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J.P. Morgan
ASSET MANAGEMENT
Alts in aggregate
4. Alternatives fundraising
5. Alternatives dry powder
6. Public and private market correlations
7. Alternatives and manager selection
8. Yield alternatives
9. Equity market correlations and yields
10. Portfolio diversification
11. Alternative asset class returns
12. Alternative asset correlations, returns, and yields
13. Valuations monitor

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15. U.S. real estate: NOI growth and transaction volumes
16. U.S. real estate: Office leasing activity
17. U.S. real estate: Office supply
18. U.S. real estate: Retail
19. U.S. real estate: Industrial
20. U.S. real estate: Residential
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22. Europe real estate: Yield and income
23. Europe real estate: Office vacancy rates
24. Global real estate: Retail
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33. Renewable energy infrastructure
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60. Equity market dispersion and positioning
61. Volatility, rates, and hedge fund returns
Global private capital fundraising
USD billions

Source: Preqin, J.P. Morgan Asset Management.
Fundraising categories are provided by Preqin and represent their estimate of annual capital raised in closed-end funds. Data may not sum to total due to rounding.
*Natural resources include natural resources agriculture, energy, metals & mining, timberland and water. Fundraising Data are as of August 31, 2023. Data are based on availability as of August 31, 2023.
## Alternatives dry powder

### Dry powder by asset class

Cumulative dry powder, USD billions

<table>
<thead>
<tr>
<th>Asset class</th>
<th>2022</th>
<th>% of total</th>
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<tbody>
<tr>
<td>Secondaries</td>
<td>$163</td>
<td>5%</td>
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<tr>
<td>Fund of funds</td>
<td>$165</td>
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<tr>
<td>Private debt</td>
<td>$434</td>
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<tr>
<td>Real assets*</td>
<td>$635</td>
<td>19%</td>
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<tr>
<td>Venture capital</td>
<td>$574</td>
<td>17%</td>
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<tr>
<td>Private equity</td>
<td>$1,325</td>
<td>40%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$3,297</td>
<td>100%</td>
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</table>

Source: PitchBook, J.P. Morgan Asset Management. Dry powder Data are as of December 31, 2022. Percentages may not sum to 100 due to rounding. *Real assets dry powder includes real estate & infrastructure. Data are based on availability as of August 31, 2023.
### Public and private market correlations

#### Quarterly returns

<table>
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<tr>
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<th>Global Bonds</th>
<th>Global Equities</th>
<th>U.S. Core RE</th>
<th>Europe Core RE*</th>
<th>APAC Core RE</th>
<th>Global Core Infra</th>
<th>Transport</th>
<th>Timber</th>
<th>Direct Lending</th>
<th>Venture Capital</th>
<th>Private Equity</th>
<th>Equity Long/Short</th>
<th>Relative Value</th>
<th>Macro</th>
<th>Bitcoin</th>
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<td>Global Bonds</td>
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<td>Transport</td>
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<td>Timber</td>
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<tr>
<td>Direct Lending</td>
<td>0.1</td>
<td>0.7</td>
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<tr>
<td>Venture Capital</td>
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<tr>
<td>Equity Long/Short</td>
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<td>0.9</td>
<td>-0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>0.1</td>
<td>-0.1</td>
<td>-0.1</td>
<td>0.7</td>
<td>0.7</td>
<td>0.9</td>
<td>1.0</td>
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<td></td>
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<tr>
<td>Relative Value</td>
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<td>0.9</td>
<td>-0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>0.1</td>
<td>-0.1</td>
<td>-0.2</td>
<td>0.9</td>
<td>0.5</td>
<td>0.8</td>
<td>0.9</td>
<td>1.0</td>
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<tr>
<td>Macro</td>
<td>0.0</td>
<td>0.3</td>
<td>0.0</td>
<td>0.2</td>
<td>0.0</td>
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<td>0.2</td>
<td>0.2</td>
<td>0.3</td>
<td>0.3</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>Bitcoin</td>
<td>0.0</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>0.1</td>
<td>0.2</td>
<td>0.0</td>
<td>0.0</td>
<td>0.1</td>
<td>0.2</td>
<td>0.2</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>1.0</td>
</tr>
</tbody>
</table>

Alternatives and manager selection

Public and private manager dispersion
Based on returns over a 10-year window*

Source: Burgiss, NCREIF, Morningstar, PivotalPath, J.P. Morgan Asset Management.
Global equities (large cap) and global bonds dispersion are based on the world large stock and world bond categories, respectively. *Manager dispersion is based on the annual returns for U.S. Fund Global Equities, U.S. Fund Global Bonds, Hedge Funds, and U.S. Core Real Estate are over a 10-year period ending Q2 2023. Non-core Real Estate, Global Private Equity and Global Venture Capital are represented by the 10-year horizon internal rate of return (IRR) ending 1Q 2023. U.S. Fund Global Equities and Bonds are comprised of U.S.-domiciled mutual funds and ETFs.
Data are based on availability as of August 31, 2023.
Yield alternatives

Asset class yields

Percent

| Source: BAML, Bloomberg, Clarkson, Cliffwater, Drewry Maritime Consultants, Federal Reserve, FTSE, MSCI, NCREIF, FactSet, Wells Fargo J.P. Morgan Asset Management. *CML is commercial mortgage loans. Equities and fixed income yields are as of 8/31/2023. Alternative yields are as of 6/30/2023 except Transport and Infrastructure, which are as of 3/31/2023, and CRE – Mezz, which is as of 7/31/2023. CML – Senior: Gilberto-Levy Performance Aggregate Index (unlevered). Mezzanine commercial mortgage loans yield is derived from a J.P. Morgan Survey and U.S. Treasuries of a similar duration. Global Transport: Levered yields for transport assets calculated as the difference between charter rates (rental income), operating expenses, debt amortization and interest expenses, as a percentage of equity value, and are based on a historical 15-year average. Yields for each of the sub-vessel types are calculated and respective weightings are applied to arrive at the current levered yields for Global Transportation; Preferreds: BAML Hybrid Preferred Securities; Direct Lending: Cliffwater Direct Lending Index; U.S. High Yield: Bloomberg US Aggregate Corporate High Yield; Global Infrastructure: MSCI Global Infrastructure Asset Index-Low Risk; U.S. Real Estate: MSCI Global Property Fund Index – North America; Global REITs: FTSE NAREIT Global REITs; International Equity: MSCI AC World ex-U.S.; U.S. 10-year: 10-year U.S. Treasury yield; U.S. Equity: MSCI USA, Europe Real Estate: Market weighted avg. of MSCI Global Property Fund Indices – U.K. & Cont. Europe; Asia Pacific (APAC) core real estate: MSCI Global Property Fund Index – Asia-Pacific. Euro Govt. (7-10 yr.): Bloomberg Euro Aggregate Government – Treasury (7-10Y); Timber: NCREIF Timberland Index (U.S.) – EBITDA Return. Data are based on availability as of August 31, 2023. |
Equity market correlations and yields

Hedge adjusted yield, last 12 months


All non-alternative yields are as of 8/31/2023. All yields are as of 6/30/2023, expect Infrastructure and Transport, which hare as of 3/31/2023.

Data are based on availability as of August 31, 2023.
Portfolio diversification

Alternatives and portfolio risk/return
Annualized volatility and returns, 1989 – 1Q23

<table>
<thead>
<tr>
<th>Portfolio allocation</th>
<th>Volatility</th>
<th>Annualized returns</th>
</tr>
</thead>
<tbody>
<tr>
<td>40 Equities/60 F.I.</td>
<td>6.8%</td>
<td>7.4%</td>
</tr>
<tr>
<td>60 Equities/40 F.I.</td>
<td>9.7%</td>
<td>8.4%</td>
</tr>
<tr>
<td>80 Equities/20 F.I.</td>
<td>12.8%</td>
<td>9.2%</td>
</tr>
<tr>
<td>30 Alts/30 Equities/40 F.I.</td>
<td>6.5%</td>
<td>8.5%</td>
</tr>
<tr>
<td>30 Alts/40 Equities/30 F.I.</td>
<td>8.0%</td>
<td>9.0%</td>
</tr>
<tr>
<td>30 Alts/50 Equities/20 F.I.</td>
<td>9.5%</td>
<td>9.4%</td>
</tr>
</tbody>
</table>

Source: Bloomberg, Burgiss, HRFI, NCREIF, Standard & Poor’s, FactSet, J.P. Morgan Asset Management. Alts include hedge funds, real estate, and private equity, with each receiving an equal weight. Portfolios are rebalanced at the start of the year. Data are based on availability as of August 31, 2023.
## Alternative asset class returns

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>26.6%</td>
<td>26.6%</td>
<td>16.2%</td>
<td>14.2%</td>
<td>23.0%</td>
<td>20.8%</td>
<td>19.9%</td>
<td>57.5%</td>
<td>48.8%</td>
<td>29.9%</td>
<td>9.0%</td>
<td>19.1%</td>
<td>12.8%</td>
<td>8.8%</td>
<td>8.5%</td>
<td>9.0%</td>
<td>14.2%</td>
<td>2.7%</td>
<td>9.0%</td>
<td>19.1%</td>
<td>12.8%</td>
<td>8.8%</td>
<td>8.5%</td>
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<tr>
<td>2014</td>
<td>19.9%</td>
<td>13.9%</td>
<td>15.3%</td>
<td>13.4%</td>
<td>16.8%</td>
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<td>11.5%</td>
<td>16.8%</td>
<td>24.2%</td>
<td>36.4%</td>
<td>Infra.</td>
<td>Private Equity</td>
<td>11.5%</td>
<td>Asset Allocation</td>
<td>9.7%</td>
<td>CML - Senior*</td>
<td>3.1%</td>
<td>Private Equity</td>
<td>15.4%</td>
<td>Transport</td>
<td>8.5%</td>
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<td>2015</td>
<td>18.8%</td>
<td>U.S. Core RE</td>
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<td>Private Equity</td>
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<td>Europe Core RE</td>
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<td>Infra.</td>
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<td>27.7%</td>
<td>U.S. Core RE</td>
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<td>2016</td>
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<td>Infra.</td>
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<td>CML - Senior*</td>
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<td>Direct Lending</td>
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<td>9.4%</td>
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<td>8.9%</td>
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<tr>
<td>2022</td>
<td>Europe Core RE</td>
<td>5.8%</td>
<td>6.9%</td>
<td>2.7%</td>
<td>CML - Senior*</td>
<td>2.9%</td>
<td>U.S. Core RE</td>
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<td>U.S. Core RE</td>
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<td>4.9%</td>
<td>8.9%</td>
<td>9.4%</td>
<td>8.9%</td>
<td>8.9%</td>
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<tr>
<td>2023</td>
<td>CML - Senior*</td>
<td>Hedge Funds</td>
<td>Hedge Funds</td>
<td>2.9%</td>
<td>Hedge Funds</td>
<td>1.0%</td>
<td>Venture Capital</td>
<td>5.7%</td>
<td>Hedge Funds</td>
<td>-1.2%</td>
<td>Transport</td>
<td>APAC Core RE</td>
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<td>CML - Senior*</td>
<td>2.8%</td>
<td>Hedge Funds</td>
<td>2.8%</td>
<td>Hedge Funds</td>
<td>2.8%</td>
<td>2.8%</td>
<td>2.8%</td>
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</tbody>
</table>

Alternative asset correlations, returns, and yields

Correlations, returns, and yields
10-year correlations and 10-year annualized total returns, quarterly, 2013 - 2022

Source: Burgiss, Cliffwater, Gilberto-Levy, HRFI, MSCI, NCREIF, FactSet, J.P. Morgan Asset Management. Correlations are based on quarterly returns over the past 10 years through 2022. A 60/40 portfolio is comprised of 60% stocks and 40% bonds. Stocks are represented by the S&P 500 Total Return Index. Bonds are represented by the Bloomberg U.S. Aggregate Total Return Index. 10-year annualized returns are calculated from 2013 – 2022. Indices and data used for alternative asset class returns and yields are as described on pages 8, 9, and 11 of the Guide to Alternatives. Yields are based on latest available data as described on page 8 of the Guide to Alternatives. Data are based on availability as of August 31, 2023.
**Valuations monitor**

### Asset class valuations

Z-scores based on average valuations since March 2009*

- **12/31/2021**
- **Current**

<table>
<thead>
<tr>
<th>Asset Class</th>
<th>12/31/2021</th>
<th>Current</th>
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<tr>
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<tr>
<td>Int'l Equity</td>
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<tr>
<td>U.S. Small Cap</td>
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<td>-0.35</td>
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<td>Global REITs</td>
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<td>Venture Capital</td>
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<td>Infrastructure</td>
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<td>Europe RE</td>
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<td>U.S. Core RE</td>
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<td>Transport</td>
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<tr>
<td>Private Credit</td>
<td>-0.22</td>
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Source: Burgiss, Cliffwater, FactSet, Jay Ritter, Cordell Eminent Scholar, Eugene F. Brigham Department of Finance, Insurance, and Real Estate Warrington College of Business, University of Florida, LCD, PitchBook, MSCI, NCREIF, RCA, J.P. Morgan Markets, J.P. Morgan Asset Management. All alternative asset classes valuation measures are quarterly, except VC, which is annual. Public market asset class valuations are monthly. Equity valuations are measured using next twelve months price-to-earnings ratios. Fixed income valuations are measured using yield-to-worst and spread-to-worst. Global REITs valuations are measured using price-to-free cash (P/FCF) flow multiples. Real estate valuations are measured using the spread between transaction-based cap rates and the yield on the appropriate 10-year government bond. Private equity valuations are determined using leveraged buyout purchase price multiples (LBO PPM). Private credit valuations are measured using the spread between quarterly income returns and 3-month SOFR (LIBOR pre-2019). VC valuations measured using the median VC-backed IPO price-to-sales (P/S) ratio. Infrastructure valuations are measured using 12-month trailing infrastructure income returns. *VC average valuation is since 12/31/2008. 2023 data P/S ratio for VC is a J.P. Morgan Asset Management estimate. Global REITs average valuation is since 1/31/2010 due to data constraints. **Yields and spreads are inversely related to prices.

Data are based on availability as of August 31, 2023.
U.S. real estate dynamics

U.S. real estate cap rate spreads
Transaction based, spread to 10y UST, 4-quarter rolling average

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. All data are as of June 30, 2023.
Data are based on availability as of August 31, 2023.
U.S. real estate: NOI growth and transaction volumes

U.S. real estate transaction volumes
USD millions, seasonally adjusted, 2013 – present

Net operating income growth by property type
Rolling 4-quarter growth, 2013 – present

Source: NCREIF, NAREIT, Statista, J.P. Morgan Asset Management.
NOI is net operating income. Transaction volume and net operating income growth data are as of June 30, 2023.
Data are based on availability as of August 31, 2023.
U.S. real estate: Office leasing activity

In million square feet, quarterly

Source: JLL, J.P. Morgan Asset Management. "U.S. Office Outlook – 2Q 2023," JLL, August 2023. *Tenant improvement allowance (TI) is typically expressed in dollars per square foot and provided by landlords to tenants in order to cover the costs of renovations. Data are based on availability as of August 31, 2023.
U.S. real estate: Office supply

U.S. office inventory
In million square feet, 2Q23

- Conversion
- Redevelopment
- Demolition

Office real estate lease expiration and debt maturity

- Lease expiration by year as % of total
- Debt maturity as % of total current balance

U.S. real estate: Retail

U.S. online retails sales by segment
% of total retail sales by segment, NSA

- Clothing and general merchandise: 13% (1Q18), 12% (2Q23)
- Furniture, building materials and electronics: 9% (1Q18), 12% (2Q23)
- Motor vehicle and parts: 3% (1Q18), 4% (2Q23)
- Total online retails: 9% (1Q18), 15% (2Q23)

Change in number of retail establishments
4Q12 – 4Q22, percent

- Total: 29.3%
- Goods-producing: 19.1%
- Service-providing: 30.9%
- Department/discount: 37.9%
- Personal care/services: 28.5%
- Restaurants/bars: 19.4%
- Pharmacies and person care: 16.8%
- Grocery/liquor: 10.2%
- Automobile dealers: 7.6%
- Gas stations: 4.7%
- Furniture/furnishings: -3.4%
- Electronics/apparatus: -14.4%
- Entertainment goods: -15.9%
- Clothing: -36.0%

U.S. real estate: Industrial

U.S. industrial construction activity and vacancy rates
2017 – 1H23

U.S. cities with highest industrial net absorption
Net absorption as a % of total deliveries, 1H23

Data are based on availability as of August 31, 2023.
U.S. real estate: Residential

U.S. home price growth by city
S&P Case-Shiller Home Price Index, June 2023, y/y% change

- Chicago: 4.2%
- New York: 3.4%
- Miami: 2.5%
- Atlanta: 2.1%
- Boston: 0.9%
- Washington D.C.: 0.6%
- National home price: 0.0%
- Los Angeles: -1.8%
- Dallas: -4.1%
- Portland: -4.2%
- Denver: -4.4%
- Phoenix: -7.5%
- Seattle: -8.8%
- San Francisco: -9.7%

Cumulative net domestic migration*
Top and bottom 5 states, thousands of people

- Florida
- Texas
- North Carolina
- Arizona
- South Carolina

July 2010 – June 2019
April 2020 – June 2022

Source: FactSet, Standard & Poor’s, Robert Shiller, U.S. Census Bureau, J.P. Morgan Asset Management. *Net domestic migration is defined as total in-migration less total outmigration. Data are based on availability as of August 31, 2023.
Europe real estate: Transaction volumes

European transaction volumes
Rolling year-over-year % change, 4Q08 – 2Q23

European transaction volumes by property type
2007 – 1H23

Source: RCA, J.P. Morgan Asset Management. Percentages may not sum to 100 due to rounding. Data are based on availability as of August 31, 2023.
Europe real estate: Yield and income

Net yield by property type*
1987 – 2Q23

<table>
<thead>
<tr>
<th>Year</th>
<th>Average '87 - '22</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retail</td>
<td>4.9%</td>
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<tr>
<td>Industrial</td>
<td>5.1%</td>
</tr>
<tr>
<td>Office</td>
<td>4.7%</td>
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</tbody>
</table>

Rent growth by property type
Year-over-year % change, 1987 – 2Q23

<table>
<thead>
<tr>
<th>Year</th>
<th>Average '87 - '22</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retail</td>
<td>5.1%</td>
</tr>
<tr>
<td>Industrial</td>
<td>8.6%</td>
</tr>
<tr>
<td>Office</td>
<td>4.8%</td>
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</table>

Data are based on availability as of August 31, 2023.
Europe real estate: Office vacancy rates

Office vacancy rates by city
2010 – 2Q23

Office vacancy rates within cities
Total city vacancy rates vs. central business districts*, 2Q23

Source: CBRE ERIX, J.P. Morgan Asset Management. *Includes both central business districts (CBDs) and prime areas. Data are based on availability as of August 31, 2023.
Global real estate: Retail

Global online retail sales
Percent of total retail sales, 2Q23*

Source: (Left) Australian Bureau of Statistics, Centre for Retail Research (Germany, France, Italy, Spain), Korean Statistical Information Service, METI (Japan), National Bureau of Statistics (China), ONS (UK), Statistics of Singapore, U.S. Census Bureau. *All data are as of 2Q23 except Japan, which is as of 2021, and France, Germany, Spain and Italy, which are as of 2022. (Right) Statista, J.P. Morgan Asset Management. Retail space per capita per country data was published in November 2020 and represents retail square footage per person in 2018. Data are based on availability as of August 31, 2023.
Global real estate: Logistics

Global office and logistics pricing
Yields, 2Q 2023

Sources: CBRE, JLL, J.P. Morgan Asset Management. London is South East for Prime Office. Munich and Milan Prime Warehouse yields are based on country level aggregates. Data are based on availability as of August 31, 2023.
U.S. REITs and real estate

U.S. REITs, real estate and equities
12-quarter rolling correlations, total return

Source: NAREIT, NCREIF, Standard & Poor’s, FactSet, J.P. Morgan Asset Management.
Real estate investment trusts (REITs). Indices do not include fees or operating expenses and are not available for actual investment. Past performance is not necessarily a reliable indicator for current and future performance. Correlations are as of 2Q23. Data are based on availability as of August 31, 2023.
### U.S. REIT sector returns

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<tr>
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<td>2013</td>
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<td>46.2%</td>
<td>40.6%</td>
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<td>28.4%</td>
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<td>49.1%</td>
<td>21.0%</td>
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<td>-6.5%</td>
<td>25.3%</td>
<td>17.0%</td>
<td>30.1%</td>
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<tr>
<td>2014</td>
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<td>25.6%</td>
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<tr>
<td>2015</td>
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<td>12.8%</td>
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<td>2016</td>
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<td>63.6%</td>
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<td>17.9%</td>
<td>7.9%</td>
<td>20.6%</td>
<td>14.7%</td>
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<td>2017</td>
<td>7.3%</td>
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<td>4.7%</td>
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<td>7.2%</td>
<td>28.7%</td>
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<td>7.2%</td>
<td>7.2%</td>
<td>20.5%</td>
<td>14.7%</td>
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<td>2018</td>
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<td>2020</td>
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<td>2.6%</td>
<td>3.7%</td>
<td>3.7%</td>
<td>-7.0%</td>
<td>25.4%</td>
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<td>0.1%</td>
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<td>16.8%</td>
<td>16.8%</td>
<td>14.7%</td>
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<td>2021</td>
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<td>25.9%</td>
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<td>3.7%</td>
<td>-12.8%</td>
<td>22.0%</td>
<td>-18.4%</td>
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<td>16.7%</td>
<td>14.7%</td>
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<td>N/A</td>
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<td>14.9%</td>
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</table>

Sources: FTSE NAREIT, FactSet, J.P. Morgan Asset Management.

All indices are from FTSE NAREIT. Mfgd. Homes represents manufactured homes.

Data are based on availability as of August 31, 2023.
Average annual infrastructure need
USD trillions, constant 2017 dollars

Data are based on availability as of August 31, 2023.
Infrastructure transactions

Infrastructure deal count and value

Source: Preqin, J.P. Morgan Asset Management. Transaction data are as of September 2021. Data are based on availability as of August 31, 2023.
Sources of global infrastructure returns

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

Data are based on availability as of August 31, 2023.

Source: MSCI, J.P. Morgan Asset Management.
Infrastructure returns represented by the MSCI Global Quarterly Infrastructure Asset Index. Data show rolling one-year returns from income and capital growth. The chart shows the full index history, beginning in 1Q09, and ending in 1Q23. Past performance is not indicative of future results. Alternative investments carry more risk than traditional investments and are recommended only for long-term investment. Some alternative investments may be highly leveraged and rely on speculative investments that can magnify the potential for loss or gain. Diversification does not guarantee investment returns or eliminate the risk of loss.
Utility profitability and household spending

**U.S. utilities allowed returns versus inflation**
Average allowed return on equity*

**Household utility spending**
Household utility spending % of personal consumption expenditures

Data are based on availability as of August 31, 2023.
U.S. electricity and the energy transition

**Planned U.S. electricity generating capacity 2023**

- **Total retirements:** 6.4 GW (60% Coal, 33% Natural gas, 7% Petroleum*, 0.2% Other*)
- **Total additions:** 30.6 GW (57% Natural gas, 20% Solar, 17% Wind, 6% Batteries, 2% Nuclear, 0.2% Other**)

**Share of global commodities mining production by region 2022**

- Rare earths:
  - United States: 30.4%
  - China: 69.6%
  - South America: 0%
  - APAC*: 0%
  - North America*: 0%
  - Africa & RoW: 6.2%

- Zinc:
  - United States: 14.9%
  - China: 85.1%

- Nickel:
  - United States: 0%
  - China: 90.8%
  - South America: 0%
  - North America*: 0%
  - Europe: 1.3%
  - Africa & RoW: 3.6%

- Lithium*:
  - United States: 0%
  - China: 74.6%
  - South America: 18.6%
  - APAC*: 6.8%
  - North America*: 0%
  - Africa & RoW: 0.2%

- Copper:
  - United States: 25.6%
  - China: 19.5%
  - South America: 0%
  - APAC*: 13.2%
  - North America*: 0%
  - Europe: 41.8%

- Cobalt:
  - United States: 0%
  - China: 86.4%
  - South America: 0%
  - APAC*: 4.5%
  - North America*: 0%
  - Europe: 7.8%


(Left) 2023 planned capacity retirements and additions are from the March 2023 Monthly Electric Generator Inventory report published by the EIA and uses net summer capacity to illustrate share of retirements and additions. *Other retirements include conventional hydroelectric, wood/wood/ waste biomass, landfill gas, onshore wind turbine, batteries, and other gases. **Other additions include batteries, geothermal, conventional hydroelectric, petroleum, biomass and landfill gas.

(Right) *U.S. lithium mining production is excluded in this analysis in order to protect individual company information. North America excludes the U.S. APAC excludes China.

Data are based on availability as of August 31, 2023.
Renewable energy infrastructure

Number of electricity vehicle charging points
In thousands, U.S.

<table>
<thead>
<tr>
<th>Year</th>
<th>California</th>
<th>Virginia</th>
<th>Massachusetts</th>
<th>Ohio</th>
<th>Maryland</th>
<th>West Virginia</th>
<th>Illinois</th>
<th>Texas</th>
<th>Alabama</th>
<th>Pennsylvania</th>
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<td>114</td>
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</tr>
</tbody>
</table>

State power balances
Net electricity generation**, in million MWh, 2021

<table>
<thead>
<tr>
<th>State</th>
<th>Net Electricity Generation</th>
</tr>
</thead>
<tbody>
<tr>
<td>California</td>
<td>-50</td>
</tr>
<tr>
<td>Virginia</td>
<td>-32</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>-31</td>
</tr>
<tr>
<td>Ohio</td>
<td>-22</td>
</tr>
<tr>
<td>Maryland</td>
<td>-21</td>
</tr>
<tr>
<td>West Virginia</td>
<td>33</td>
</tr>
<tr>
<td>Illinois</td>
<td>46</td>
</tr>
<tr>
<td>Texas</td>
<td>46</td>
</tr>
<tr>
<td>Alabama</td>
<td>57</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>98</td>
</tr>
</tbody>
</table>

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 calculated as total electricity generation minus total retail sales of electricity. Data are based on availability as of August 31, 2023.
Forestry, inflation and carbon offsets

Timber returns and inflation
Headline CPI, NCREIF Timberland Index, 5-yr. annualized change

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

- China ETS
- Japan carbon tax
- South Korea ETS
- EU ETS
- Other

Source: BLS, NCREIF, World Bank, J.P. Morgan Asset Management.
Data are based on availability as of August 31, 2023.
Global trade

**World trade volume**
Year-over-year, % change, 3-month moving average, monthly

**World seaborne trade by product**
Estimated in trillion ton-miles

Data are based on availability as of August 31, 2023.
Shipping trends: Orderbook

Global fleet and orderbook
Gross tonnage

Idle containership capacity as % of fleet

Global fleet age
+100 gross tonnage, years

Source: Clarksons Research, MSI, Sea/net, J.P. Morgan Asset Management.
Data are based on availability as of August 31, 2023.
Shipping trends: Pricing and port calls

Global shipping costs
USD per 40-foot container, weekly

Global port call duration**
Number of days, 30-day moving average

Source: Bloomberg, Clarksons Research, MSI, Sea/net, J.P. Morgan Asset Management. Port calls defined as all instances of a vessel entering and leaving a defined port location, excluding instances where vessel not recorded as travelling at less than 1 knot, and combining multiple consecutive instances at the same port where the vessel has not left a buffered shape around the port. Data basis date vessel last recorded in port location. *Global Port Calls excludes calls at ports by tugs. **U.S. and Europe port calls are of deep-sea cargo vessels, which only includes larger bulkers. ** Port call duration is defined as the average number of days spent by the vessels seen at a location. The duration is calculated using the total number of hours a vessel spent at location to complete the visit based on the time arrival and time of departure.

Data are based on availability as of August 31, 2023.
Wind power

Global wind net capacity additions
Onshore versus offshore, gigawatt

Forecasted average annual additions, 2023-2025

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 are based on availability as of August 31, 2023.
Aircraft trends

Average age of major airline aircraft
Years, U.S.

<table>
<thead>
<tr>
<th>Year</th>
<th>Average Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993</td>
<td>10.4</td>
</tr>
<tr>
<td>2000</td>
<td>11.8</td>
</tr>
<tr>
<td>2010</td>
<td>12.7</td>
</tr>
<tr>
<td>2018</td>
<td>13.3</td>
</tr>
<tr>
<td>2019</td>
<td>13.4</td>
</tr>
</tbody>
</table>

Percent of industry wide aviation fleet leased*
Global

<table>
<thead>
<tr>
<th>Year</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td>0%</td>
</tr>
<tr>
<td>1980</td>
<td>10%</td>
</tr>
<tr>
<td>1990</td>
<td>20%</td>
</tr>
<tr>
<td>2000</td>
<td>30%</td>
</tr>
<tr>
<td>2010</td>
<td>40%</td>
</tr>
<tr>
<td>2020</td>
<td>50%</td>
</tr>
</tbody>
</table>

Narrow-body aircraft demand**
Year-to-date June 2023, number

- Deliveries: 497
- Gross orders: 1,337
- Backlogs: 11,654

Wide-body aircraft demand**
Year-to-date June 2023, number

- Deliveries: 85
- Gross orders: 270
- Backlogs: 1,892

U.S. public vs. private equity

Number of listed U.S. companies* and market cap.
Number, S&P 500 market capitalization in USD trillions

Private vs. public equity sector weights

- Tech: 12.7%, 37.1%
- Healthcare: 14.1%, 14.4%
- Industrials: 14.7%, 15.1%
- Cons. Disc.: 9.9%, 10.5%
- Financials: 7.4%, 17.1%
- Comm. Services: 2.9%, 5.9%
- Other**: 3.2%, 18.6%

*Number of listed U.S. companies is represented by the sum of number of companies listed on the NYSE and the NASDAQ. **Other includes real estate, utilities and energy. Percentages may not sum due to rounding. Sector weights are as of June 31, 2022.
Data are based on availability as of August 31, 2023.
U.S. business formation

U.S. applications for business formation
Seasonally adjusted, thousands

Growth in business establishments by private industry
December 2019 – December 2022

Business formation data are as of 1Q23. *Information includes broadcasting (excluding internet), data processing, hosting and related services, motion picture and sound recording industries, publishing industries (excluding internet) and telecommunications. **Other services includes unclassified businesses.
Data are based on availability as of August 31, 2023.
Private equity valuations

U.S. LBOs: purchase price multiples
Equity and debt over trailing EBITIDA

U.S. middle market private company revenues by sector
2Q23, year-over-year growth

U.S. middle market private company earnings by sector
2Q23, year-over-year growth

Source: Golub Capital, PitchBook, LCD, J.P. Morgan Asset Management. Purchase price multiples are as of June 30, 2023. Middle market revenue and earnings data are from the Golub Capital Altman Index. “The Golub Capital Altman Index measures the actual revenue and EBITDA (earnings before interest, taxes, depreciation and amortization) growth of US middle market private companies for the first two months of each calendar quarter and provides insight into anticipated quarterly performance of US public companies. The index is based on aggregated data from approximately 150 companies in the loan portfolio of Golub Capital, a leading middle market lender.”

Data are based on availability as of August 31, 2023.
Private equity deals and exits

U.S. private equity deals
USD billions

<table>
<thead>
<tr>
<th>Type</th>
<th>YTD</th>
<th>Avg. '07 - '22</th>
</tr>
</thead>
<tbody>
<tr>
<td>B2B</td>
<td>35.0%</td>
<td>28.6%</td>
</tr>
<tr>
<td>B2C</td>
<td>9.7%</td>
<td>18.4%</td>
</tr>
<tr>
<td>Natural resources</td>
<td>8.8%</td>
<td>13.7%</td>
</tr>
<tr>
<td>Financial services</td>
<td>16.1%</td>
<td>8.6%</td>
</tr>
<tr>
<td>Health care</td>
<td>11.2%</td>
<td>12.5%</td>
</tr>
<tr>
<td>Technology</td>
<td>19.1%</td>
<td>18.1%</td>
</tr>
</tbody>
</table>

Private equity exits by type
USD billions

<table>
<thead>
<tr>
<th>Type</th>
<th>YTD</th>
<th>Avg. '07 - '22</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secondary buyout</td>
<td>34.0%</td>
<td>36.8%</td>
</tr>
<tr>
<td>Public listing</td>
<td>4.1%</td>
<td>18.1%</td>
</tr>
<tr>
<td>Corporate acquisition</td>
<td>61.9%</td>
<td>45.1%</td>
</tr>
</tbody>
</table>

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 June 30, 2023.
Data are based on availability as of August 31, 2023.
Private equity deals by size and type

U.S. private equity deals by size
% of total deals, 2007 – 2Q23

Secondary market

Secondary market volume
USD billions

Venture capital

Investment and exit activity
Number of investments/number of exits*

![Graph showing investment and exit activity from 1980 to 2022, with average price-to-sales ratios for venture capital and private equity indicated.]

Venture capital IPO price-to-sales
1980 – 2022, market price

![Graph showing the price-to-sales ratio for venture capital IPOs from 1980 to 2022, with average and high points highlighted.]

Source: PitchBook, Cordell Eminent Scholar, Eugene F. Brigham Department of Finance, Insurance, and Real Estate Warrington College of Business, University of Florida, J.P. Morgan Asset Management. *Number of investments is defined as deal count. Investment and exit activity data are as of 2Q23. Data are based on availability as of August 31, 2023.
Global M&A

Global M&A by acquirer type
USD billions

<table>
<thead>
<tr>
<th>Year</th>
<th>Corporate M&amp;A</th>
<th>Sponsor-backed</th>
</tr>
</thead>
<tbody>
<tr>
<td>'07</td>
<td>8.5x</td>
<td>8.3x</td>
</tr>
<tr>
<td>'09</td>
<td>8.3x</td>
<td>8.3x</td>
</tr>
<tr>
<td>'11</td>
<td>8.1x</td>
<td>8.5x</td>
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<tr>
<td>'13</td>
<td>8.5x</td>
<td>8.9x</td>
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<tr>
<td>'15</td>
<td>10.0x</td>
<td>11.5x</td>
</tr>
<tr>
<td>'17</td>
<td>10.0x</td>
<td>12.6x</td>
</tr>
<tr>
<td>'19</td>
<td>10.8x</td>
<td>13.1x</td>
</tr>
<tr>
<td>'21</td>
<td>11.5x</td>
<td>16.0x</td>
</tr>
<tr>
<td>'23</td>
<td>10.8x</td>
<td>16.0x</td>
</tr>
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</table>

Source: PitchBook, J.P. Morgan Asset Management. M&A deal data are as of June 30, 2023. Percentages may not sum to 100 due to rounding. Data are based on availability as of August 31, 2023.

North America and Europe M&A multiples by sector
Enterprise value/EBITDA, 2Q23

- Trailing 12-month multiples
- Average: 2010 - 2022
Private debt fundraising

Private debt fundraising by type
USD billions

Sources: Preqin, J.P. Morgan Asset Management. *Other includes venture debt and fund of funds.
Data are based on availability as of August 31, 2023.
Credit returns across recent economic cycles

**Expansion**
Manufacturing ISM > 50 and rising

<table>
<thead>
<tr>
<th></th>
<th>GTA</th>
<th>U.S.</th>
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</thead>
<tbody>
<tr>
<td>10y UST</td>
<td>0.0%</td>
<td>0.3%</td>
</tr>
<tr>
<td>2y UST</td>
<td>0.9%</td>
<td>0.9%</td>
</tr>
<tr>
<td>U.S. IG</td>
<td>2.5%</td>
<td>2.5%</td>
</tr>
<tr>
<td>U.S. HY</td>
<td>1.7%</td>
<td>1.7%</td>
</tr>
<tr>
<td>U.S. leveraged loans</td>
<td>2.9%</td>
<td>2.9%</td>
</tr>
<tr>
<td>U.S. direct lending</td>
<td>2.9%</td>
<td>2.9%</td>
</tr>
</tbody>
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**Recession**
Manufacturing ISM <50 and falling

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<th>U.S.</th>
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</thead>
<tbody>
<tr>
<td>10y UST</td>
<td>1.4%</td>
<td>1.4%</td>
</tr>
<tr>
<td>2y UST</td>
<td>0.6%</td>
<td>0.6%</td>
</tr>
<tr>
<td>U.S. IG</td>
<td>2.0%</td>
<td>2.0%</td>
</tr>
<tr>
<td>U.S. HY</td>
<td>1.2%</td>
<td>1.2%</td>
</tr>
<tr>
<td>U.S. leveraged loans</td>
<td>0.6%</td>
<td>0.6%</td>
</tr>
<tr>
<td>U.S. direct lending</td>
<td>1.4%</td>
<td>1.4%</td>
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</tbody>
</table>

**Late cycle cooling**
Manufacturing ISM > 50 and falling

<table>
<thead>
<tr>
<th></th>
<th>GTA</th>
<th>U.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td>10y UST</td>
<td>1.3%</td>
<td>1.3%</td>
</tr>
<tr>
<td>2y UST</td>
<td>0.4%</td>
<td>0.4%</td>
</tr>
<tr>
<td>U.S. IG</td>
<td>0.6%</td>
<td>0.6%</td>
</tr>
<tr>
<td>U.S. HY</td>
<td>0.6%</td>
<td>0.6%</td>
</tr>
<tr>
<td>U.S. leveraged loans</td>
<td>0.7%</td>
<td>0.7%</td>
</tr>
<tr>
<td>U.S. direct lending</td>
<td>2.2%</td>
<td>2.2%</td>
</tr>
</tbody>
</table>

**Turnaround**
Manufacturing ISM<50 and rising

<table>
<thead>
<tr>
<th></th>
<th>GTA</th>
<th>U.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td>10y UST</td>
<td>0.3%</td>
<td>0.3%</td>
</tr>
<tr>
<td>2y UST</td>
<td>0.9%</td>
<td>0.9%</td>
</tr>
<tr>
<td>U.S. IG</td>
<td>2.2%</td>
<td>2.2%</td>
</tr>
<tr>
<td>U.S. HY</td>
<td>5.8%</td>
<td>5.8%</td>
</tr>
<tr>
<td>U.S. leveraged loans</td>
<td>4.7%</td>
<td>4.7%</td>
</tr>
<tr>
<td>U.S. direct lending</td>
<td>1.4%</td>
<td>1.4%</td>
</tr>
</tbody>
</table>

Data are based on availability as of August 31, 2023.
Credit market stress

U.S. leveraged loans downgrade/upgrade ratio
Rolling 3-month average

Data are based on availability as of August 31, 2023
U.S. regional banks and credit market participants

Tier 1 risk-based capital ratios by asset size
Percentage, quarterly, 4Q96 – 1Q23

Primary market sources of financing
1999 - 2022

Direct lending and the bank loan market

Leveraged loans vs. private credit sector exposure

Covenant-lite loans**
% of total loans, 4Q10–2Q23, quarterly

Private credit and leverage loans default rate
Quarterly, 2Q20–present

Source: Cliffwater, LCD, Standard & Poor’s, Proskauer, J.P. Morgan Markets Research, J.P. Morgan Asset Management. *For private credit, information technology includes business services. Private credit sector exposure is as of June 30, 2023. Leveraged loans sector exposure is as of July 2023. **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. All leveraged loans data are from the Morningstar LSTSA U.S. Leveraged Loan Index. The leveraged loans default rate is calculated using the LTM number of defaults as a % of total issuers. Private credit default rate is as of December 31, 2023. The private credit default rate is calculated by dividing the number of defaulted loans by the aggregate number of loans in the Index.

Data are based on availability as of August 31, 2023.
U.S. distressed loans

U.S. distressed loan volume
In USD billions, last twelve months

Bankruptcy filings by year
U.S., 2008 – 1H23, in thousands

Share of distressed leveraged loans by industry
U.S., August 2023, % of total distressed loans

Source: Pitchbook, LCD, Morningstar, Morgan Asset Management. Distressed loan data are 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 are based on availability as of August 31, 2023.
Sponsored versus non-sponsored leveraged loans

Sources of LBO financing
Bank syndicated loan and private credit markets, quarterly

<table>
<thead>
<tr>
<th>Year</th>
<th>Syndicated</th>
<th>Private credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>'19</td>
<td>26</td>
<td>45</td>
</tr>
<tr>
<td>'20</td>
<td>30</td>
<td>43</td>
</tr>
<tr>
<td>'21</td>
<td>32</td>
<td>42</td>
</tr>
<tr>
<td>'22</td>
<td>33</td>
<td>38</td>
</tr>
<tr>
<td>'23</td>
<td>18</td>
<td>8</td>
</tr>
</tbody>
</table>

Sponsored and non-sponsored leveraged loan spreads
Weighted average nominal spreads, monthly, since 1997

<table>
<thead>
<tr>
<th></th>
<th>Current</th>
<th>Long-term average*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sponsored</td>
<td>398.3</td>
<td>353.5</td>
</tr>
<tr>
<td>Non-sponsored</td>
<td>307.5</td>
<td>309.4</td>
</tr>
<tr>
<td>Difference</td>
<td>90.8</td>
<td>44.1</td>
</tr>
</tbody>
</table>

Source: Pitchbook, LCD, Morningstar LSTSA U.S. Leveraged Loan Index. LBO financing and Sponsored and non-sponsored leveraged loan data are as of June 30, 2023. *Averages are since 1997. Data are based on availability as of August 31, 2023.
Commercial mortgage loans

Commercial mortgage spreads
Spreads over Treasury, basis points, senior loans

<table>
<thead>
<tr>
<th>Asset class</th>
<th>Current spread</th>
<th>Avg. '14 - '22</th>
</tr>
</thead>
<tbody>
<tr>
<td>CML index</td>
<td>250.3</td>
<td>211.2</td>
</tr>
<tr>
<td>A-rated CML</td>
<td>229.4</td>
<td>194.6</td>
</tr>
<tr>
<td>BBB-rated CML</td>
<td>271.3</td>
<td>227.7</td>
</tr>
<tr>
<td>U.S. Corp. IG**</td>
<td>124.4</td>
<td>126.8</td>
</tr>
</tbody>
</table>

Commercial mortgage yields
12-month income return, unlevered, senior loans, 2Q23

<table>
<thead>
<tr>
<th>Asset class</th>
<th>Current spread</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. Corp. IG**</td>
<td>5.2%</td>
</tr>
<tr>
<td>Other sectors**</td>
<td>4.7%</td>
</tr>
<tr>
<td>Retail</td>
<td>4.6%</td>
</tr>
<tr>
<td>Office</td>
<td>4.5%</td>
</tr>
<tr>
<td>Aggregate*</td>
<td>4.3%</td>
</tr>
<tr>
<td>Apartment</td>
<td>4.2%</td>
</tr>
<tr>
<td>Industrial</td>
<td>4.1%</td>
</tr>
</tbody>
</table>

Source: Bloomberg, Gilberto-Levy, FactSet, J.P. Morgan Asset Management. All spreads are as of August 2023. *Aggregate: Gilberto-Levy Commercial Mortgage Loans Performance Index. **Other sectors includes hotels, motels, mixed-use, and miscellaneous. ***U.S. Corp. IG: Bloomberg U.S. Corporate Investment Grade Index. The income return shown for U.S. Corp. IG is the last 12-month average yield to worst as of June 30, 2023. Commercial mortgage spreads are from a J.P. Morgan survey and are calculated as the difference between the average yield as indicated by the survey and the yield of a U.S. Treasury security with a similar duration.

Data are based on availability as of August 31, 2023
Hedge fund strategy returns

Source: MSCI, Bloomberg, HFRI, FactSet, J.P. Morgan Asset Management.
Global equities reflect the MSCI AC World Index and global bonds reflect the Bloomberg Global Aggregate Index. All hedge fund returns are from HFRI. HFRI Composite: HFRI FW Composite Index. Returns may fluctuate as hedge fund reporting occurs on a lag. Please see disclosure pages for index definitions.
Data are based on availability as of August 31, 2023.
Hedge funds and manager selection

Hedge fund manager dispersion
Based on 10-year trailing returns

Sources: PivotalPath, J.P. Morgan Asset Management.
Manager dispersion is based on monthly returns for hedge funds. Blue bar denotes median. All hedge funds: Fund Weighted Composite Index, Equity market neutral: Equity hedge – equity market neutral, Event-driven: Event-Driven (Total), Relative value: Relative Value (Total), Relative value multi-strategy: Relative Value Multi-Strategy, Macro total: Macro (Total), Equity hedge: Equity Hedge (Total), Emerging markets: Emerging Markets Global. All Data are as of 2Q23.

Data are based on availability as of August 31, 2023.
Hedge funds and traditional portfolios

Hedge fund correlation with a 60/40 stock-bond portfolio*
1990 – August 2023, monthly

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 are based on availability as of August 31, 2023.
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 are based on availability as of August 31, 2023.
Equity market dispersion and positioning

S&P 500 Index dispersion*
Monthly, 1991 – present

Average: 24%
Aug. 2023: 20%

Hedge fund sector exposure relative to S&P 500
2Q23

-10.0% -5.0% 0.0% 5.0%
Info. Tech. -6.4%
Comm. Svcs. -1.3%
Cons. Staples -0.5%
Health Care 1.2%
Real Estate 1.0%
Materials 0.8%
Utilities 0.2%
Energy 1.3%
Financials 1.7%
Industrials 2.1%

Source: Standard & Poor’s, SEC, 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. Hedge fund positioning relative to the S&P is compiled using aggregated data from the SEC Form 13F and Standard & Poor’s.
Data are based on availability as of August 31, 2023
Volatility, rates, and hedge fund returns

Equity, interest rate and foreign exchange volatility
Z-score, 4-week moving average

Hedge fund returns and short-term rates
December 1990 – present, monthly, year-over-year total returns

Source: CBOE, ICE BoFA, J.P. Morgan Index Research, HFRI, FactSet, J.P. Morgan Asset Management. Equity volatility is represented by the VIX Index, interest rate volatility is represented by the MOVE Index and foreign exchange volatility is represented by the J.P. Morgan Global FX Volatility Index. Data are based on availability as of August 31, 2023.
J.P. Morgan Asset Management – Definitions

Alpha – Is the difference between an investment's return and its expected return, given its level of beta.

Accredited investor – Defined by Rule 501 of Regulation D, an individual (i.e. non-corporate) "accredited investor" is either a natural person who has individual net worth, or joint net worth with the person’s spouse, that exceeds $1 million at the time of the purchase OR a natural person with income exceeding $200,000 in each of the two most recent years or joint income with a spouse exceeding $300,000 for those years and a reasonable expectation of the same income level in the current year. For the complete definition of accredited investor, see the SEC website.

Capital commitment – A Limited Partner’s obligation to provide a specific amount of capital to a Closed-end Fund (defined below) for investments. The Capital Commitment is “drawn down” or “called” over time, meaning a portion of the commitment must be wired to the Closed-end Fund by a set date.

Capital called – The amount of capital wired to a fund that is “drawn down” over time as the General Partner selects investments.

Carried interest (aka incentive fee) – A fee paid to a fund manager for generating returns over a benchmark; calculated as a percentage of investment profits over a hurdle rate and charged in addition to a management fee. In Private Equity, carried interest (typically up to 20% of the profits) becomes payable once the investors have achieved repayment of their original investment in the fund, plus a defined hurdle rate.

Catch-up – This is a common term of the private equity partnership agreement. Once the general partner provides its limited partners with their preferred return, if any, it then typically enters a catch-up period in which it receives the majority or all of the profits until the agreed upon profit-split, as determined by the carried interest, is reached.

Clawback – A clawback obligation represents the general partner's promise that, over the life of the fund, the managers will not receive a greater share of the fund’s distributions than they bargained for. Generally, this means that the general partner may not keep distributions representing more than a specified percentage (e.g., 20%) of the fund’s cumulative profits, if any. When triggered, the clawback will require that the general partner return to the fund’s limited partners an amount equal to what is determined to be “excess” distributions.

Closed-end fund – A fund that has a finite capital raising period and stated term (i.e. 5 years, 10 years, etc.). Clients will have the ability to commit to the fund during the set fundraising period, after which point the fund will be closed to new investors. Unlike an open-ended fund, there is limited flexibility on when a client may invest and there is no liquidity/redemptions. Clients who invest are obligated to remain in the fund for the duration of the term; they will be required to fulfill capital calls during the stated commitment period and will receive periodic distributions based on underlying monetization of investments.

Commitment period – The period of time within which the fund can make investments as established in the Limited Partnership Agreement (“LPA”), meaning the governing document, for the fund.

Direct co-investment – An investment made directly in a single underlying asset of a fund. Example: The General Partner elects to invest in an operating company alongside a fund.


Distressed – A financial instrument in a company that is near or is currently going through bankruptcy. This usually results from a company's inability to meet its financial obligations. As a result, these financial instruments have suffered a substantial reduction in value. Distressed securities can include common and preferred shares, bank debt, trade claims (goods owed) and corporate bonds.

Distributions – The total proceeds distributed by the fund to the Limited Partners, which may include both return of capital and gain distributions.

General partner – The managing partner of a Limited Partnership. The General Partner is managed by the asset management team responsible for making fund investments (i.e., the intermediary between investors with capital and businesses seeking capital to grow).

Gross IRR – The dollar-weighted internal rate of return, before management fees and carried interest generated by the fund.

Hedge Fund strategies:

Relative Value/Arbitrage involves the simultaneous purchase and sale of similar securities to exploit pricing differentials. Strategies in this sector offer potential to generate consistent returns while minimizing directional risk.

Opportunistic/Macro strategies involve investments in a wide variety of strategies and instruments, which often have a directional stance based on the manager’s global macroeconomic views.

Long/Short (US) Equity involves long and/or short positions in equity securities deemed to be under- or overvalued, respectively. Exposures to sectors, geography, and market capitalizations are often flexible and will change over time.

Merger Arbitrage/Event Driven strategies invest in opportunities created by significant corporate transactions and events which tend to alter a company’s financial structure or operating strategy.

Distressed Securities invests in debt and equity securities of firms in reorganization or bankruptcy.

High watermark – The highest peak in value that an investment fund has reached. This term is often used in the context of fund manager compensation. For example, a $1,000,000 investment is made in year 1 and the fund declines by 50%, leaving $500,000 in the fund. In year 2, the fund returns 100%, bringing the investment value back to $1,000,000. If a fund has a high watermark, it will not take incentive fees on the return in year 2, since the investment has never grown. The fund will only take incentive fees if the investment grows above the initial level of $1,000,000.

Hurdle rate – The rate of return that the fund manager must meet before collecting incentive fees.

Internal rate of return (IRR) – The dollar-weighted internal rate of return. This return considers the daily timing of cash flows and cumulative fair stated value, as of the end of the reported period.

J-Curve effect – Occurs when funds experience negative returns for the first several years. This is a common experience, as the early years of the fund include capital drawdowns and an investment portfolio that has yet to mature. If the fund is well managed, it will eventually recover from its initial losses and the returns will form a J-curve: losses in the beginning dip below the initial value, and later returns show profits above the initial level.

K-1 – Tax document issued for an investment in partnership interests to report your share of income, deductions and credits. (Note that Private Investments generally issue a Schedule K-1 instead of a Form 1099 for tax reporting. K-1s may at times be issued later than 1099s, requiring investors to file for an extension).

Limited partner – An investor in a Limited Partnership, which is a form of legal entity used for certain hedge funds, private equity funds and real estate funds.

Management fee – Fee paid to a fund manager for managing the fund; typically calculated as a percentage of assets under management.

Mezzanine finance – Loan finance that is half debt, half equity.

Multiple of Invested Capital (MIC) – A calculation performed by adding the remaining (reported) value and the distributions received (cash out) and subsequently dividing that amount by the total capital contributed (cash in).

Net asset value (NAV) – This is the current fair stated value for each of the investments, as reported by the administrator of the fund.

Net IRR – The dollar-weighted internal rate of return, net of management fees and carried interest generated by the fund. This return considers the daily timing of all cash flows and the cumulative fair stated value, as of the end of the reported period.
Open-ended fund – As it relates to private alternatives (not mutual fund structure), an open-ended fund is a fund that has no stated term or maturity and allows clients to invest and redeem on an ongoing basis. The frequency of investments (aka subscriptions) and / or redemptions may vary. Redemptions from open-ended private alternative funds generally require advance notice in writing.

Pari Passu – At an equal rate or pace, without preference.

Portfolio company – A business entity that has secured at least one round of financing from one or more private equity funds. A company in which a given fund has invested.

Post-money valuation – The valuation of a company immediately after the most recent round of financing. For example, a venture capitalist may invest $3.5 million in a company valued at $2 million “pre-money” (before the investment was made). As a result, the startup will have a post money valuation of $5.5 million.

Pre-money valuation – The valuation of a company prior to a round of investment. This amount is determined by using various calculation methods, such as multiples to earnings or comparable to other private and/or public companies.

Preferred return – Also known as Hurdle Rate.

Private equity – Equity capital invested in a private company through a negotiated process.

Primary investment – An investment made in a newly formed limited partnership.

Real estate investment trust (REITs) – Stocks listed on an exchange that represent an interest in a pool of real estate properties.

Realized value – The amount of capital extracted from an investment.

Reported/remaining value – The current stated value for each of the investments in a fund, as reported by the General Partner of the fund.

Return on equity (RoE) - Amount of net income returned as a percentage of shareholders’ equity.

Secondary market investment – The buying and selling of pre-existing investor commitments.

Seed money – The first round of capital for a start-up business. Seed money usually takes the structure of a loan or an investment in preferred stock or convertible bonds, although sometimes it is common stock. Seed money provides startup companies with the capital required for their initial development and growth. Angel investors and early-stage venture capital funds often provide seed money.

Tax documents – See K-1.

Total value – The combination of market value and realized value of an investment. Shows the total worth of an investment.

Unfunded commitment – Money that has been committed to an investment but not yet transferred to the General Partner.

Venture capital – A specialized form of private equity, characterized chiefly by high-risk investment in new or young companies following a growth path in technology and other value-added sectors.

Vintage year – The year of fund formation and first draw-down of capital.

Write-down – A reduction in the value of an investment.
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