine types

Share of on-water fleet, 2020



LNG carrier fleet age profile

Number of vessels, 2020



Source: BP Energy Outlook 2020, Clarkson's Research, Deutsche Verkehrs-Zeitung, European Environment Agency, European Chemical Transport Association, Management press, Roland Berger analysis, MSI Horizon, J.P. Morgan Asset Management. Data is based on availability as of November 30, 2022.

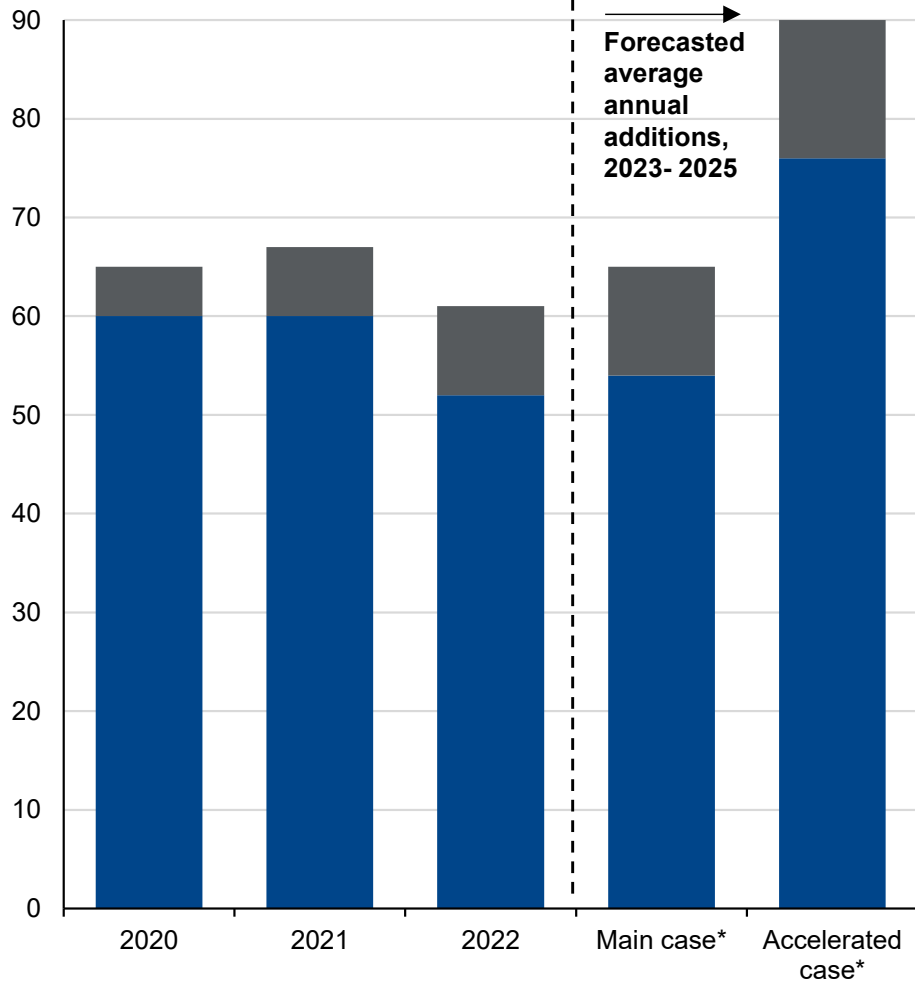


Wind power

Transport

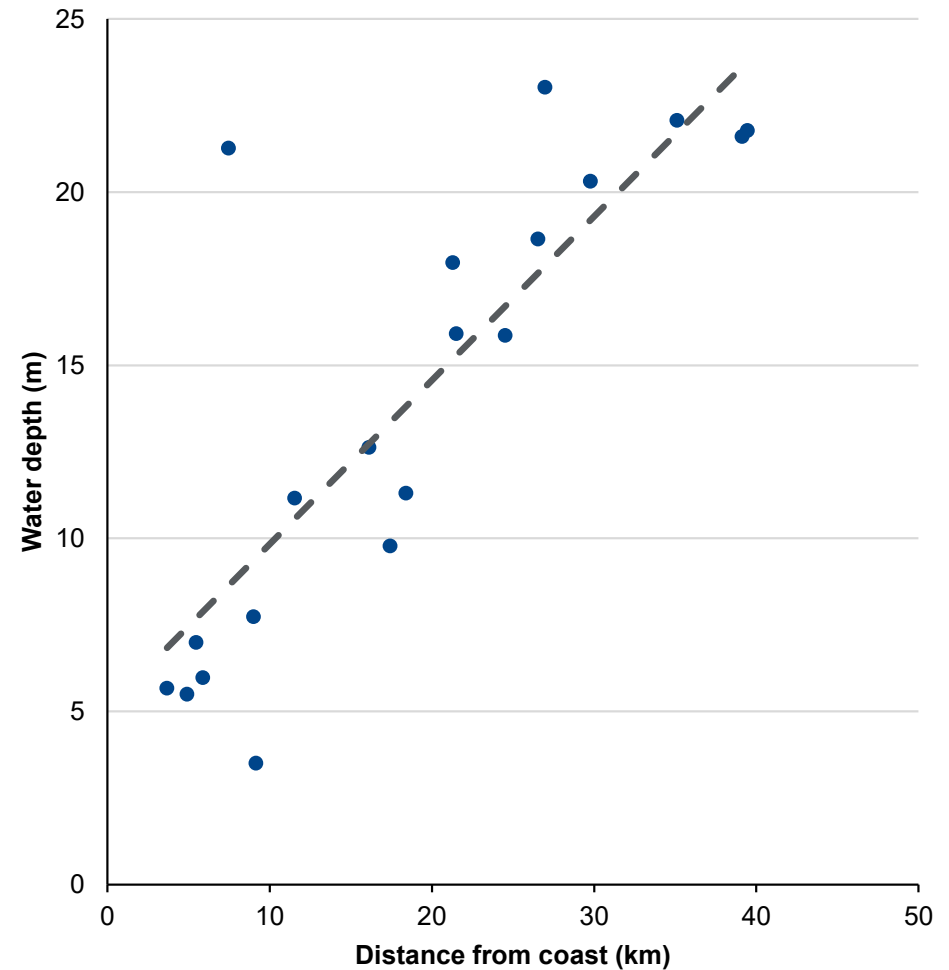
Global wind net capacity additions

Onshore versus offshore, gigawatt



Offshore wind project locations

Distance from shore and water depth



Source: IEA, The Wind Power, J.P. Morgan Asset Management. *In its “main case” scenario, the IEA projects wind, solar, hydro, and other renewable sources of energy accounting for 95% of the increase in the world’s electricity generating capacity over the next 5 years. Data is based on availability as of November 30, 2022.



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- **2023 macro outlook**
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- **Private equity valuations and the denominator effect**
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- **Private credit against a tighter monetary backdrop**

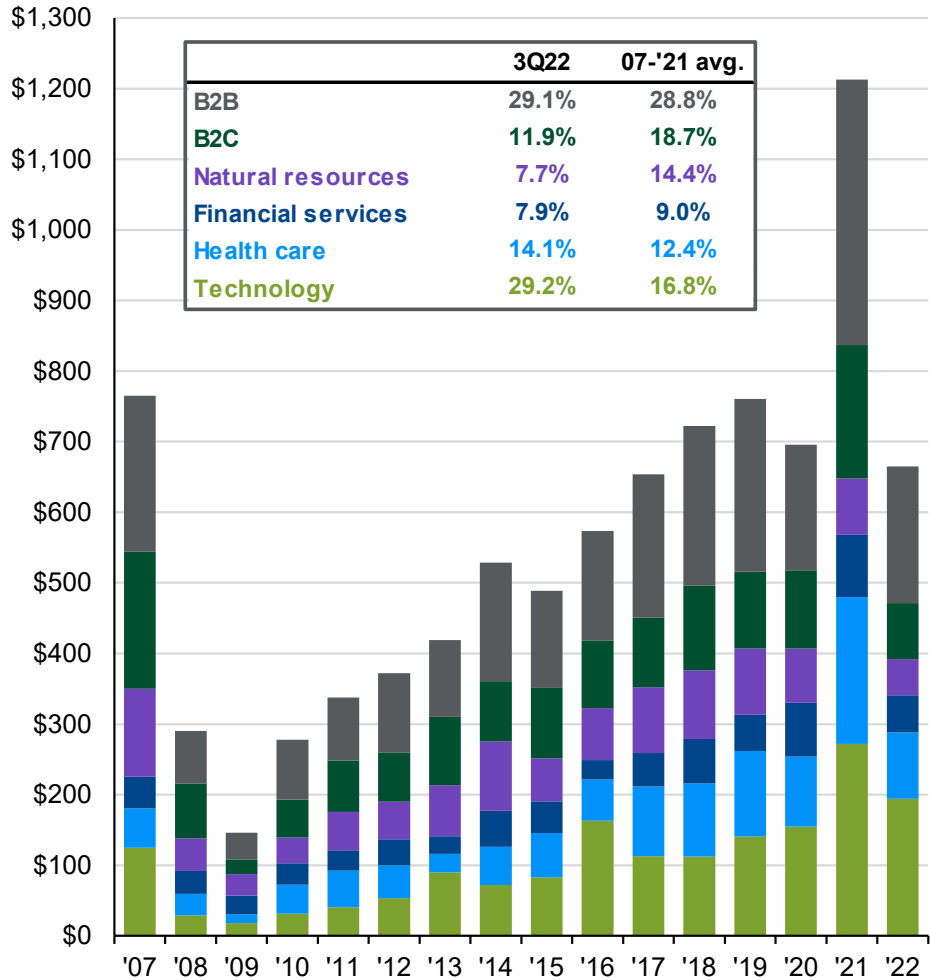


Private equity deals and exits

Private markets

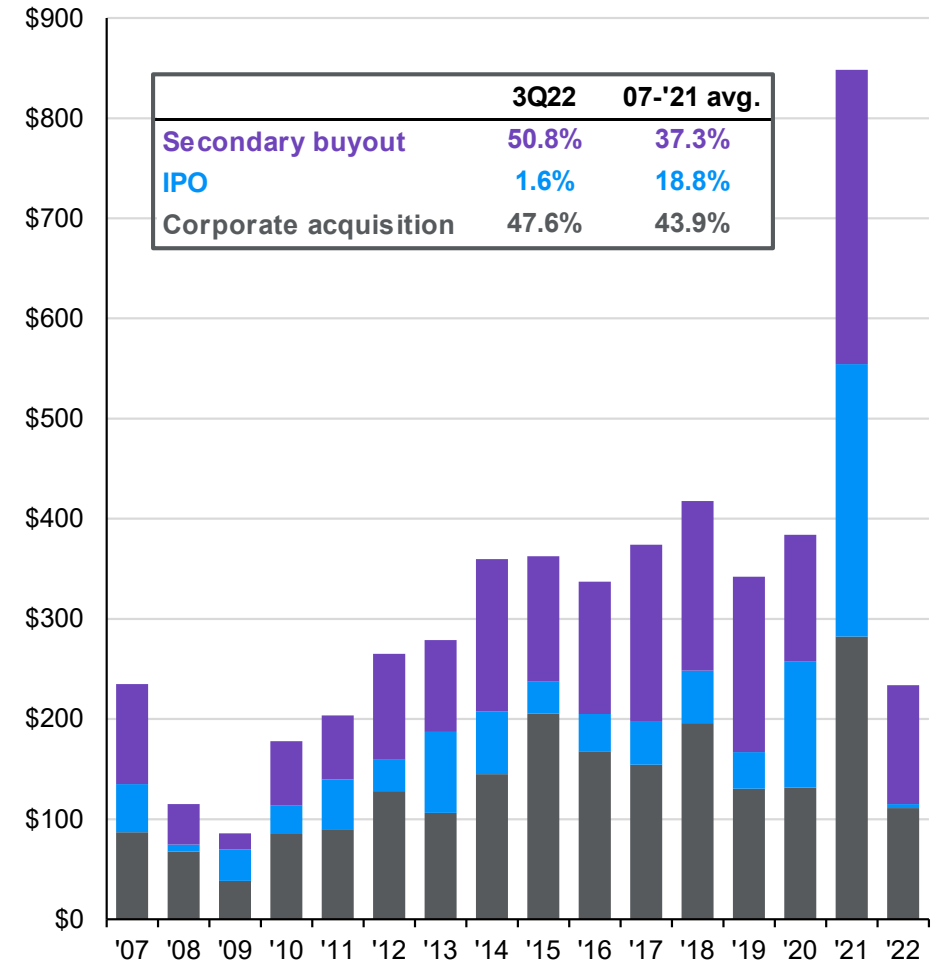
U.S. private equity deals

USD billions



Private equity exits by type

USD billions



Source: PitchBook, J.P. Morgan Asset Management.

B2B is business to business. B2C is business to consumer. Natural resources = Materials & resources and energy. Private equity deal and exit data are as of September 30, 2022.

Data is based on availability as of November 30, 2022.

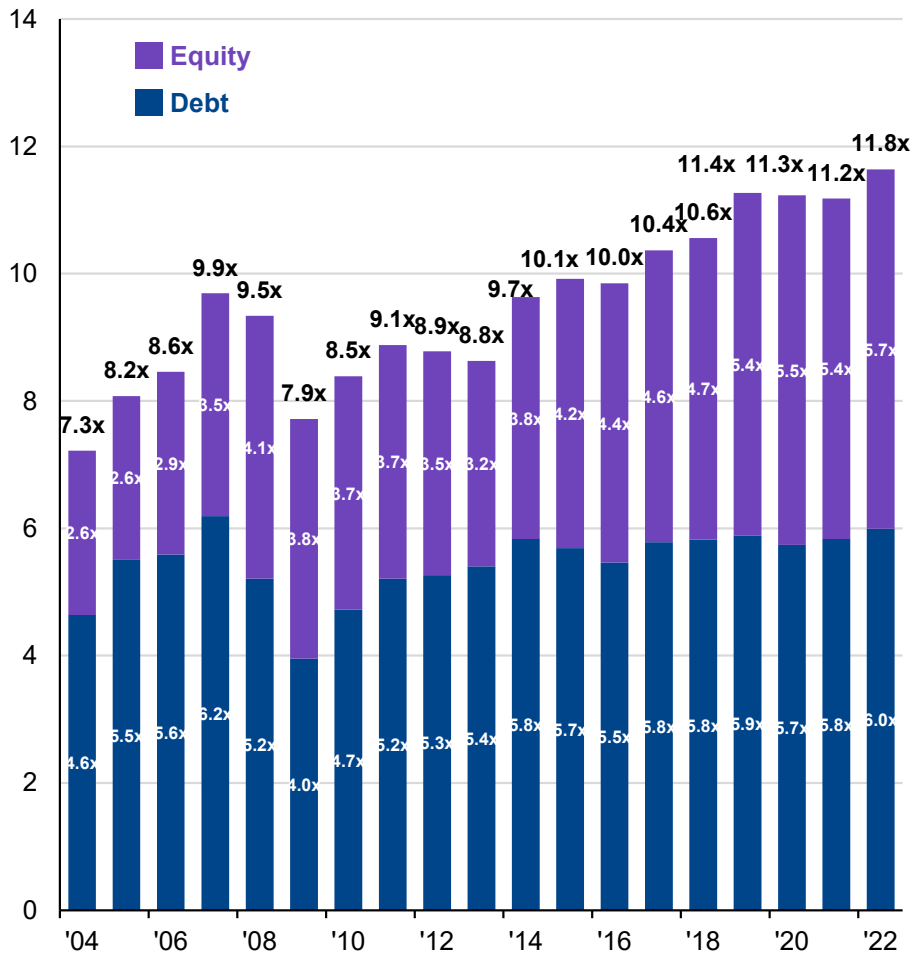


Private equity valuations

Private markets

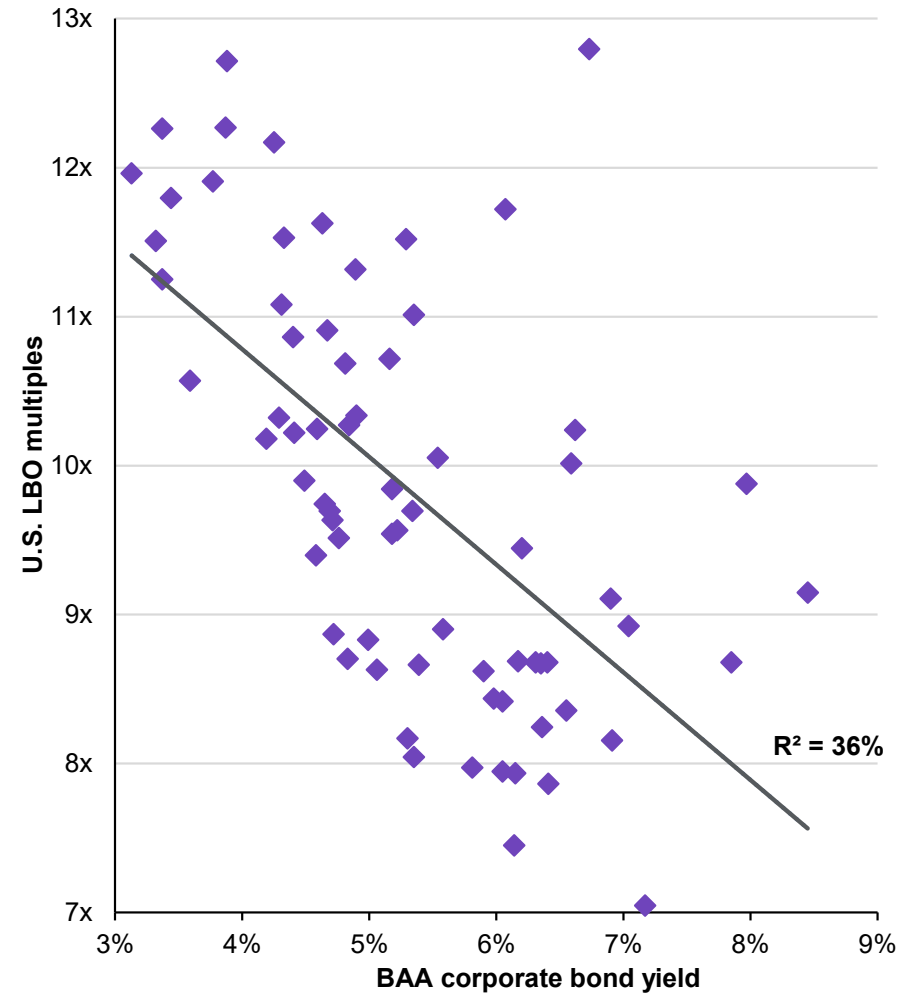
U.S. LBOs: purchase price multiples

Equity and debt over trailing EBTIDA



U.S. LBO multiples and BAA corporate bond yields

Quarterly, 2005 – 3Q22



Source: PitchBook, LCD, J.P. Morgan Asset Management. Purchase price multiples are as of September 30, 2022. Data is based on availability as of November 30, 2022.

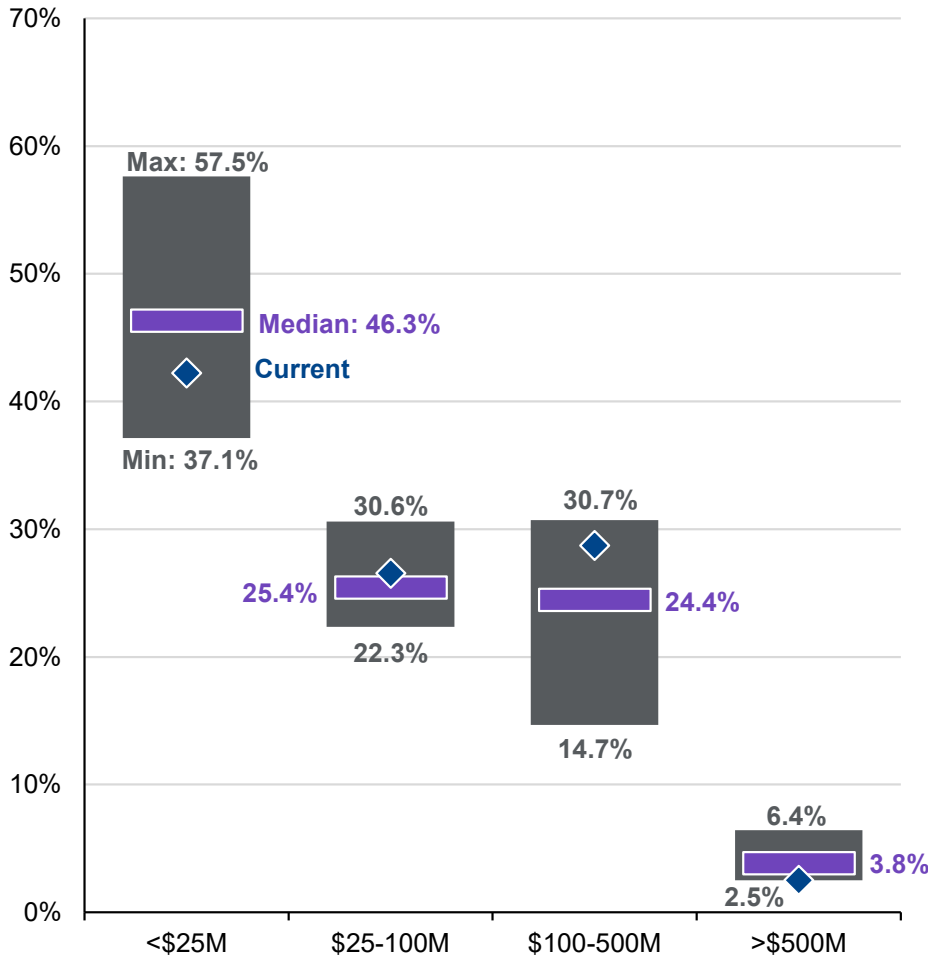


Private equity deals by size and type

Private markets

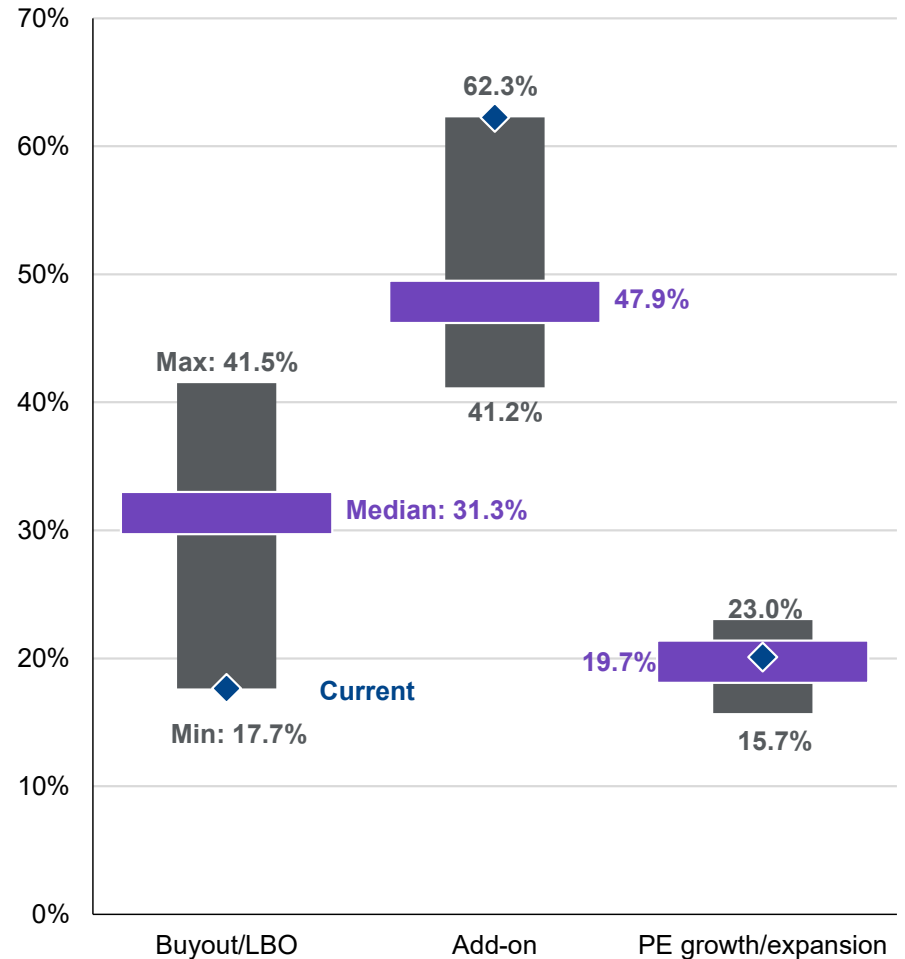
U.S. private equity deals by size

% of total deals, 2007 – 3Q22



U.S. private equity deals by type

% of total deals, 2007 – 3Q22



Source: PitchBook. J.P. Morgan Asset Management.
Private equity deal size and type activity are as September 30, 2022.
Data is based on availability as of November 30, 2022.

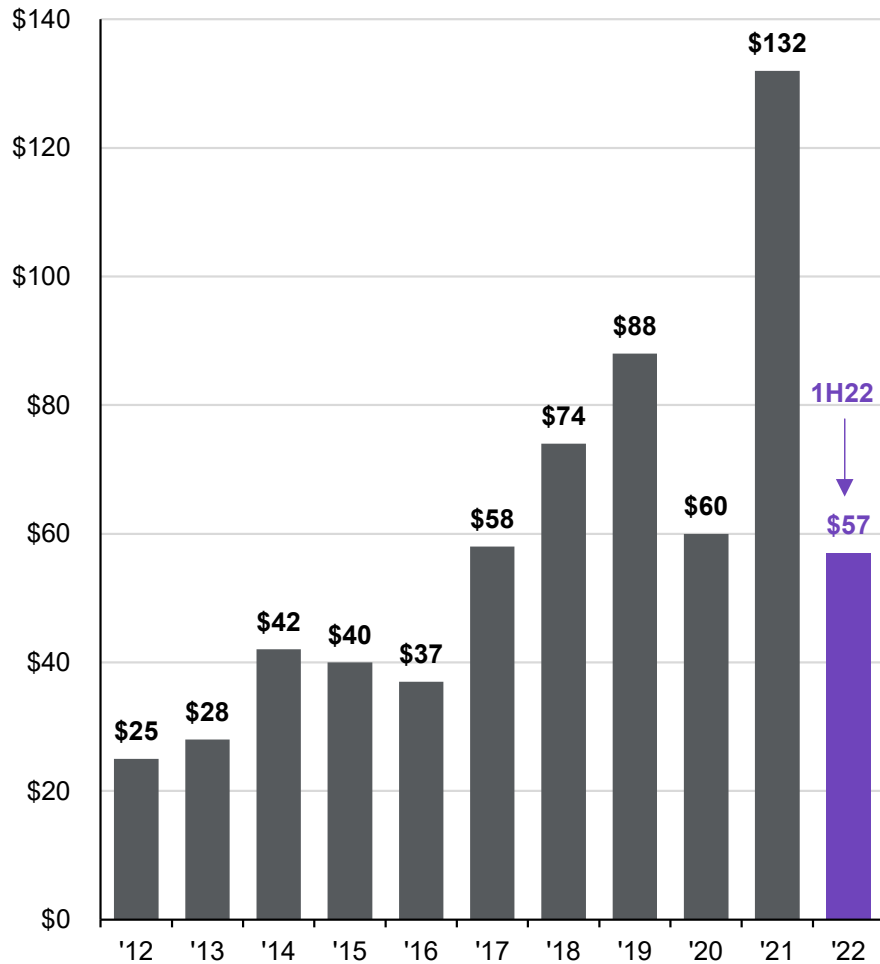


Secondary market

Private markets

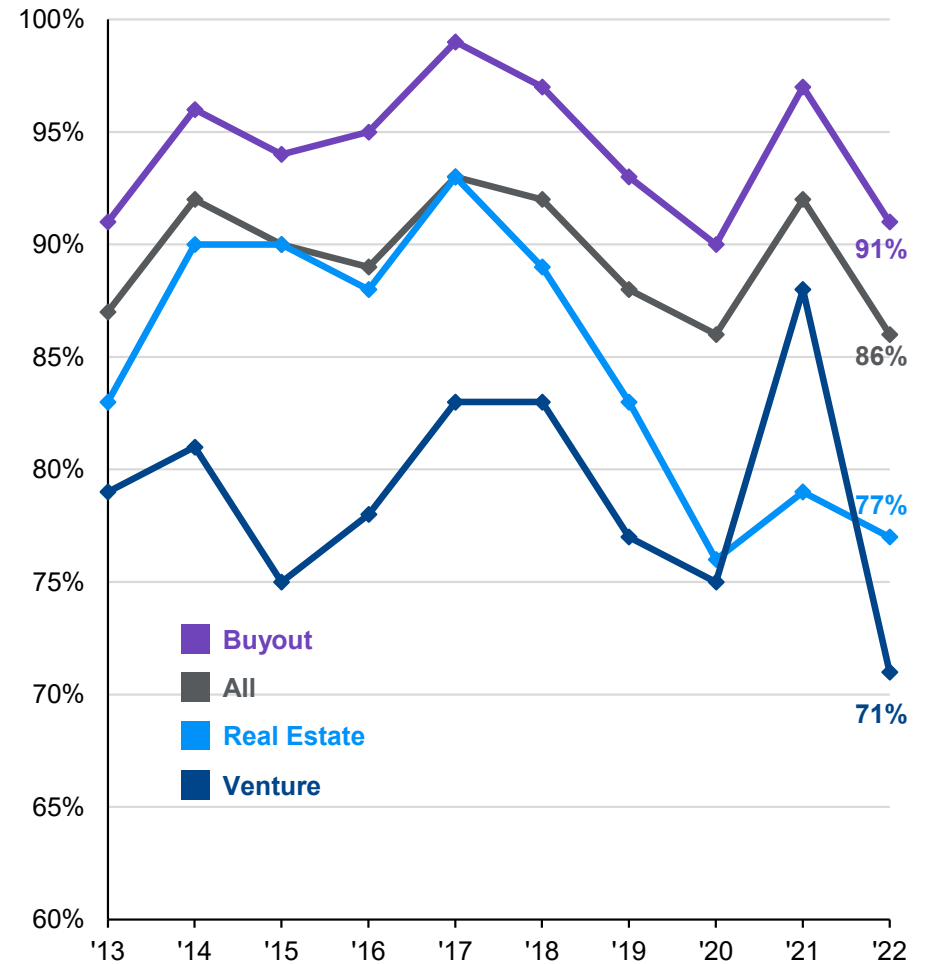
Secondary market volume

USD billions



Secondary pricing*

Percent of net asset value (NAV)



Source: Greenhill, Jefferies, J.P. Morgan Asset Management. 2022 secondary data is through 1H2022. *Secondary pricing of LP portfolios. Data is based on availability as of November 30, 2022.



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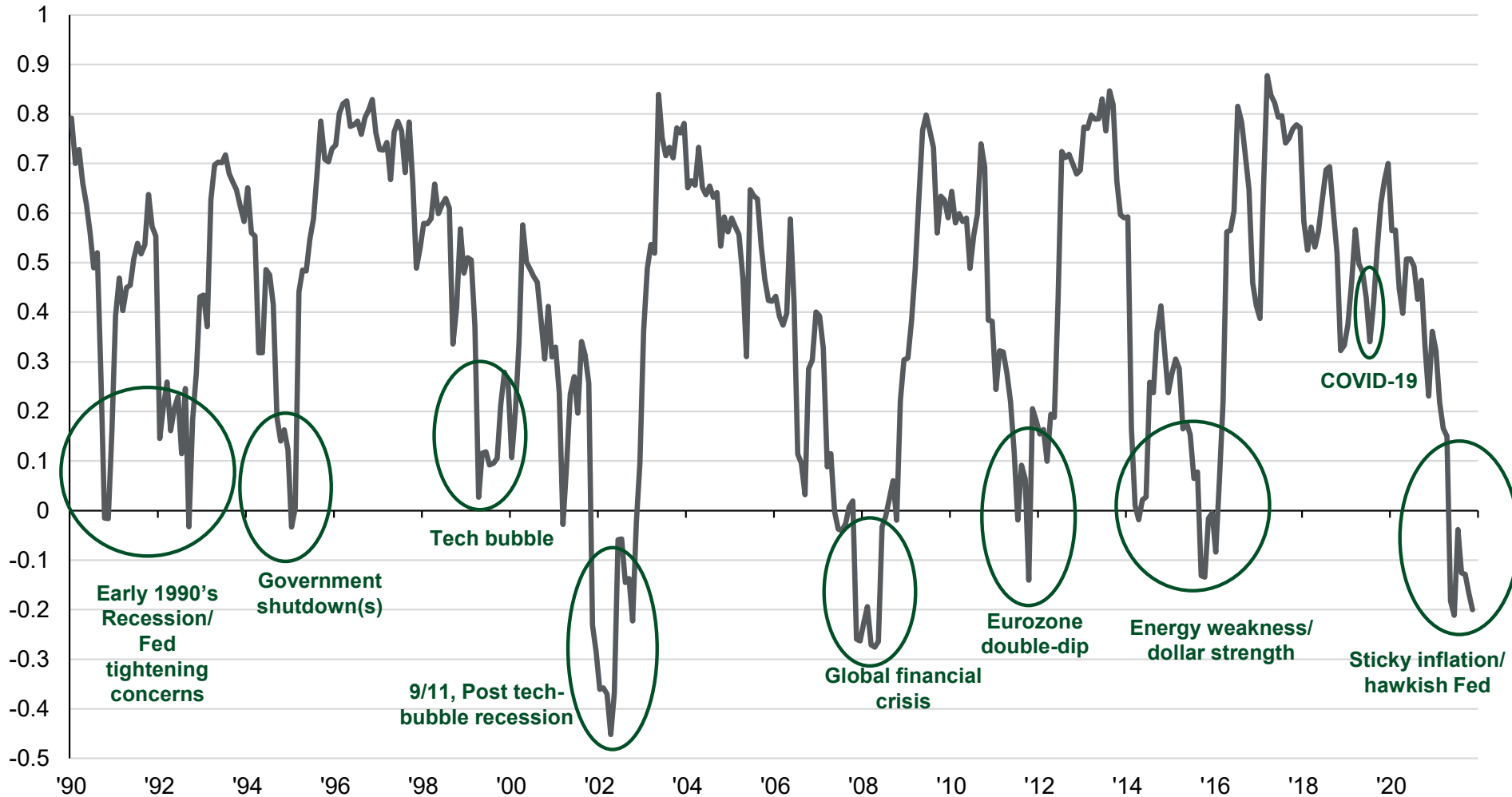
- **2023 macro outlook**
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Hedge funds and traditional portfolios

Hedge fund correlation with a 60/40 stock-bond portfolio* 1990 – August 2022, monthly

Hedge funds



Sources: HFRI, Standard & Poor's, Bloomberg, FactSet, J.P. Morgan Asset Management.

*60/40 portfolio is 60% S&P 500 and 40% Bloomberg U.S. Aggregate. Hedge funds are represented by HFRI Macro. Correlation is calculated on a 12-month rolling basis.

Data is based on availability as of November 30, 2022.

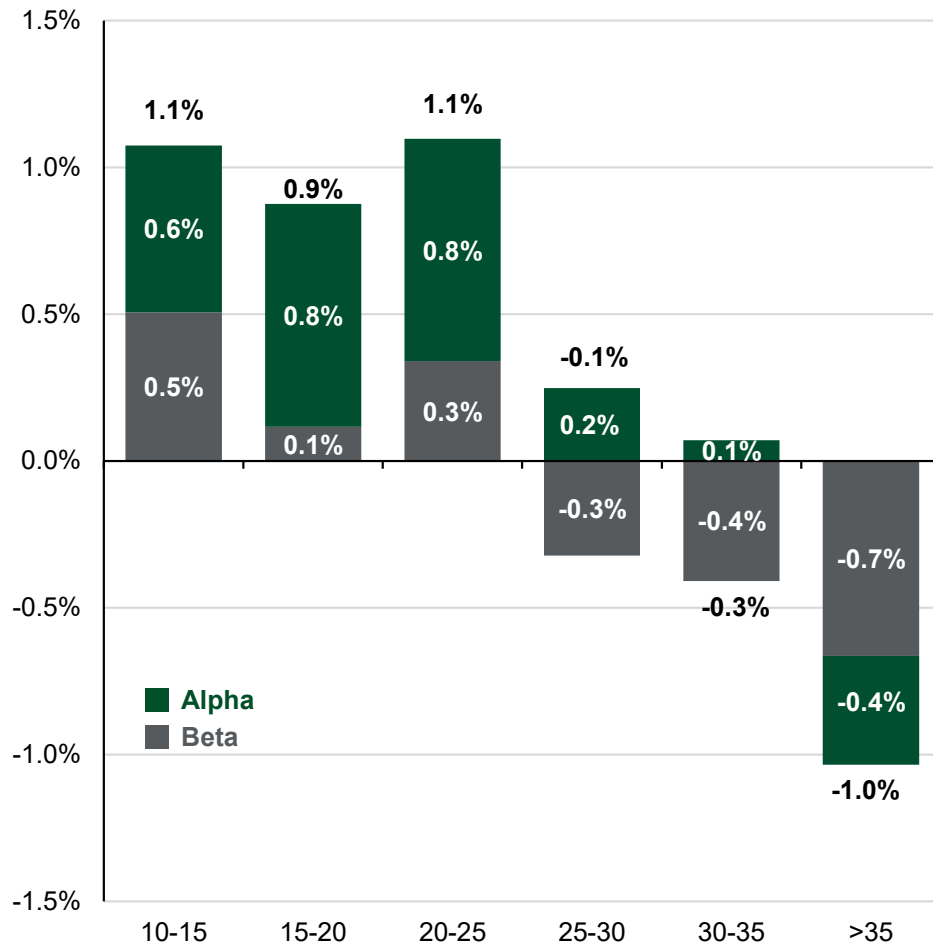


Hedge funds and volatility

Hedge funds

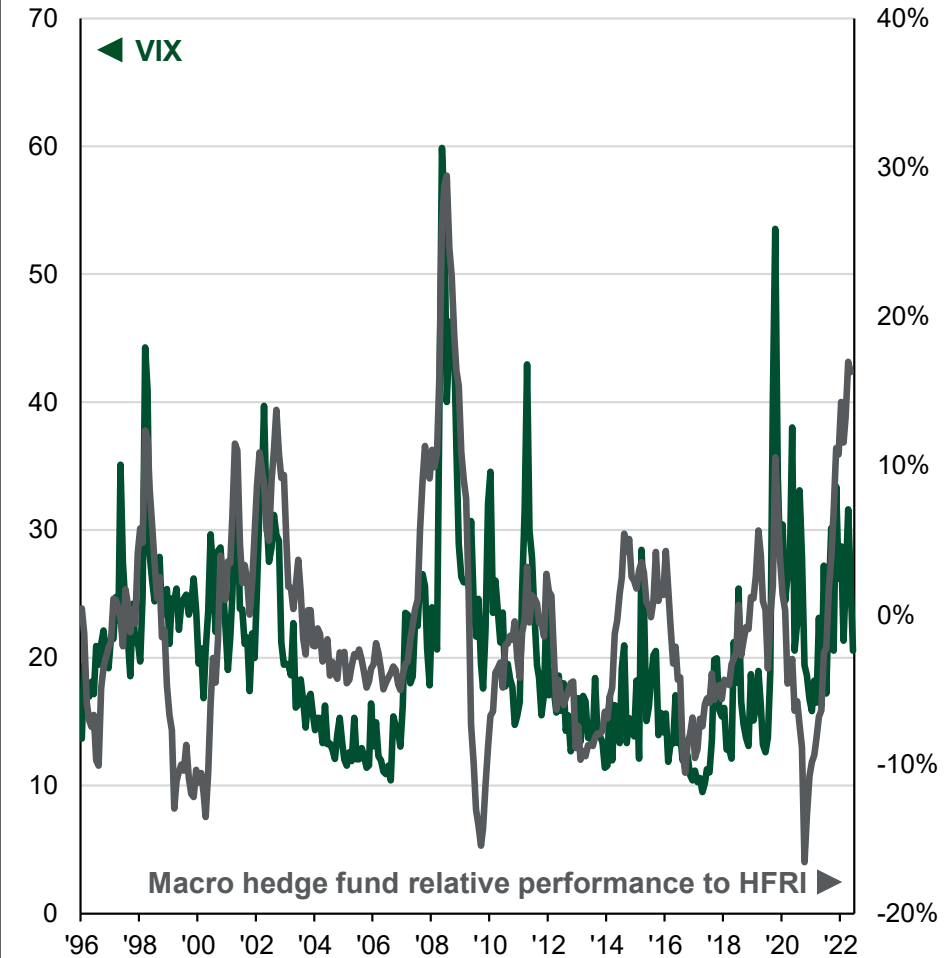
Hedge funds and volatility

Average monthly hedge fund returns by VIX level, 1990 – present



Macro hedge fund relative performance & volatility

VIX index level, y/y change in rel. perf. of HFRI Macro index



Source: HFRI, CBOE, MSCI, FactSet, J.P. Morgan Asset Management.
 Historical beta is based on regression analysis, where the HFRI is the dependent variable and the MSCI AC World Index is the independent variable.
 Monthly VIX reading is an average. Numbers may not sum to 100% due to rounding.
 Data is based on availability as of November 30, 2022

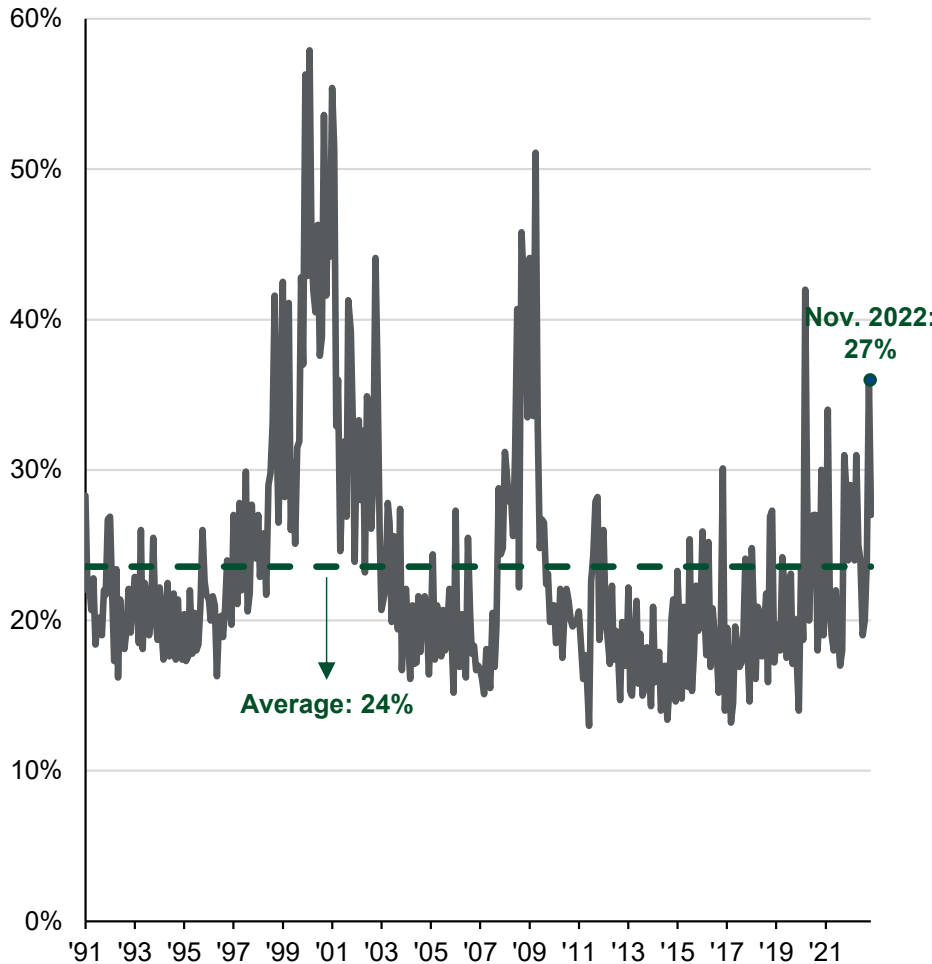


Equity and credit dispersion

Hedge funds

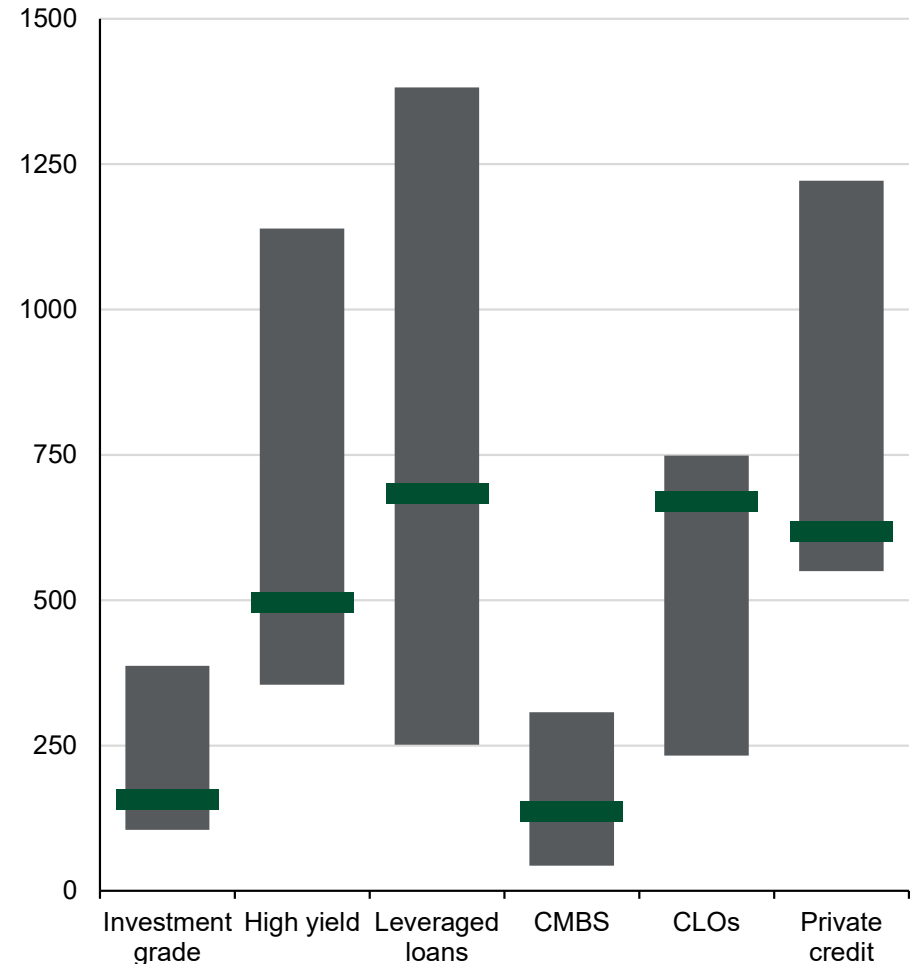
S&P 500 Index dispersion*

Monthly, 1991 – present



Credit spread dispersion**

Historical range vs. current spreads, bps, last 10 years



Source: S&P Global, HFRI, FactSet J.P. Morgan Asset Management.

*S&P 500 Index dispersion is calculated as the annualized, index-weighted standard deviation of the index constituent's' full-month total returns.

**Credit spread dispersion is represented by the historical range. Private credit spreads are as of September 30, 2022.

Data is based on availability as of November 30, 2022



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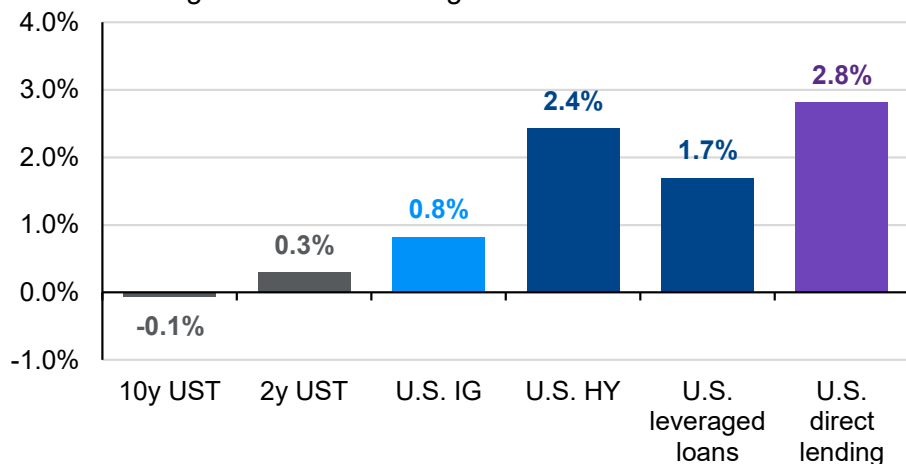


Credit returns across recent economic cycles: 2004 – 3Q22

Private markets

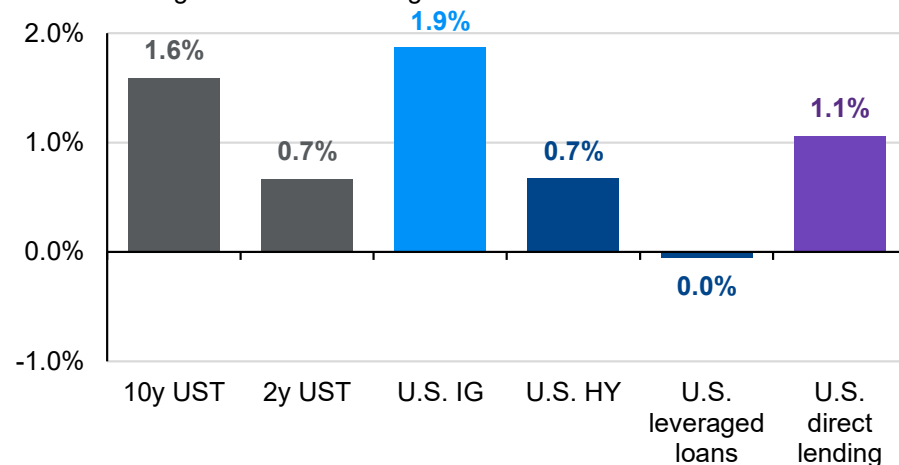
Expansion

Manufacturing ISM > 50 and rising



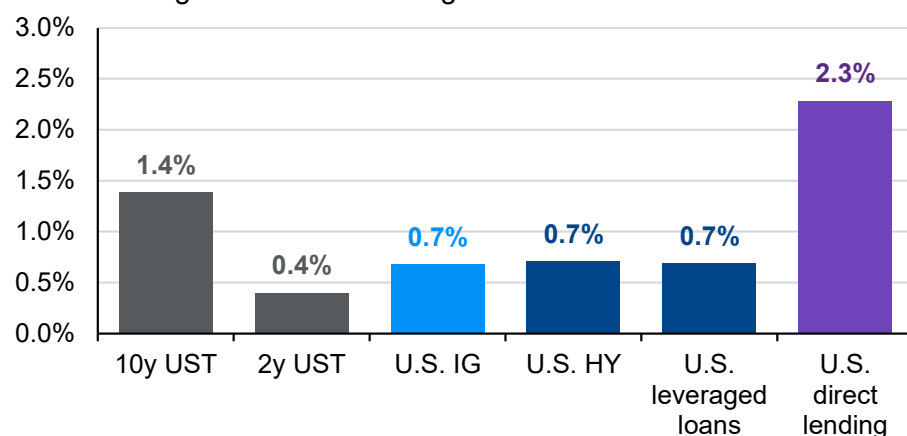
Recession

Manufacturing ISM <50 and falling



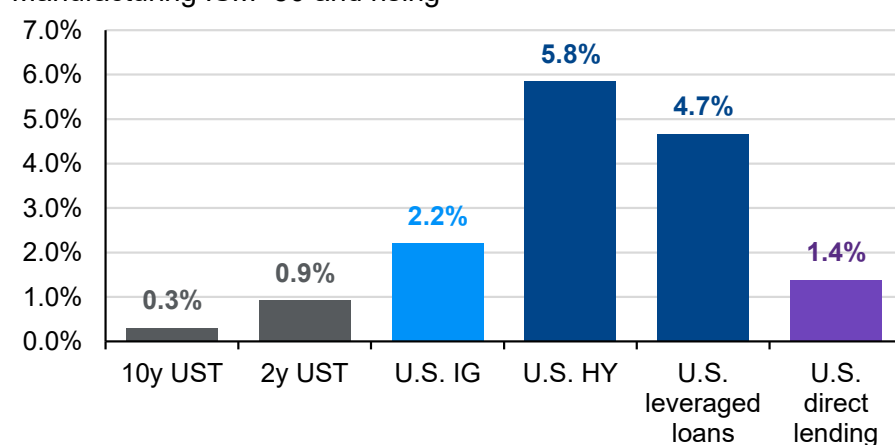
Late cycle cooling

Manufacturing ISM > 50 and falling



Turnaround

Manufacturing ISM <50 and rising



Source: Institute for Supply Management, Bloomberg, Credit Suisse, Cliffwater, J.P. Morgan Asset Management.

The ISM Manufacturing Index is a nationwide survey of purchasing executives. A reading greater than 50 indicates increased economic activity and a reading less than 50 indicates decreased economic activity. 10y UST: Bloomberg U.S. Treasury Bellwethers (10y), 2y UST: Bloomberg U.S. Treasury Bellwethers (2y), U.S. IG: Bloomberg U.S. Aggregate Corporate Investment Grade, U.S. HY: Bloomberg U.S. Aggregate Corporate High Yield, U.S. leveraged loans: Credit Suisse Leveraged Loan Index, U.S. direct lending: Cliffwater Direct Lending Index. All returns are from 12/31/2004 through 9/30/2022.

Data is based on availability as of November 30, 2022.

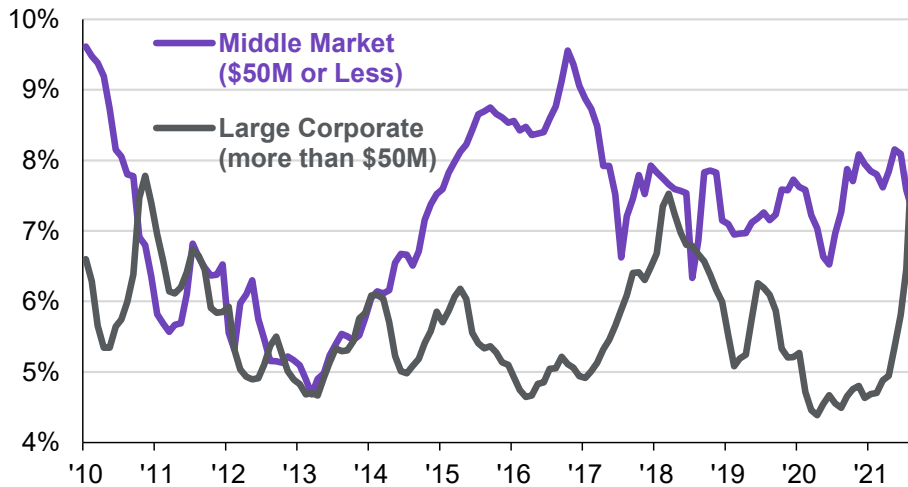


Loan issuance by purpose and quality

Private markets

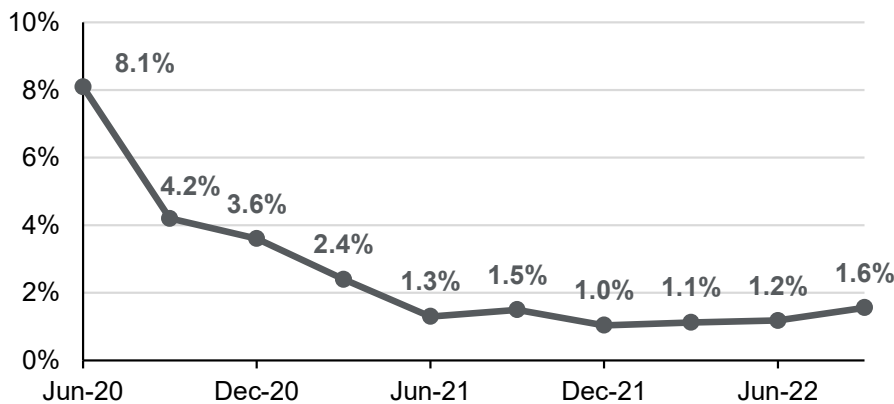
New issue yields

December 2010 – July 2022*, monthly, by EBITDA



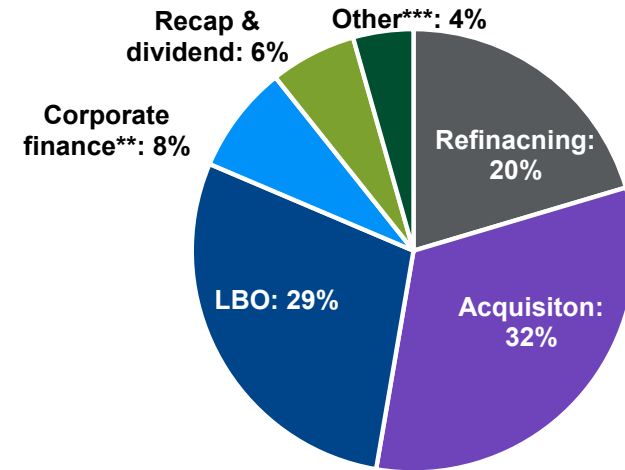
Private credit default rate

Quarterly, 2Q20 – 3Q22



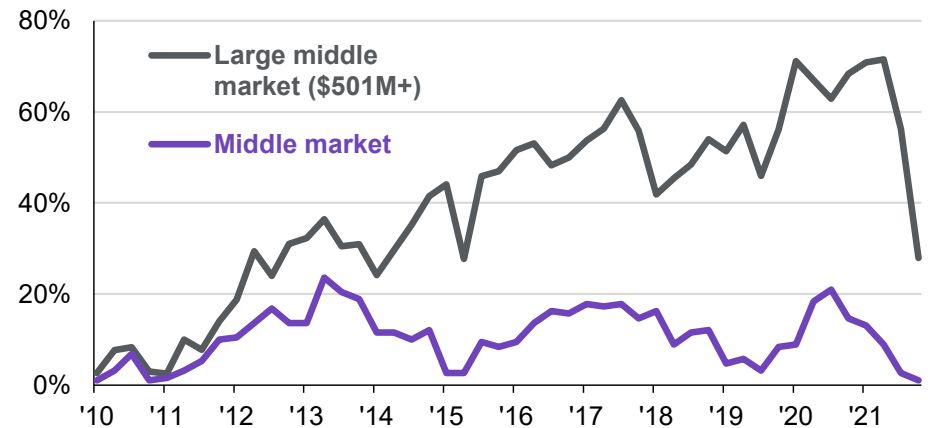
New loan issuance by purpose

12-months ending September 30, 2022, leveraged loans



Covenant-lite loans

% of total loans, 4Q10– 3Q22, quarterly



Source: LCD, Proskauer, J.P. Morgan Markets Research, J.P. Morgan Asset Management. Covenant-lite loans are a type of financing that is issued with fewer restrictions on the borrower regarding collateral, level of income, and loan payment terms, and fewer protections for the lender, including financial maintenance tests that measure the debt-service capabilities of the borrower. *Middle market yields from April 2020 to January 2021 are estimated using a 12-month trailing average due to lack of data availability over that time period. **Corporate finance includes corporate purpose, spinoff and merger. ***Other includes recap, stock repurchases, exit financing, expansion, capital expenditures, equity infusion, IPO, IDS and DIP. Percentages may not sum to 100 due to rounding. Data is based on availability as of November 30, 2022.

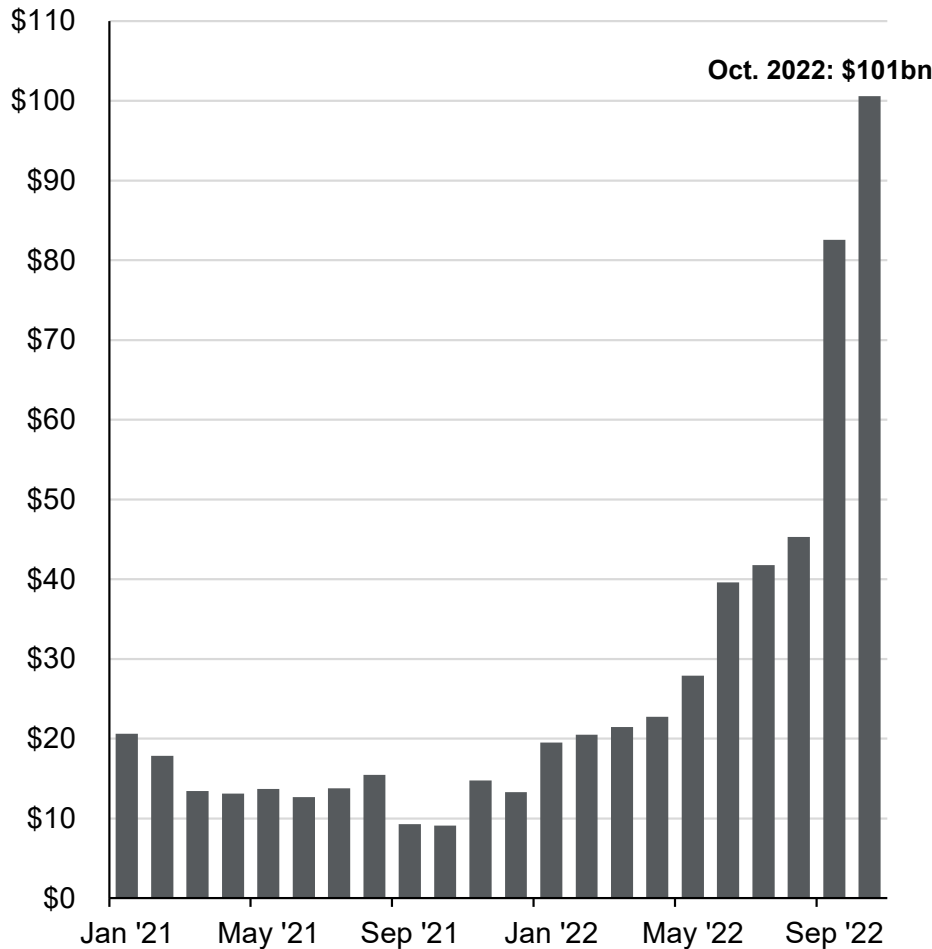


U.S. distressed loans

Private markets

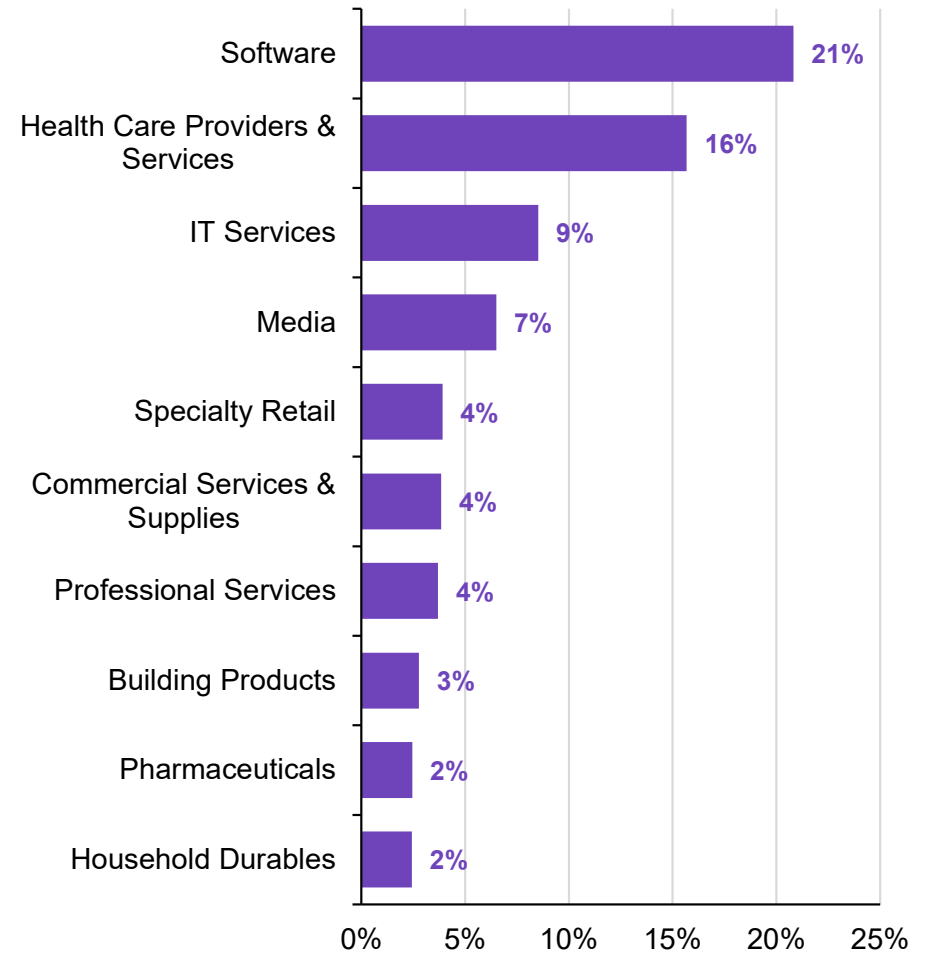
U.S. distressed loan volume

In USD billions



Share of distressed leveraged loans by industry

U.S., October 2022



Source: Pitchbook, LCD, Morningstar, Morgan Asset Management. Distressed loan data is from the Morningstar LSTSA U.S. Leveraged Loan Index, which defines distressed loans as performing leveraged loans priced below 80 cents on the dollar. Data is based on availability as of November 30, 2022.



J.P. Morgan Asset Management – Index definitions

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

Equities:

The **Dow Jones Industrial Average** is a price-weighted average of 30 actively traded blue-chip U.S. stocks.

The **MSCI ACWI (All Country World Index)** is a free float-adjusted market capitalization weighted index that is designed to measure the equity market performance of developed and emerging markets.

The **MSCI EAFE Index (Europe, Australasia, Far East)** is a free float-adjusted market capitalization index that is designed to measure the equity market performance of developed markets, excluding the US & Canada.

The **MSCI Emerging Markets Index** is a free float-adjusted market capitalization index that is designed to measure equity market performance in the global emerging markets.

The **MSCI Europe Index** is a free float-adjusted market capitalization index that is designed to measure developed market equity performance in Europe.

The **MSCI Pacific Index** is a free float-adjusted market capitalization index that is designed to measure equity market performance in the Pacific region.

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

The **Russell 1000 Growth Index**® measures the performance of those Russell 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 **Russell 2000 Index**® measures the performance of the 2,000 smallest companies in the Russell 3000 Index.

The **Russell 2000 Growth Index**® measures the performance of those Russell 2000 companies with higher price-to-book ratios and higher forecasted growth values.

The **Russell 2000 Value Index**® measures the performance of those Russell 2000 companies with lower price-to-book ratios and lower forecasted growth values.

The **Russell 3000 Index**® measures the performance of the 3,000 largest U.S. companies based on total market capitalization.

The **Russell Midcap Index**® measures the performance of the 800 smallest companies in the Russell 1000 Index.

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

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

The **S&P 500 Index** is widely regarded as the best single gauge of the U.S. equities market. The index includes a representative sample of 500 leading companies in leading industries of the U.S. economy. The **S&P 500 Index** focuses on the large-cap segment of the market; however, since it includes a significant portion of the total value of the market, it also represents the market.

Fixed income:

The **Bloomberg 1-3 Month U.S. Treasury Bill Index** includes all publicly issued zero-coupon US Treasury Bills that have a remaining maturity of less than 3 months and more than 1 month, are rated investment grade, and have \$250 million or more of outstanding face value. In addition, the securities must be denominated in U.S. dollars and must be fixed rate and non convertible.

The **Bloomberg Global High Yield Index** is a multi-currency flagship measure of the global high yield debt market. The index represents the union of the US High Yield, the Pan-European High Yield, and Emerging Markets (EM) Hard Currency High Yield Indices. The high yield and emerging markets sub-components are mutually exclusive. Until January 1, 2011, the index also included CMBS high yield securities.

The **Bloomberg Municipal Index**: consists of a broad selection of investment-grade general obligation and revenue bonds of maturities ranging from one year to 30 years. It is an unmanaged index representative of the tax-exempt bond market.

The **Bloomberg US Dollar Floating Rate Note (FRN) Index** provides a measure of the U.S. dollar denominated floating rate note market.

The **Bloomberg US Corporate Investment Grade Index** is an unmanaged index consisting of publicly issued US Corporate and specified foreign debentures and secured notes that are rated investment grade (Baa3/BBB or higher) by at least two ratings agencies, have at least one year to final maturity and have at least \$250 million par amount outstanding. To qualify, bonds must be SEC-registered.

The **Bloomberg US High Yield Index** covers the universe of fixed rate, non-investment grade debt. Eurobonds and debt issues from countries designated as emerging markets (sovereign rating of Baa1/BBB+/BBB+ and below using the middle of Moody's, S&P, and Fitch) are excluded, but Canadian and global bonds (SEC registered) of issuers in non-EMG countries are included.

The **Bloomberg US Mortgage Backed Securities Index** is an unmanaged index that measures the performance of investment grade fixed-rate mortgage backed pass-through securities of GNMA, FNMA and FHLMC.

The **Bloomberg US TIPS Index** consists of Inflation-Protection securities issued by the U.S. Treasury.

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

The **J.P. Morgan Domestic High Yield Index** is designed to mirror the investable universe of the U.S. dollar domestic high yield corporate debt market.

The **J.P. Morgan Corporate Emerging Markets Bond Index Broad Diversified (CEMBI Broad Diversified)** is an expansion of the **J.P. Morgan Corporate Emerging Markets Bond Index (CEMBI)**. The CEMBI is a market capitalization weighted index consisting of U.S. dollar denominated emerging market corporate bonds.

The **J.P. Morgan Emerging Markets Bond Index Global Diversified (EMBI Global Diversified)** tracks total returns for U.S. dollar-denominated debt instruments issued by emerging market sovereign and quasi-sovereign entities: Brady bonds, loans, Eurobonds. The index limits the exposure of some of the larger countries.

The **J.P. Morgan GBI EM Global Diversified** tracks the performance of local currency debt issued by emerging market governments, whose debt is accessible by most of the international investor base.

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



J.P. Morgan Asset Management – Definitions

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Other asset classes:

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

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

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

The **CS/Tremont Hedge Fund Index** is compiled by Credit Suisse Tremont Index, LLC. It is an asset-weighted hedge fund index and includes only funds, as opposed to separate accounts. The Index uses the Credit Suisse/Tremont database, which tracks over 4500 funds, and consists only of funds with a minimum of US\$50 million under management, a 12-month track record, and audited financial statements. It is calculated and rebalanced on a monthly basis, and shown net of all performance fees and expenses. It is the exclusive property of Credit Suisse Tremont Index, LLC.

The **HFR1 Monthly Indices (HFR1)** are equally weighted performance indexes, utilized by numerous hedge fund managers as a benchmark for their own hedge funds. The HFR1 are broken down into 4 main strategies, each with multiple sub strategies. All single-manager HFR1 Index constituents are included in the HFR1 Fund Weighted Composite, which accounts for over 2200 funds listed on the internal HFR Database.

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

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

Definitions:

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

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

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

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

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

Investments in **emerging markets** can be more volatile. The normal risks of investing in foreign countries are heightened when investing in emerging markets. In addition, the small size of securities markets and the low trading volume may lead to a lack of liquidity, which leads to increased volatility. Also, emerging markets may not provide adequate legal protection for private or foreign investment or private property.

The price of **equity** securities may rise, or fall because of changes in the broad market or changes in a company's financial condition, sometimes rapidly or unpredictably. These price movements may result from factors affecting individual companies, sectors or industries, or the securities market as a whole, such as changes in economic or political conditions. Equity securities are subject to "stock market risk" meaning that stock prices in general may decline over short or extended periods of time.

Equity market neutral strategies employ sophisticated quantitative techniques of analyzing price data to ascertain information about future price movement and relationships between securities, select securities for purchase and sale. Equity Market Neutral Strategies typically maintain characteristic net equity market exposure no greater than 10% long or short.

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

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

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

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

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

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

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

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

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



J.P. Morgan Asset Management – Risks & disclosures

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The Market Insights program provides comprehensive data and commentary on global markets without reference to products. Designed as a tool to help clients understand the markets and support investment decision-making, the program explores the implications of current economic data and changing market conditions.

For the purposes of MiFID II, the JPM Market Insights and Portfolio Insights programs are marketing communications and are not in scope for any MiFID II / MiFIR requirements specifically related to investment research. Furthermore, the J.P. Morgan Asset Management Market Insights and Portfolio Insights programs, as non-independent research, have not been prepared in accordance with legal requirements designed to promote the independence of investment research, nor are they subject to any prohibition on dealing ahead of the dissemination of investment research.

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J.P. Morgan Asset Management is the brand for the asset management business of JPMorgan Chase & Co. and its affiliates worldwide.

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Unless otherwise stated, all data are as of January 20, 2023 or most recently available.

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