



Guide to Alternatives[®]

1Q 2024

As of February 29, 2024





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Alternatives fundraising

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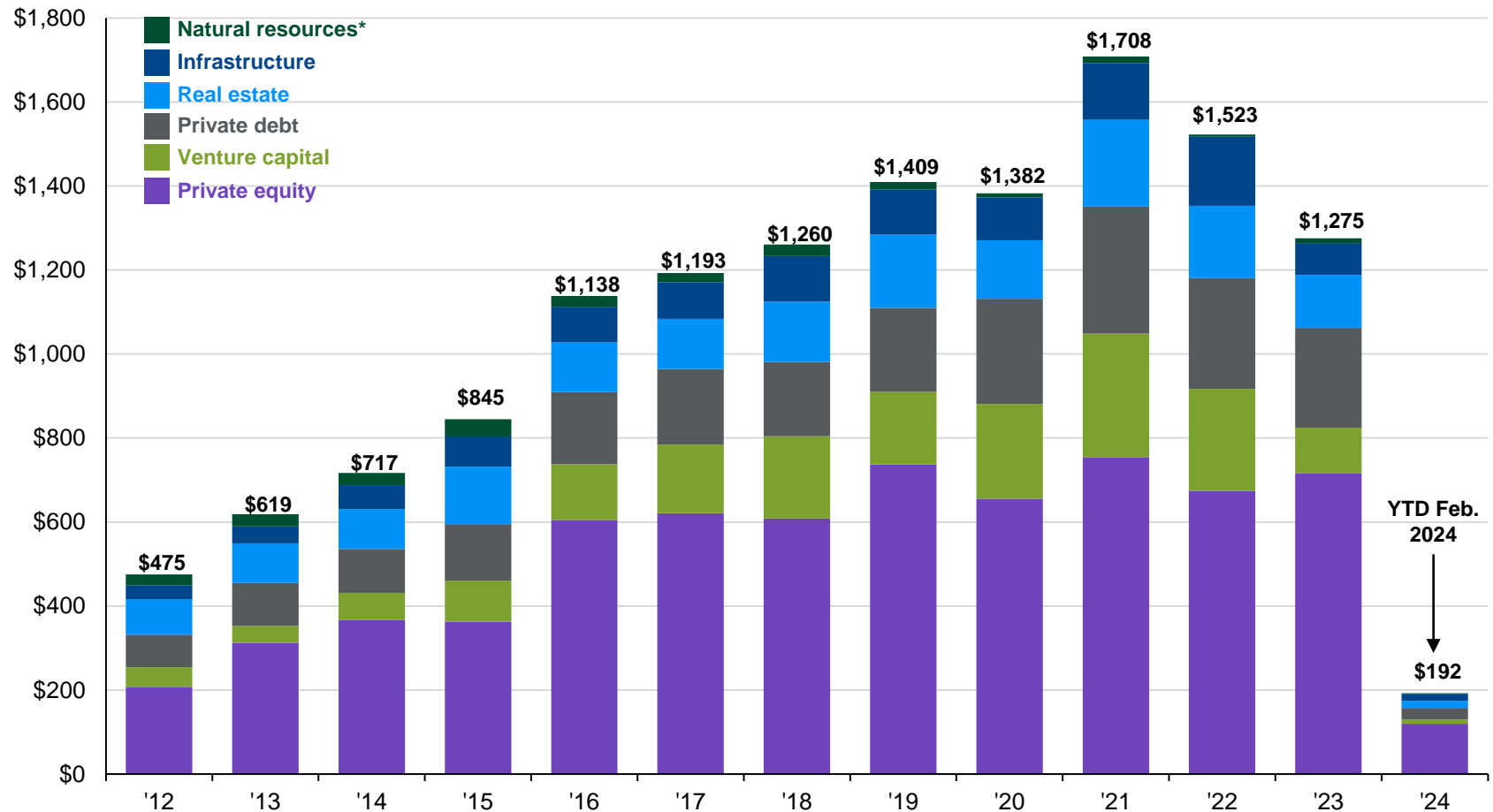
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Alts in aggregate

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. *Natural resources includes energy, timberland, agriculture and farmland, metals and mining, water, and diversified business. Data may not sum to total due to rounding.

Data are based on availability as of February 29, 2024.



Alternatives dry powder

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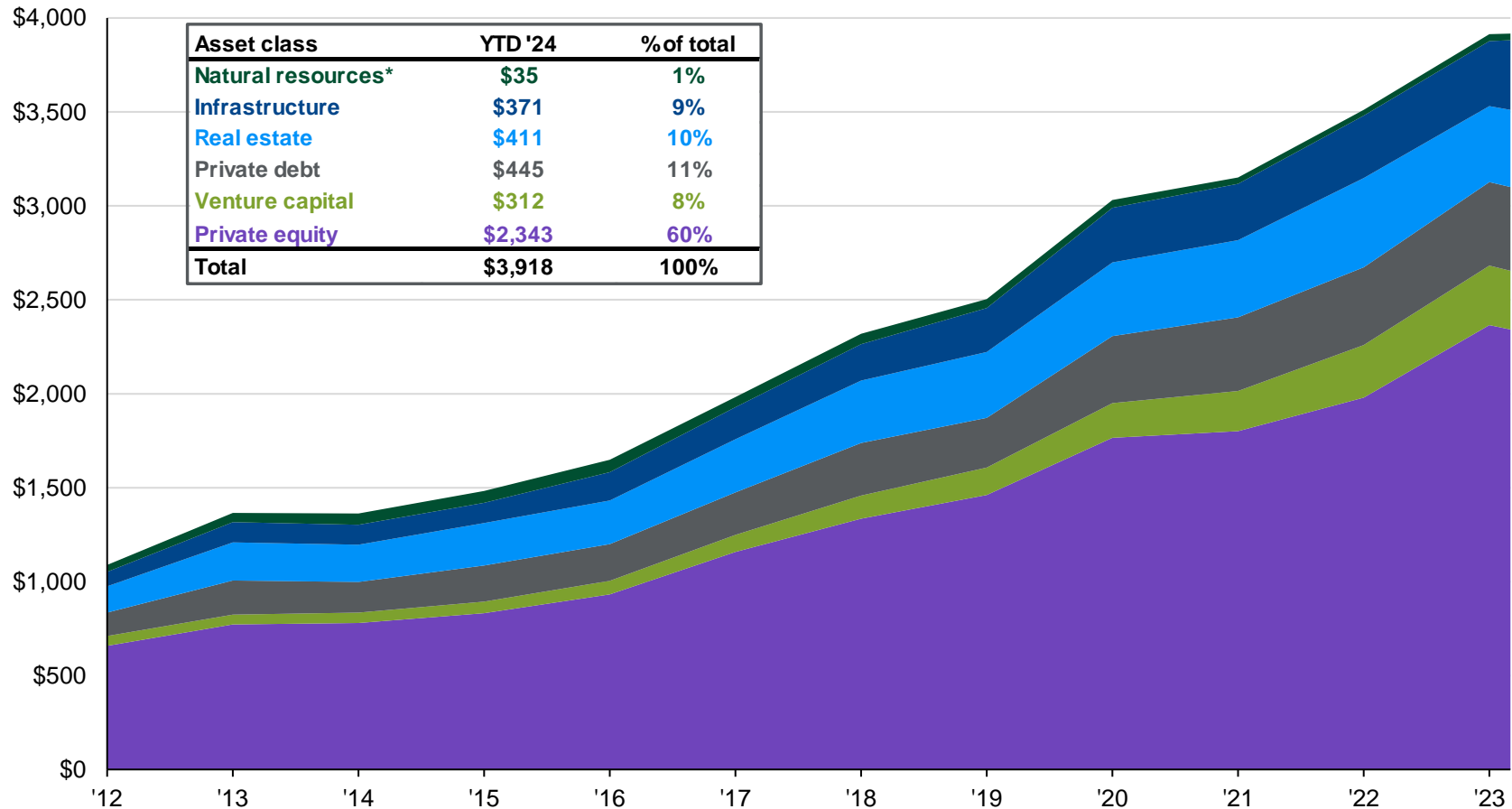
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Alts in aggregate

Global dry powder by asset class

Cumulative dry powder, USD billions



Source: Preqin, J.P. Morgan Asset Management. Dry powder refers to committed but uninvested capital. Fundraising categories are provided by Preqin. *Natural resources includes energy, timberland, agriculture and farmland, metals and mining, water, and diversified business. Percentages may not sum to 100 due to rounding. Data are based on availability as of February 29, 2024.



Portfolio diversification

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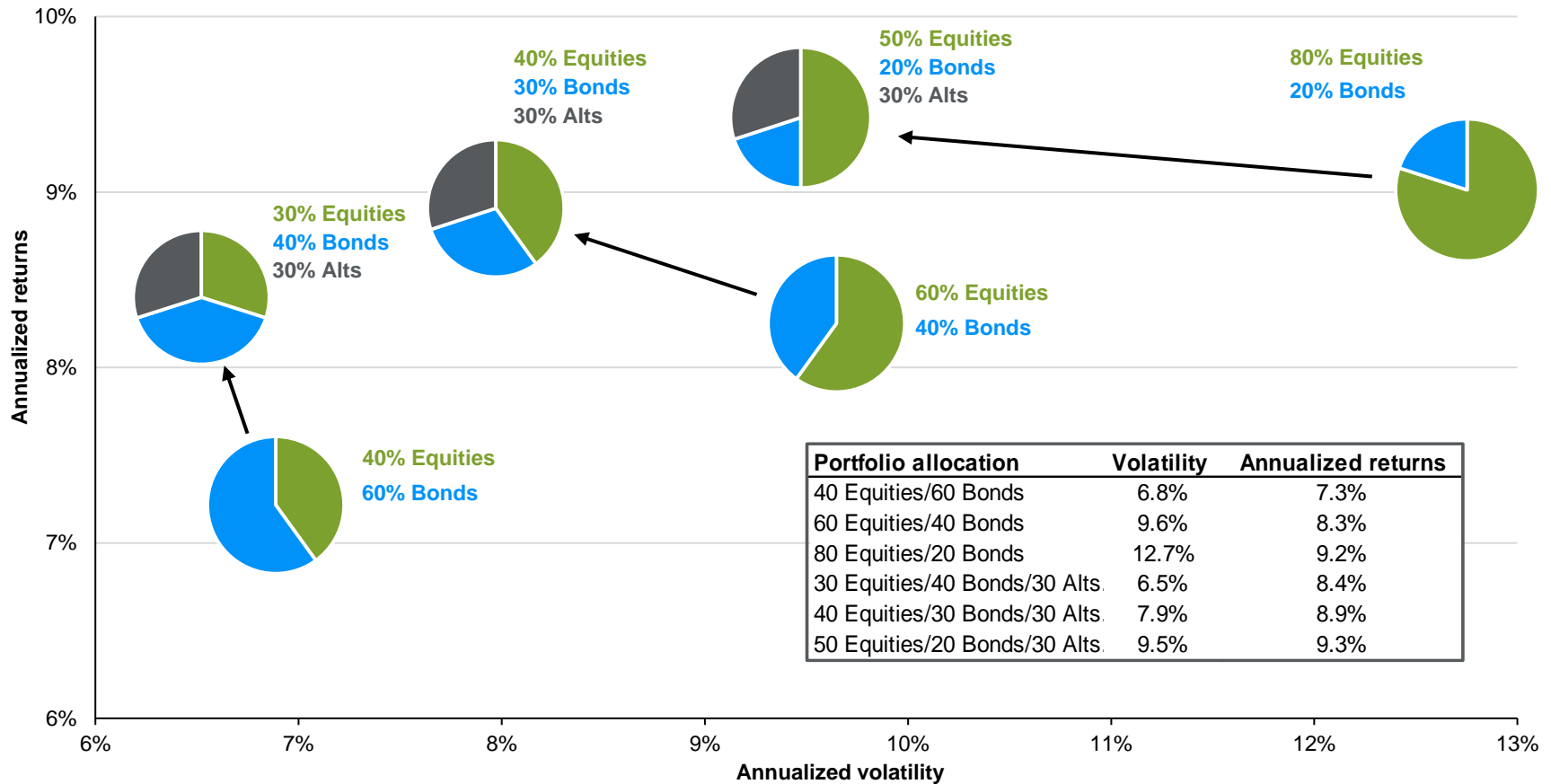
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Alts in aggregate

Alternatives and portfolio risk/return

Annualized volatility and returns, 1989 – 3Q23



Source: Bloomberg, Burgiss, HFRI, 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. Equities are represented by the S&P 500 Total Return Index. Bonds are represented by the Bloomberg U.S. Aggregate Total Return Index. Data are based on availability as of February 29, 2024.



Alternative asset correlations, returns and yields

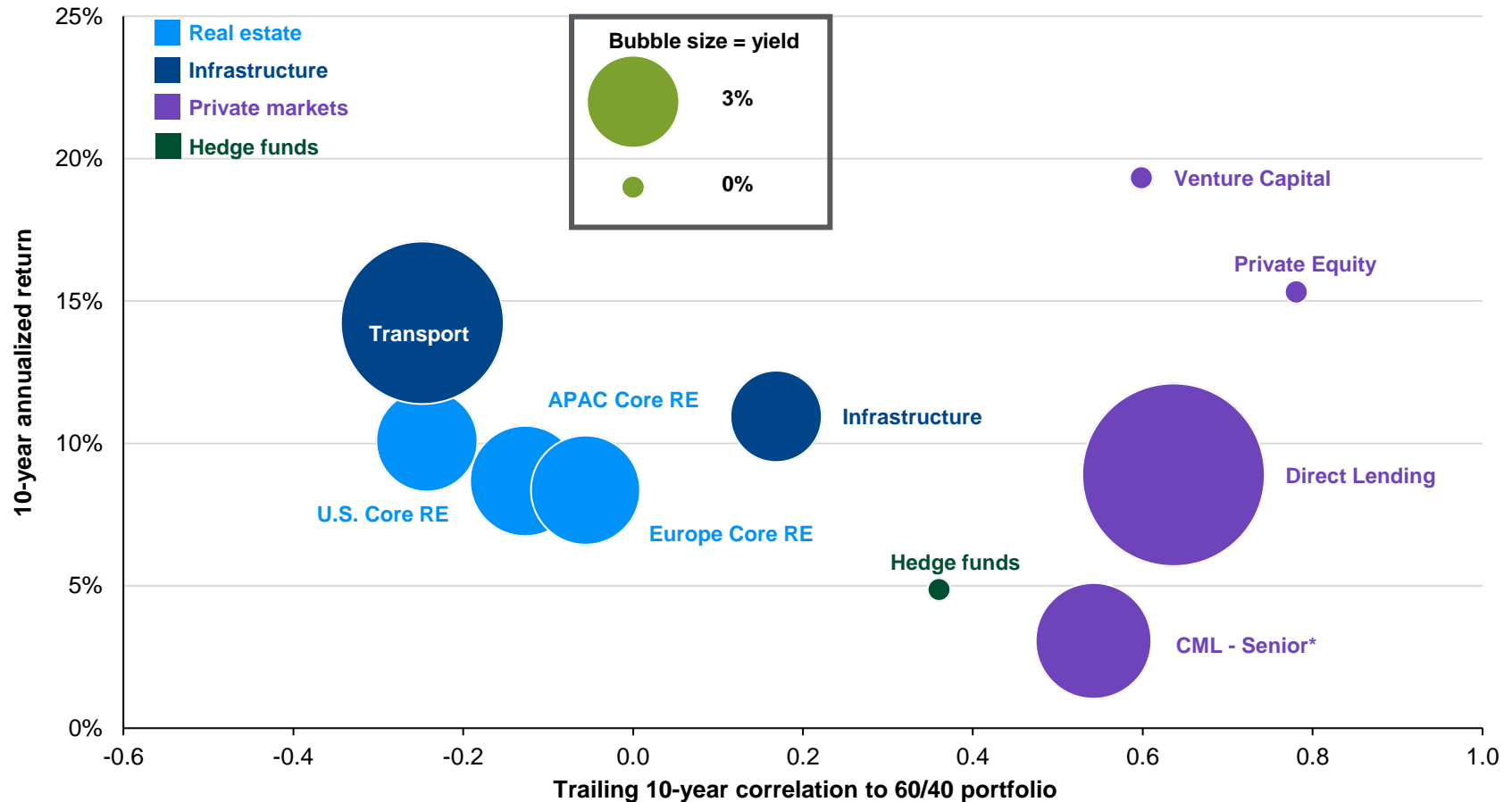
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Correlations, returns, and yields

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



Source: Burgiss, Cliffwater, Gilberto-Levy, HFRI, 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 10, 11, and 14 of the *Guide to Alternatives*. Yields are based on latest available data as described on page 10 of the *Guide to Alternatives*. *CML is commercial mortgage loans. Data are based on availability as of February 29, 2024.



Alternatives and manager selection

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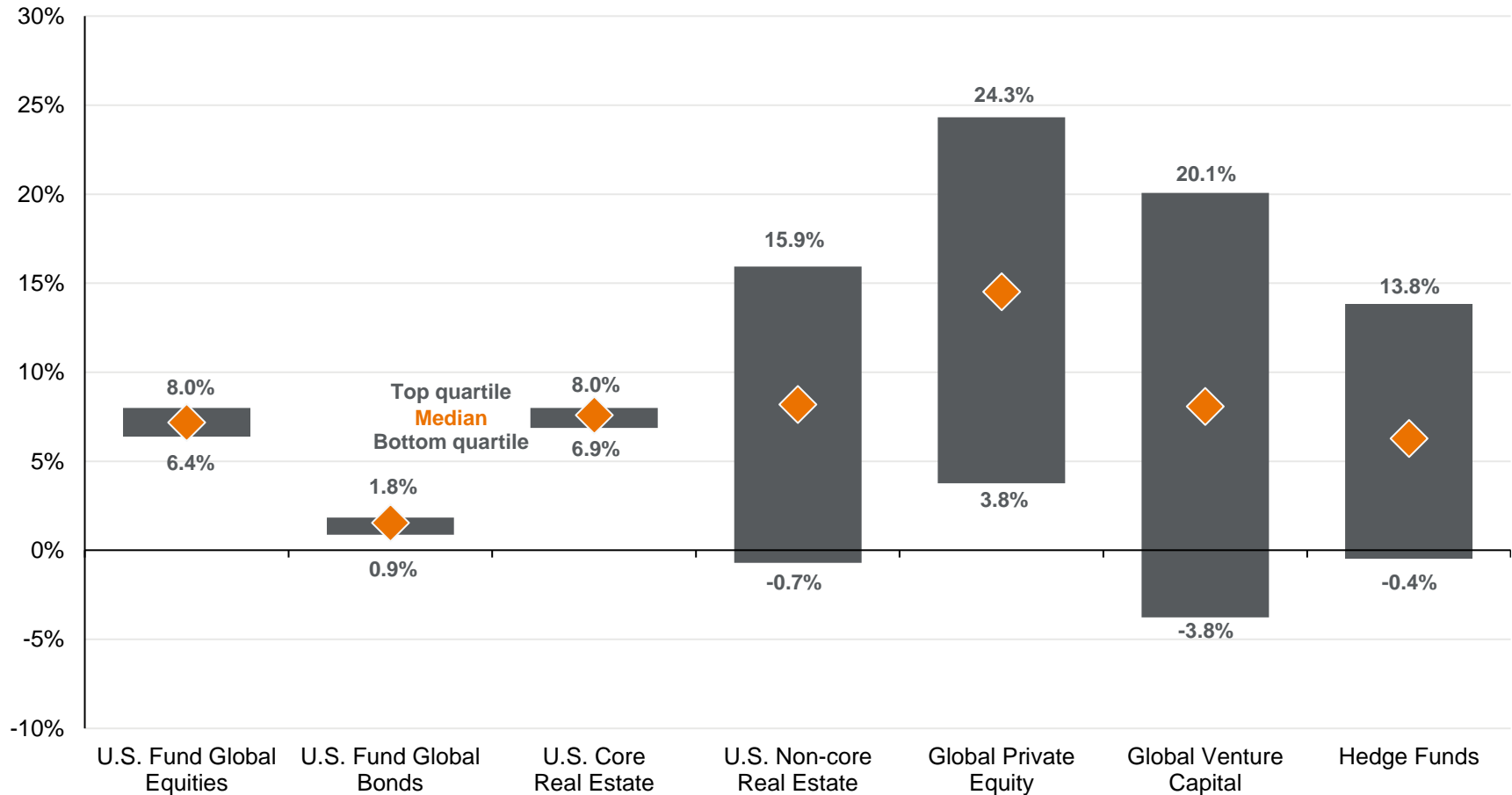
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Alts in aggregate

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 and global bonds are based on the world large stock and world bond categories, respectively. *Manager dispersion is based on annual returns over a 10-year period ending 4Q 2023 for Hedge Funds and U.S. Core Real Estate and 3Q 2023 for U.S. Fund Global Equities and U.S. Fund Global Bonds. Non-core Real Estate, Global Private Equity and Global Venture Capital are represented by the 10-year horizon internal rate of return (IRR) ending 3Q 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 February 29, 2024.

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Public and private market correlations

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Alts in aggregate

Public and private market correlations

Quarterly returns

2008 - 3Q23		Global Bonds	Global Equities	U.S. Core RE	Europe Core RE*	APAC Core RE	Global Core Infra	Transport	Timber	Direct Lending	Venture Capital	Private Equity	Equity Long/Short	Relative Value	Macro	Bitcoin
Financial assets	Global Bonds	1.0														
	Global Equities	0.4	1.0													
Global real estate	U.S. Core RE	-0.2	0.0	1.0												
	Europe Core RE*	-0.2	0.1	0.7	1.0											
	APAC Core RE	-0.1	0.0	0.8	0.7	1.0										
Real assets	Global Core Infra	-0.1	0.1	0.4	0.3	0.5	1.0									
	Transport	-0.2	0.0	0.3	0.0	0.2	-0.1	1.0								
	Timber	-0.2	-0.1	0.2	0.0	0.1	0.2	0.2	1.0							
Private markets	Direct Lending	0.0	0.7	0.2	0.3	0.3	0.3	0.1	-0.1	1.0						
	Venture Capital	0.2	0.6	0.3	0.5	0.3	0.2	0.0	-0.1	0.5	1.0					
	Private Equity	0.3	0.9	0.3	0.4	0.3	0.2	0.0	-0.1	0.8	0.8	1.0				
Hedge funds	Equity Long/Short	0.3	0.9	-0.1	0.1	0.0	0.1	0.0	-0.1	0.7	0.6	0.9	1.0			
	Relative Value	0.2	0.9	-0.1	0.1	0.0	0.1	-0.1	-0.2	0.9	0.5	0.8	0.9	1.0		
	Macro	0.0	0.3	0.0	0.1	0.0	0.0	-0.2	0.0	0.1	0.2	0.2	0.3	0.3	1.0	
Crypto	Bitcoin	0.1	0.1	0.2	0.0	0.1	0.2	0.0	0.0	0.1	0.2	0.2	0.1	0.1	0.0	1.0

Source: Bloomberg, Burgiss, Cliffwater, HFRI, MSCI, NCREIF, J.P. Morgan Asset Management. *Europe Core RE includes continental Europe. Private Equity and Venture Capital are time weighted returns from Burgiss. RE – real estate. Global equities: MSCI AC World Index. Global Bonds: Bloomberg Global Aggregate Index. U.S. Core Real Estate: NCREIF Property Index – Open End Diversified Core Equity component. Europe Core Real Estate: MSCI Global Property Fund Index – Continental Europe. Asia Pacific (APAC) Core Real Estate: MSCI Global Property Fund Index – Asia-Pacific. Global infrastructure (Infra): MSCI Global Private Infrastructure Asset Index. U.S. Direct Lending: Cliffwater Direct Lending Index. Timber: NCREIF Timberland Property Index (U.S.). Hedge fund indices are from HFRI. Transport: returns are derived from a J.P. Morgan Asset Management index. All correlation coefficients are calculated based on quarterly total return data for the period 6/30/2008-9/30/2023, except correlations with Bitcoin which are calculated over the period 12/31/2010-9/30/2023. Returns are denominated in USD.

Data are based on availability as of February 29, 2024.



Yield alternatives

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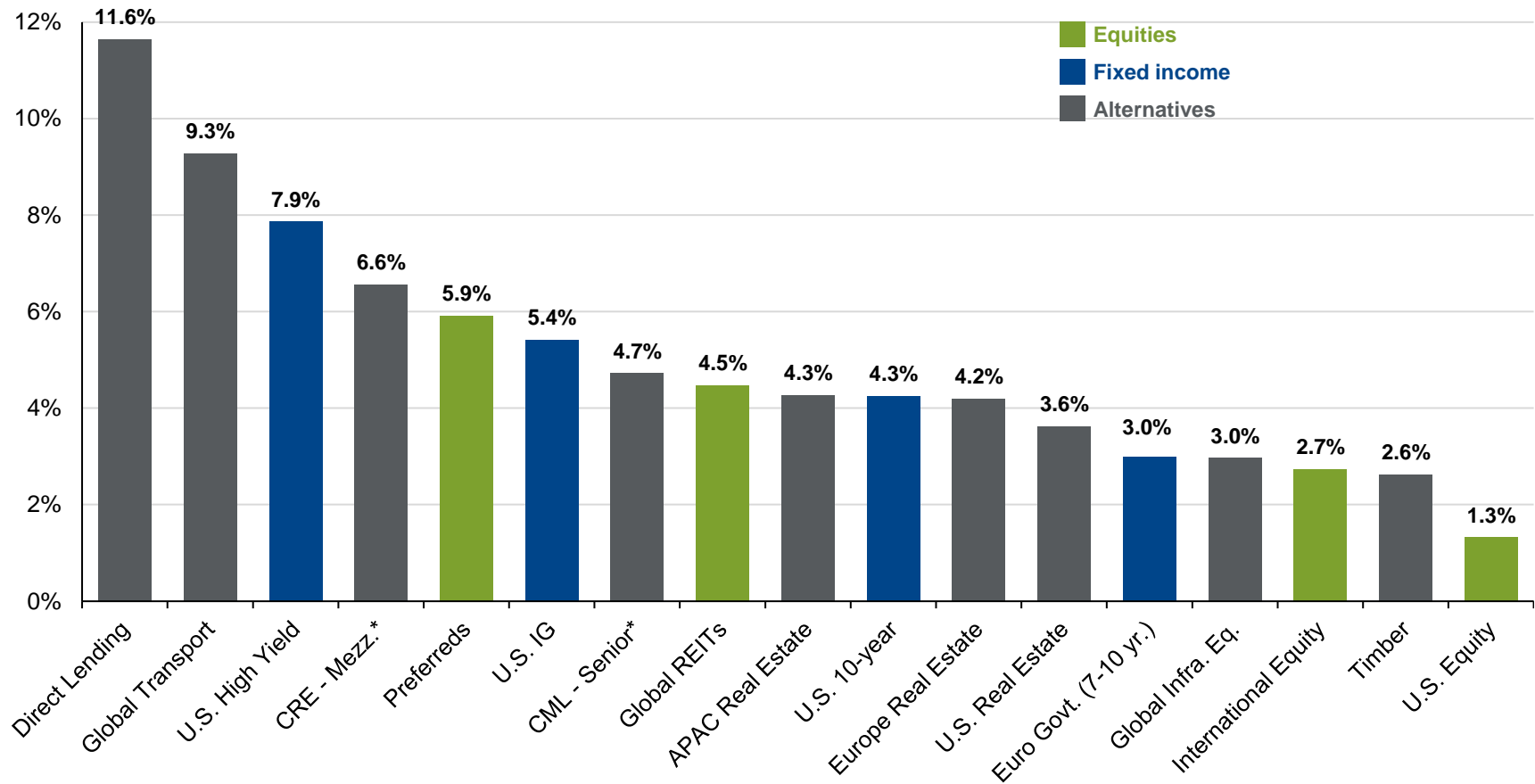
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Alts in aggregate

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 2/29/2024. Alternative yields are as of 9/30/2023, except U.S. Real Estate, Timber, and CML - Senior, which are as of 12/31/2023, and CRE-Mezz, which is as of 1/31/2024. 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 U.S. Aggregate Corporate High Yield; Global Infrastructure: MSCI Global Private Infrastructure Asset Index; U.S. Real Estate: NCREIF Property Index - ODCE; Global REITs: FTSE NAREIT Global REITs; International Equity: MSCI ACWorld 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 February 29, 2024.

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Equity market correlations and yields

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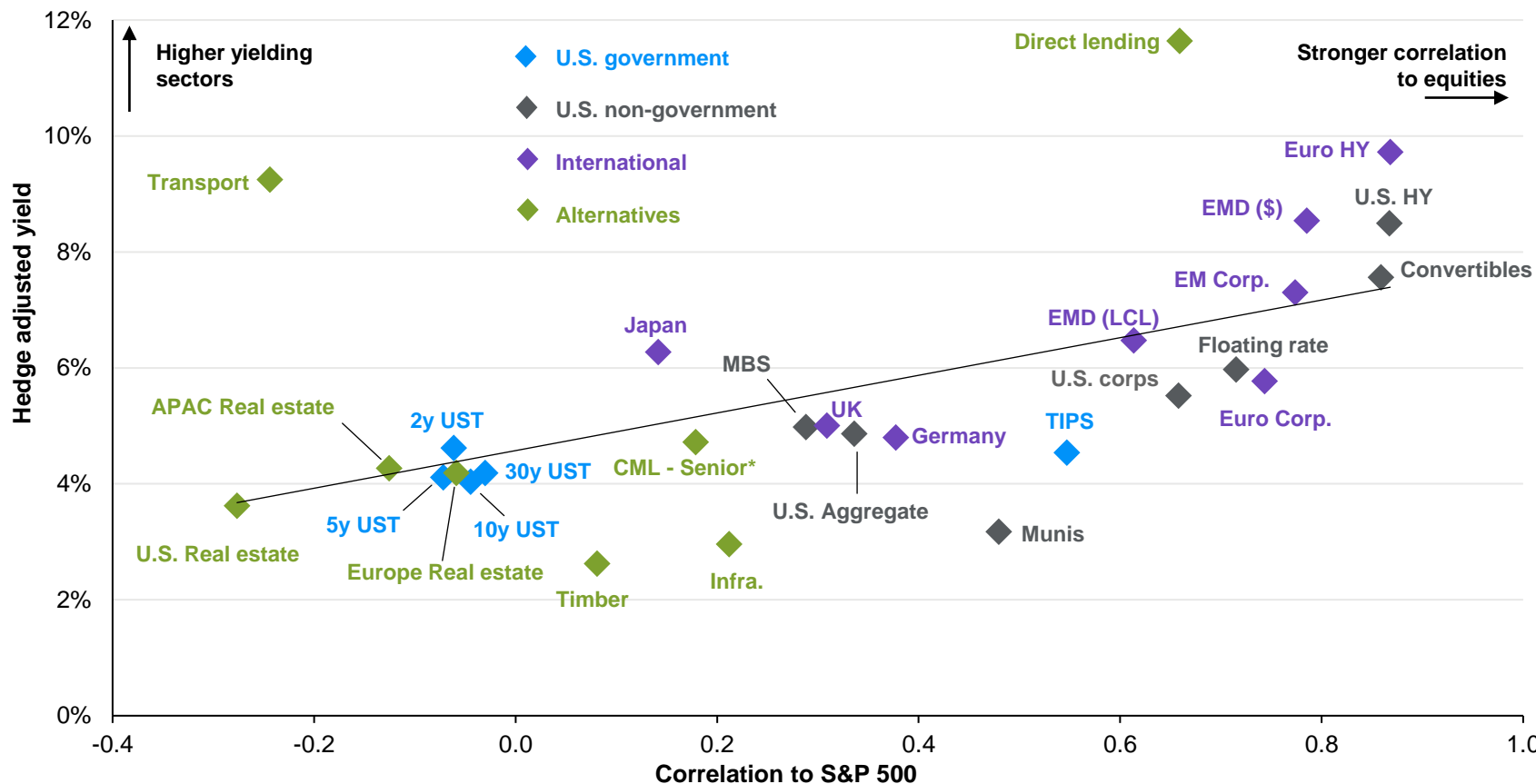
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Alts in aggregate

Equity market correlations and yields

Hedge adjusted yield, last 12 months



Source: Bloomberg, Gilberto-Levy, NCREIF, MSCI, FactSet, ICE, J.P. Morgan Asset Management. *CML is commercial mortgage loans. Fixed income shown above are represented by Bloomberg indices except for EMD and ABS – U.S. Aggregate; MBS: U.S. Aggregate Securitized – MBS; U.S. corps: U.S. Corporates; Munis: Municipal Bond; U.S. HY: Corporate High Yield; TIPS: Treasury Inflation-Protected Securities (TIPS); Floating Rate: U.S. Floating Rate; Convertibles: U.S. Convertibles Composite; ABS: J.P. Morgan ABS Index; EMD (\$): J.P. Morgan EMBIG Diversified Index; EMD (LCL): J.P. Morgan GBI EM Global Diversified Index; EM Corp.: J.P. Morgan CEMBI Broad Diversified Index; Euro Corp.: Euro Aggregate Corporate Index; Euro HY: Pan-European High Yield Index; U.S. Real Estate: NCREIF Property Index – ODCE; Europe Real Estate: Market weighted-avg. of MSCI Global Property Fund Indices – U.K. & Cont. Europe; APAC Real Estate: MSCI Global Property Index – Asia-Pacific; Global Infra.: MSCI Global Private Infrastructure Asset Index (equal weighted blend); U.S. Direct Lending: Cliffwater Direct Lending Index; Timber: NCREIF Timberland Property Index (U.S.); Transport returns and yield are derived from a J.P. Morgan Asset Management index; CML – Senior: Gilberto-Levy Commercial Mortgage Performance Aggregate Index. Convertibles yield is based on the U.S. portion of the Bloomberg Global Convertibles. Country yields are represented by the global aggregate for each country. Yield and return information based on bellwethers for Treasury securities. Alternative correlations are based on quarterly returns over the past 10 years through 9/30/2023, except U.S. Real Estate and Timber, which are as of 12/31/2023. All non-alternative yields are as of 2/29/2024. Alternative yields are as of 9/30/2023, except U.S. Real Estate and Timber, which are as of 12/31/2023. Data are based on availability as of February 29, 2024.



Valuations monitor

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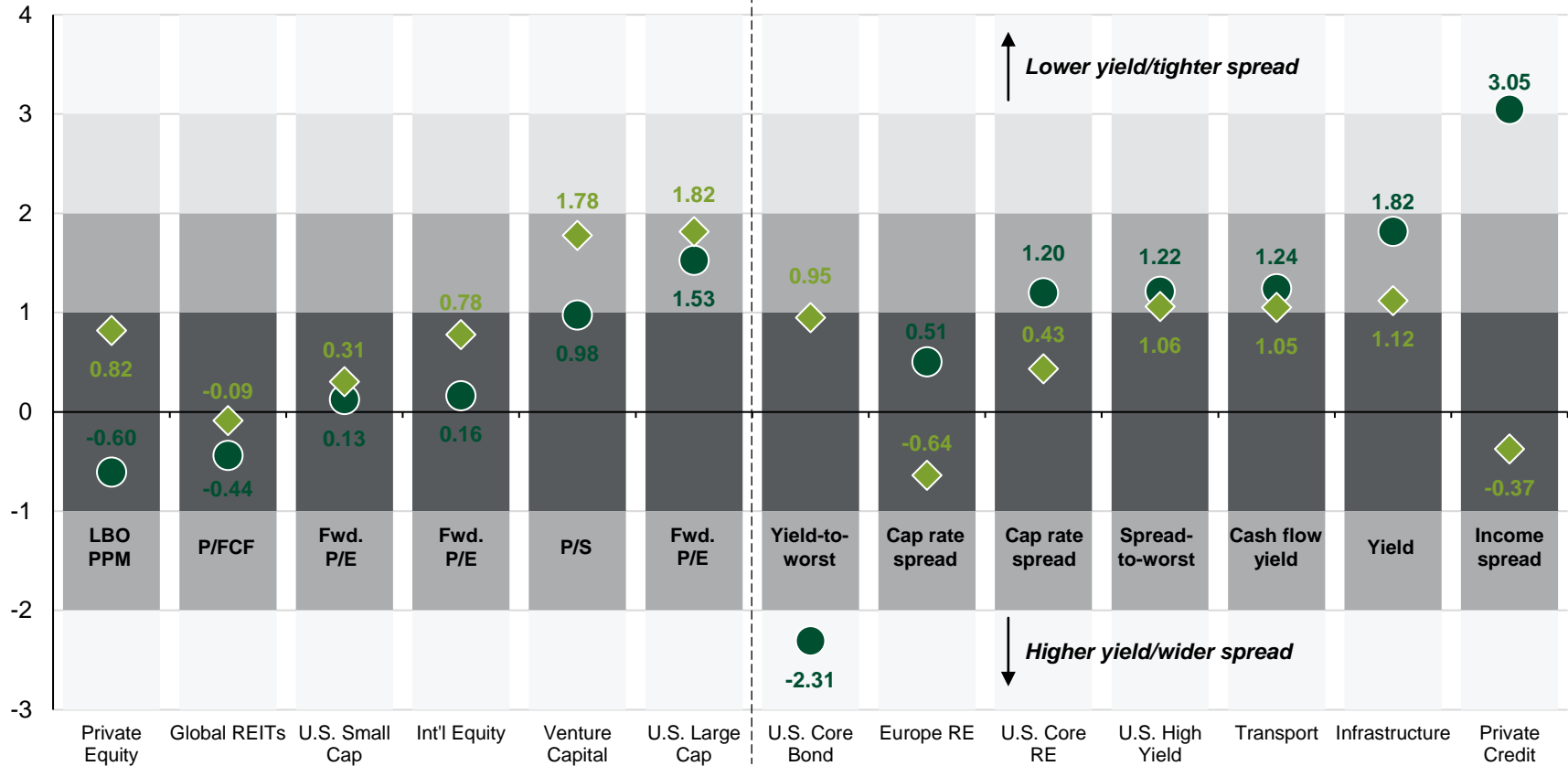
Alts in aggregate

Asset class valuations

Z-scores based on average valuations since March 2009*

◆ 12/31/2021

● Current



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. Global REITs average valuation is since 1/31/2010. Data are based on availability as of February 29, 2024.



Public vs. private market drawdowns

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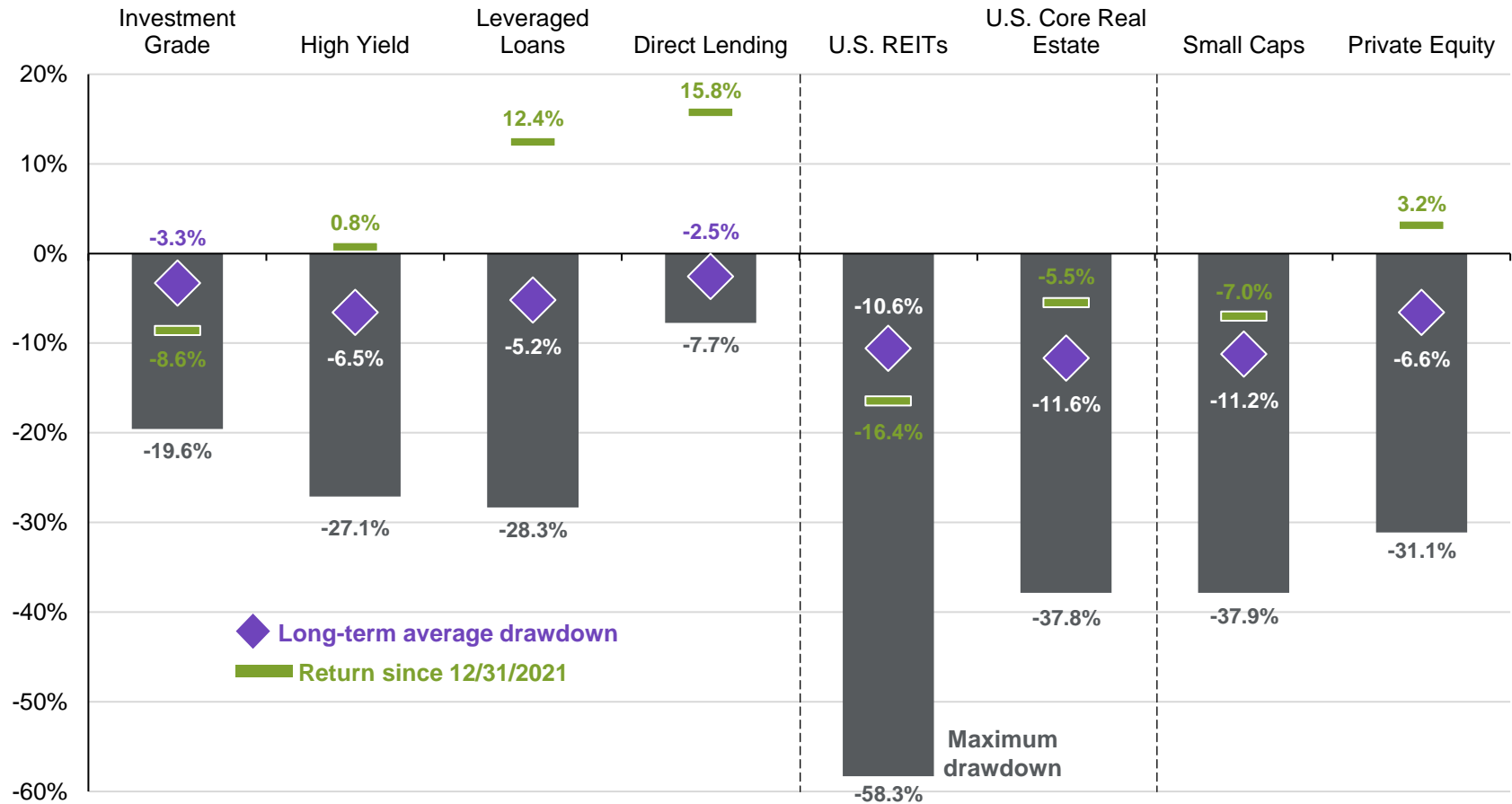
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Alts in aggregate

Public and private market drawdowns

Quarterly drawdowns, cumulative, total returns



Source: Burgiss, Bloomberg, Cliffwater, FactSet, FTSE, Morningstar, NCREIF, Russell, J.P. Morgan Asset Management.
Leveraged loans: Morningstar LSTA US Leveraged Loan Total Return Index. Investment grade: Bloomberg U.S. Corporate Investment Grade Index. High yield: Bloomberg U.S. Aggregate Credit – Corporate High Yield Index. Direct Lending: Cliffwater Direct Lending Index. U.S. Core Real Estate: NCREIF Property Index – Open End Diversified Core Equity component. U.S. REITs: FTSE NAREIT. Private Equity: Burgiss time weighted returns. Small Caps: Russell 2000. Returns and drawdowns are calculated using quarterly data. Quarterly drawdowns are cumulative. Data begins in 2004 for leveraged loans, investment grade, high yield, and direct lending; 1979 for REITs and real estate; 1980 for small caps and private equity. Returns since 12/31/2021 are through 12/31/2021 except for direct lending and private equity (through 9/30/2023). Maximum drawdown for all asset classes was 2008-2009, except investment grade which was 2022. Data are based on availability as of February 29, 2024.

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Alternative asset class returns

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Alts in aggregate

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	YTD 3Q23	2013-2022	
												Ann.	Vol.
Venture Capital	26.4%	Venture Capital 25.8%	Transport 16.2%	Infra. 14.2%	Private Equity 22.9%	Venture Capital 21.0%	Venture Capital 20.2%	Venture Capital 57.9%	Venture Capital 49.1%	Transport 29.9%	Transport 30.2%	Venture Capital 19.1%	Venture Capital 13.0%
Private Equity	19.8%	Infra. 13.9%	Infra. 15.5%	Transport 13.4%	Transport 20.2%	Infra. 11.6%	Private Equity 16.7%	Private Equity 24.2%	Private Equity 37.1%	Infra. 9.7%	Direct Lending 8.9%	Private Equity 15.5%	Transport 8.8%
Transport	18.8%	U.S. Core RE 12.5%	Venture Capital 15.3%	Private Equity 12.3%	Venture Capital 14.8%	Europe Core RE 9.8%	Infra. 11.5%	Asset Allocation 11.5%	Transport 27.7%	U.S. Core RE 7.5%	Infra. 5.6%	Transport 14.2%	Private Equity 8.5%
U.S. Core RE	13.9%	Europe Core RE 12.3%	U.S. Core RE 15.0%	Direct Lending 11.2%	Infra. 12.2%	APAC Core RE 9.4%	Europe Core RE 9.4%	Hedge Funds 8.9%	U.S. Core RE 22.2%	APAC Core RE 6.8%	Private Equity 5.2%	Infra. 10.9%	Hedge Funds 5.6%
Asset Allocation	13.0%	Asset Allocation 11.2%	Europe Core RE 12.8%	APAC Core RE 10.5%	Asset Allocation 12.2%	Private Equity 8.9%	Asset Allocation 9.2%	CML - Senior* 6.3%	Asset Allocation 20.1%	Direct Lending 6.3%	Hedge Funds 4.2%	Asset Allocation 10.7%	U.S. Core RE 4.3%
Direct Lending	12.7%	Private Equity 10.0%	APAC Core RE 11.8%	U.S. Core RE 8.8%	APAC Core RE 11.6%	Asset Allocation 8.6%	Direct Lending 9.0%	Transport 5.9%	Europe Core RE 14.2%	Europe Core RE 4.6%	Asset Allocation 4.0%	U.S. Core RE 10.1%	CML - Senior* 3.7%
Infra.	11.0%	Direct Lending 9.6%	Asset Allocation 10.4%	Asset Allocation 8.5%	Europe Core RE 9.8%	U.S. Core RE 8.3%	CML - Senior* 8.4%	Direct Lending 5.5%	Hedge Funds 13.9%	Asset Allocation 3.0%	CML - Senior* 1.0%	Direct Lending 8.9%	Europe Core RE 3.6%
Hedge Funds	9.6%	APAC Core RE 9.4%	Private Equity 9.3%	Europe Core RE 8.1%	Direct Lending 8.6%	Direct Lending 8.1%	APAC Core RE 6.6%	Europe Core RE 4.8%	Direct Lending 12.8%	Private Equity -1.9%	APAC Core RE -1.3%	APAC Core RE 8.7%	Infra. 3.4%
APAC Core RE	9.1%	CML - Senior* 7.4%	Direct Lending 5.5%	Hedge Funds 3.2%	Hedge Funds 8.5%	Transport 7.7%	Hedge Funds 5.6%	U.S. Core RE 1.2%	APAC Core RE 12.0%	Hedge Funds -2.8%	Venture Capital -2.8%	Europe Core RE 8.4%	Direct Lending 2.9%
Europe Core RE	5.8%	Transport 6.9%	CML - Senior* 2.7%	CML - Senior* 2.9%	U.S. Core RE 7.6%	CML - Senior* 2.6%	U.S. Core RE 5.3%	Infra. 0.2%	Infra. 10.5%	CML - Senior* -9.0%	Europe Core RE -3.0%	Hedge Funds 4.9%	Asset Allocation 2.8%
CML - Senior*	2.9%	Hedge Funds 4.3%	Hedge Funds -0.2%	Venture Capital 0.8%	CML - Senior* 5.7%	Hedge Funds -1.2%	Transport -0.5%	APAC Core RE 0.1%	CML - Senior* 1.9%	Venture Capital -20.8%	U.S. Core RE -7.6%	CML - Senior* 3.1%	APAC Core RE 2.1%

Source: Burgiss, Cliffwater, Gilberto-Levy, HFRI, MSCI, NCREIF, FactSet, J.P. Morgan Asset Management. *CML is commercial mortgage loans. CML - Senior: Gilberto-Levy Commercial Mortgage Performance Index. Private Equity and Venture Capital are time weighted returns from Burgiss. Hedge funds: HFRI Fund Weighted Composite. Transport returns are derived from a J.P. Morgan Asset Management index. U.S. Core RE: NCREIF Property Index - Open End Diversified Core Equity component. Europe Core Real Estate: MSCI Global Property Fund Index - Continental Europe. Asia Pacific (APAC) Core Real Estate: MSCI Global Property Fund Index - Asia-Pacific. Direct Lending: Cliffwater Direct Lending Index. Global infrastructure (Infra.): MSCI Global Private Infrastructure Asset Index. Commercial Mortgage Loans: Gilberto-Levy Commercial Mortgage Performance Index. The "Asset Allocation" portfolio assumes an evenly weighted portfolio consisting of the above alternatives. Annualized return (Ann.) and volatility (Vol.) represents the period from 12/31/2012 to 12/31/2022. Data are based on availability as of February 29, 2024.



Sources of global real estate returns

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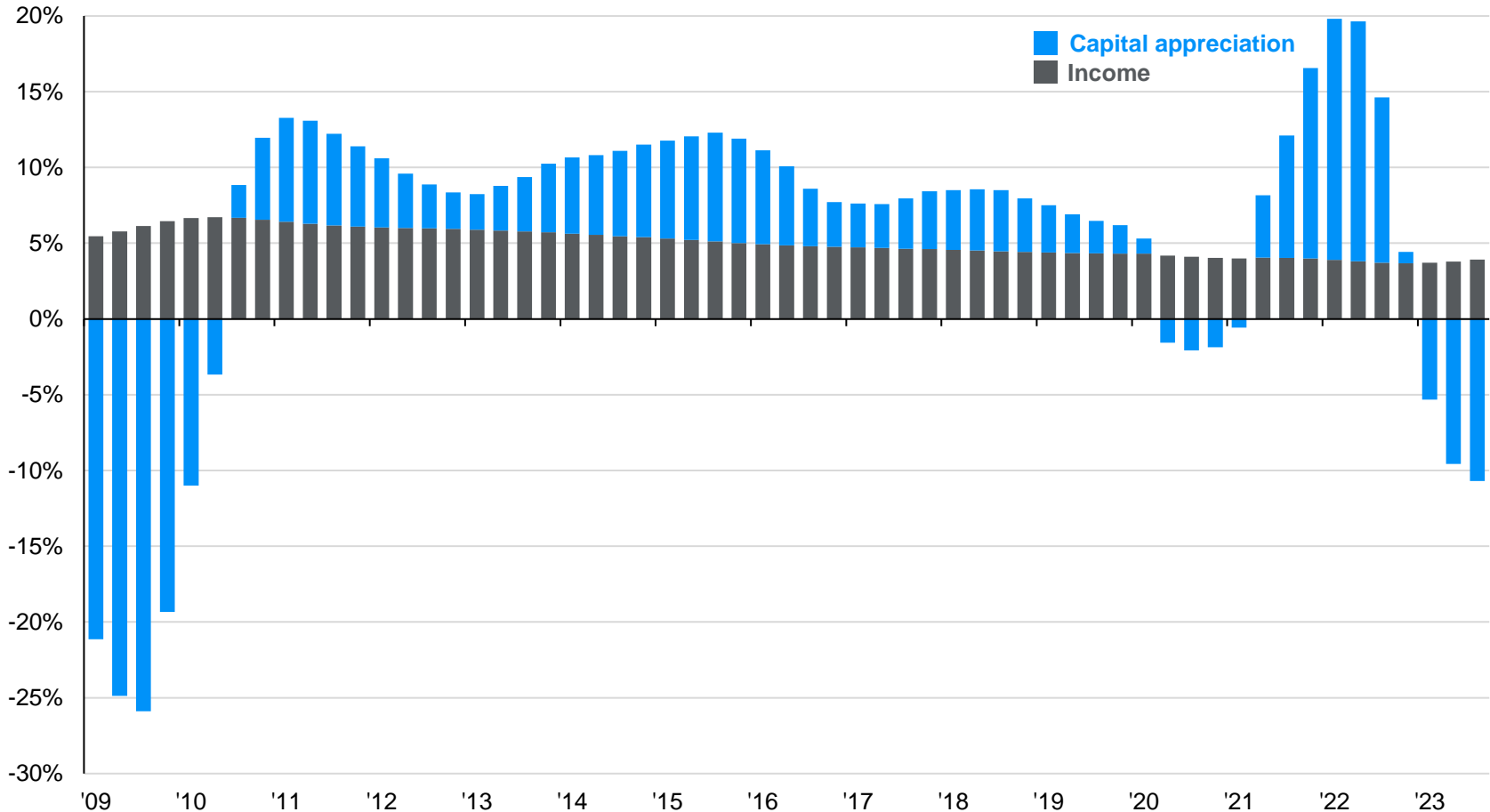
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Real estate

Global real estate returns

Rolling 4-quarter returns from income and capital appreciation



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

Real Estate returns represented by the MSCI Global Property Fund Index. Data show rolling one-year returns from income and capital appreciation. The chart shows the full index history, beginning in 1Q09, and ending in 3Q23. 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.

Data are based on availability as of February 29, 2024.

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U.S. REITs and direct real estate

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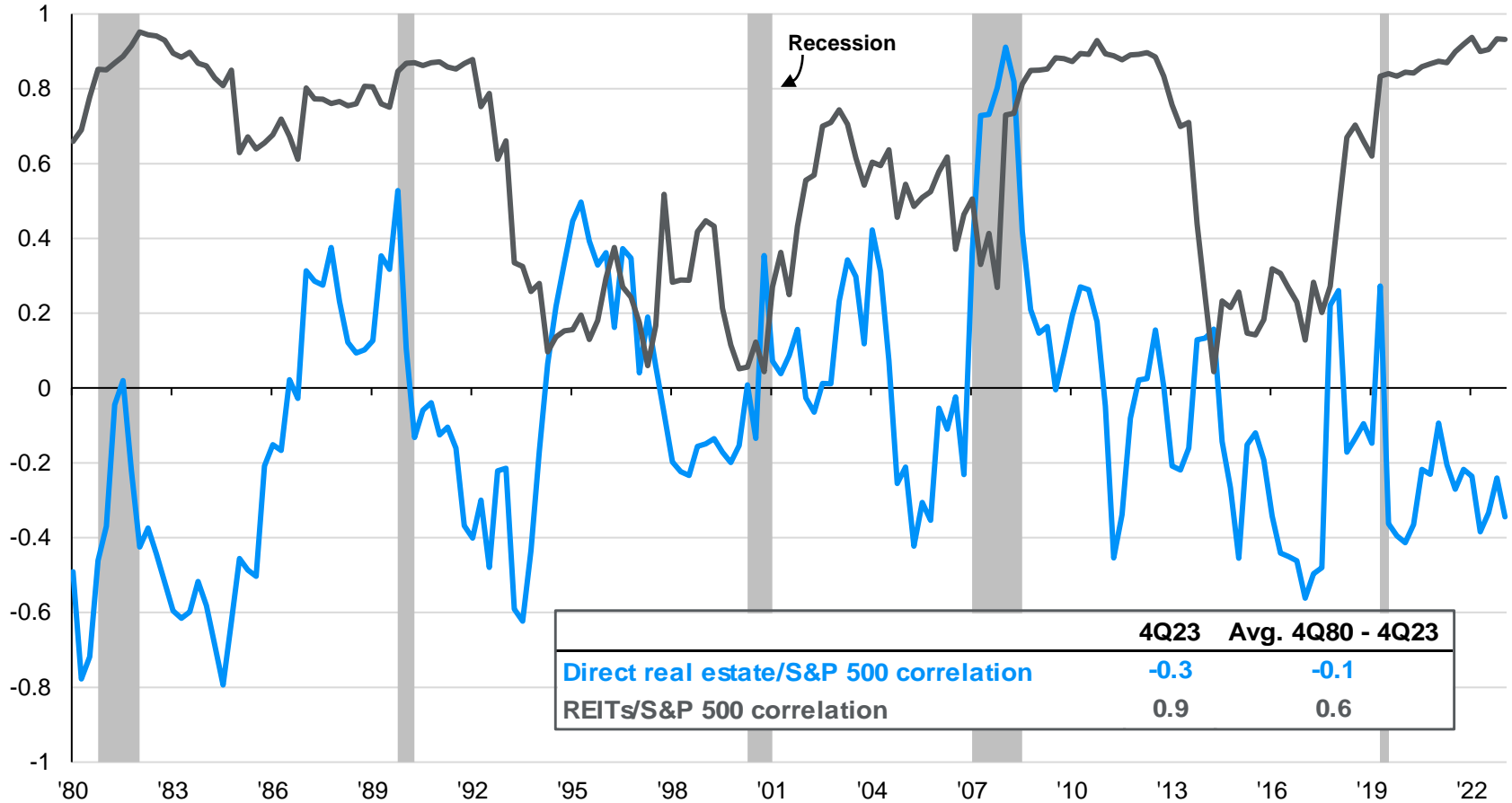
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Real estate

U.S. REITs, direct 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.
Data are based on availability as of February 29, 2024.

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U.S. real estate, GDP and inflation

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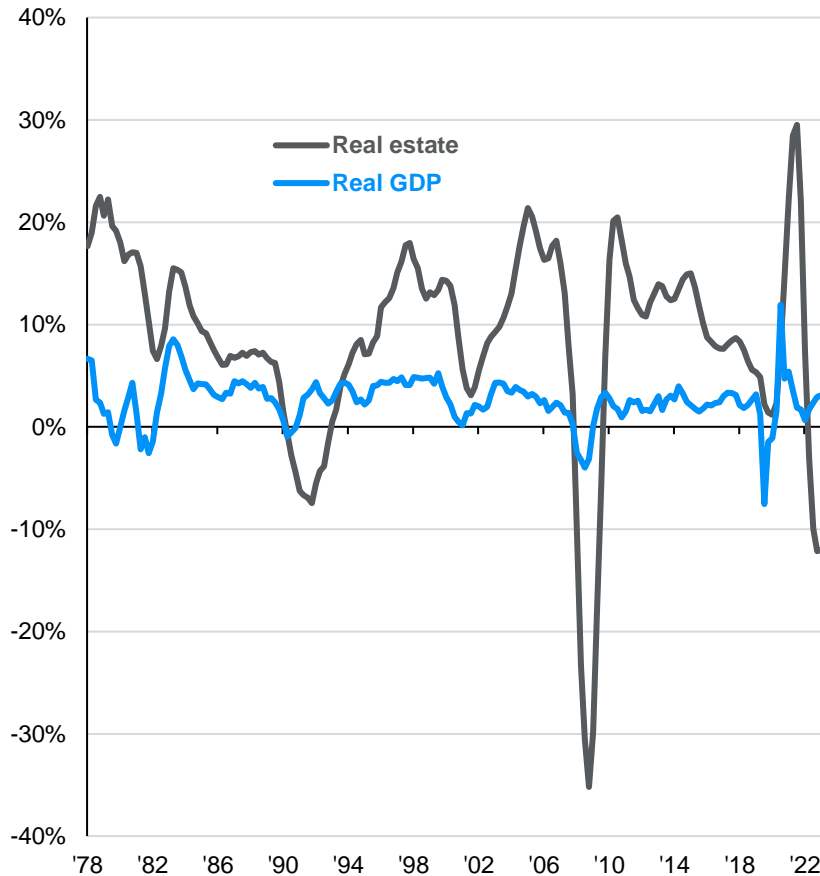
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Real estate

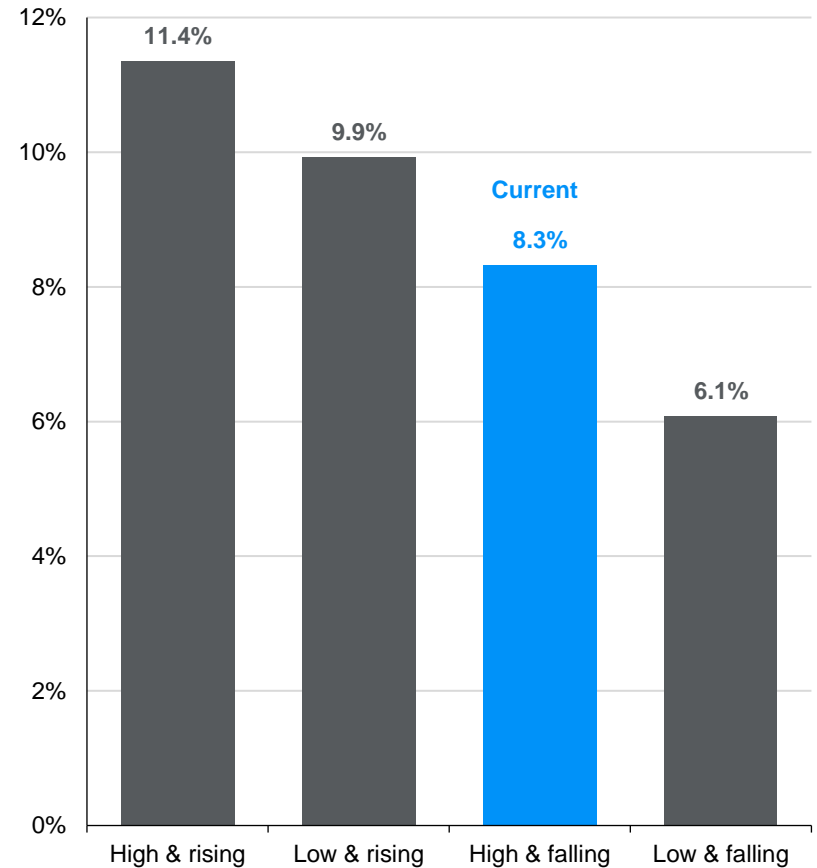
Real estate performance and real GDP growth

4Q78 – 4Q23, Real GDP SA, NCREIF ODCE Index, y/y %



Real estate performance in different inflationary regimes

4Q78 – 4Q23, quarterly, headline CPI, NCREIF ODCE Index, y/y %



Source: BEA, BLS, FactSet, NCREIF, J.P. Morgan Asset Management. Real estate performance is measured using total returns. "High" inflation is defined as any year-over-year headline CPI reading above the historical median, while "low" inflation is defined as any year-over-year headline CPI reading below the historical median. The median y/y headline CPI for period between 4Q78 – 4Q23 is 2.83%. Data is based on availability as of February 29, 2024.



U.S. real estate: Cap rates and transaction volumes

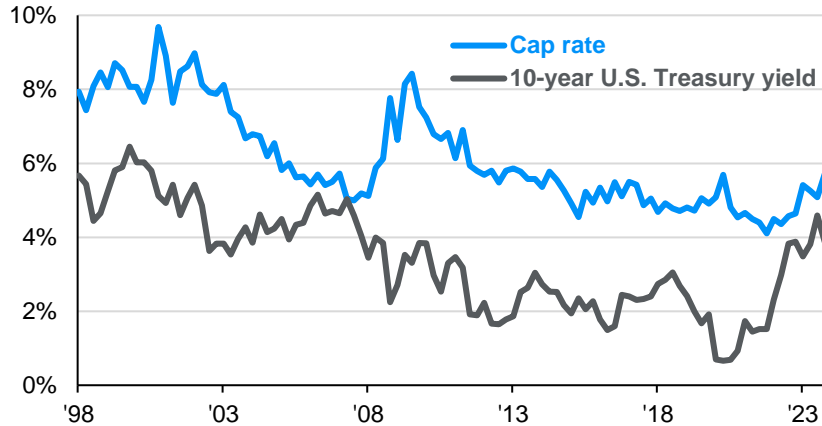
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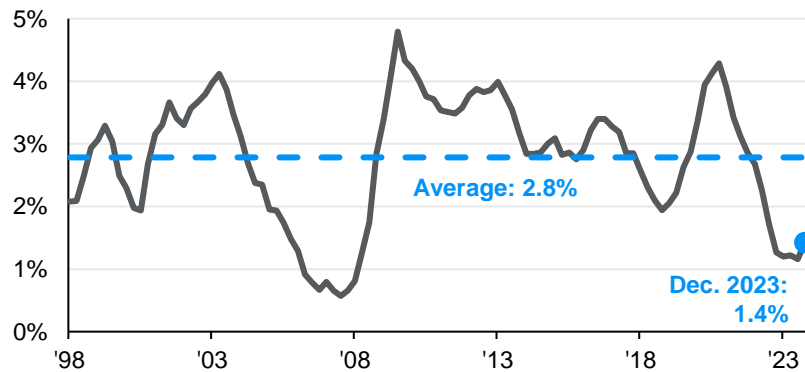
U.S. real estate cap rates and interest rates

Transaction based, 10-year U.S. Treasury yield



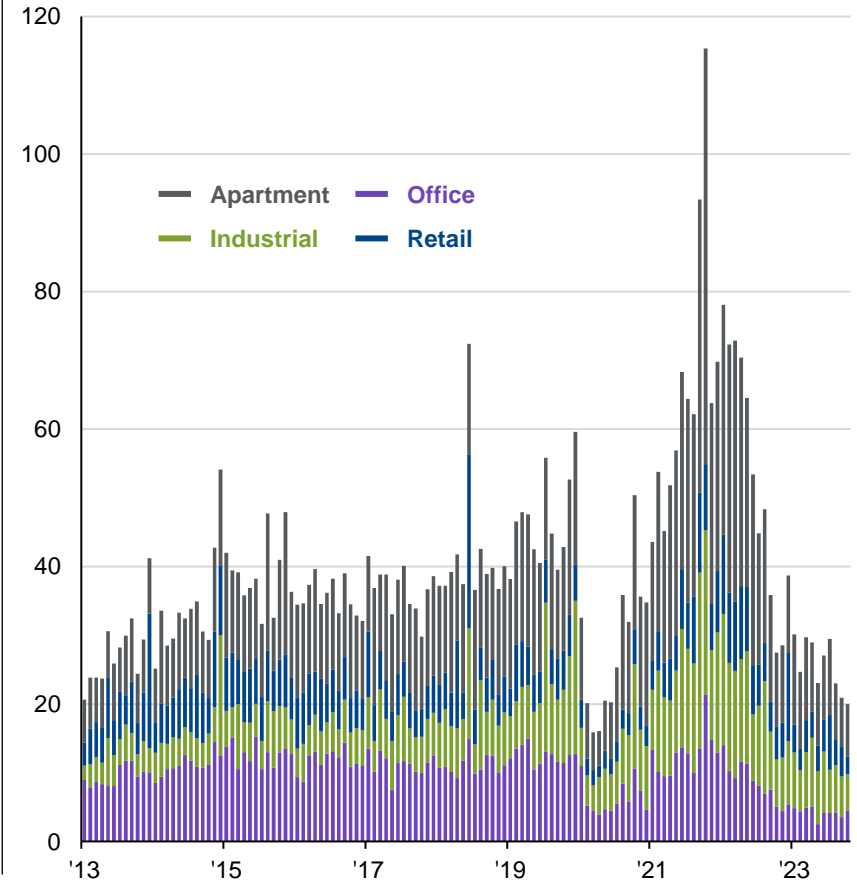
U.S. real estate cap rate spreads

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



U.S. real estate transaction volumes

USD billions, seasonally adjusted, 2013 – present



Source: NAREIT, NCREIF, RCA, 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. The cap rate is transaction based and value weighted. All data are as of December 31, 2023.

Data are based on availability as of February 29, 2024.



U.S. real estate: Vacancy rates and NOI growth

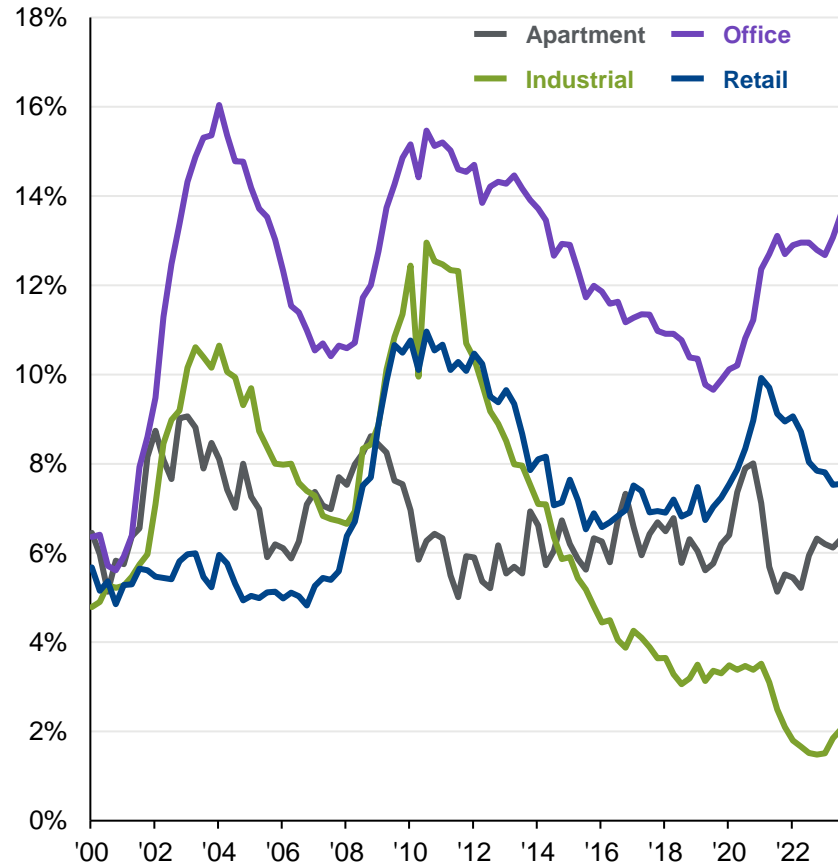
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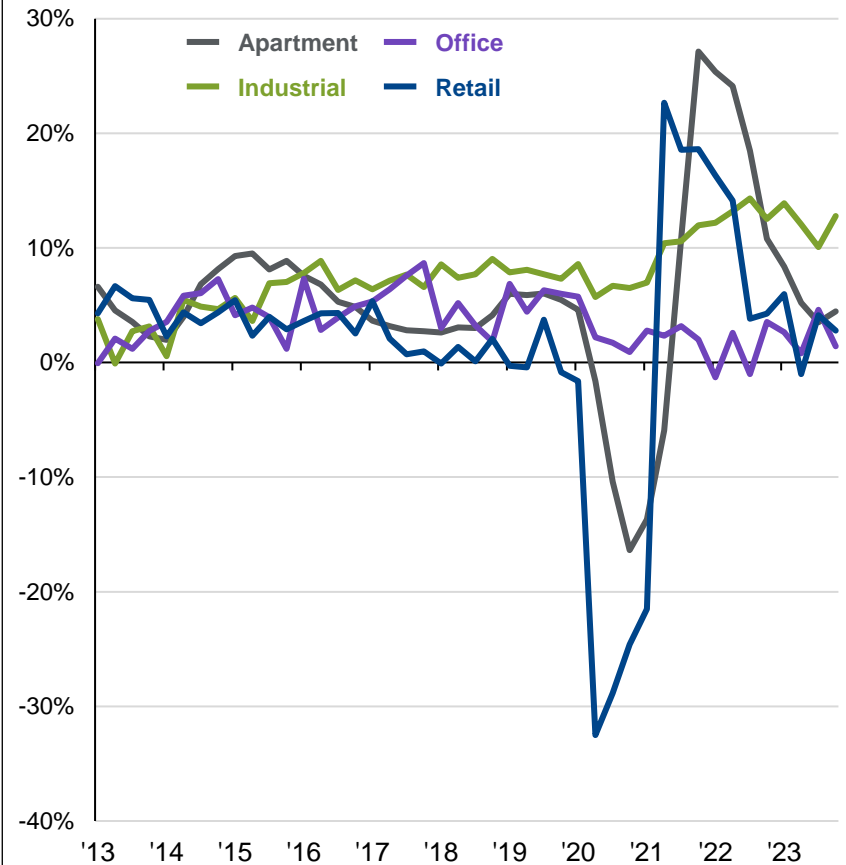
U.S. vacancy rates by property type

Percent



Net operating income growth by property type

Rolling 4-quarter growth, 2013 – present



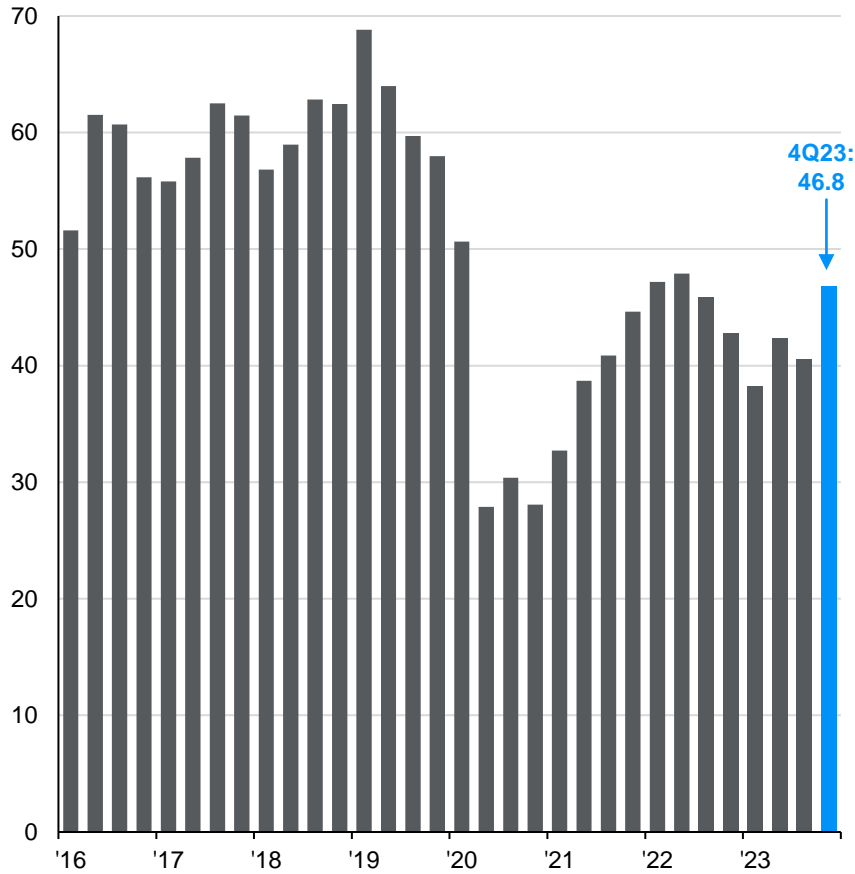
Source: NCREIF, J.P. Morgan Asset Management.
NOI is net operating income. All data are as of December 31, 2023.
Data are based on availability as of February 29, 2024.



U.S. real estate: Office leasing activity

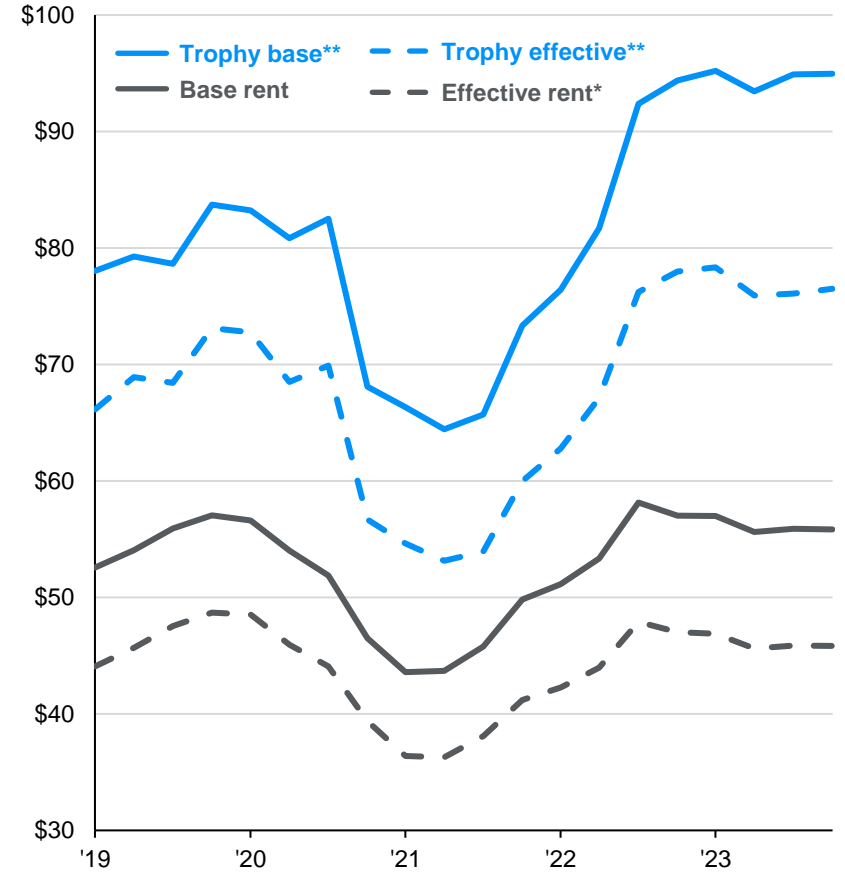
U.S. office leasing activity

In million square feet, quarterly, 2016 – present



U.S. office executed rental rates

Base and effective rental rates per square foot, 2019 - present



Source: JLL, J.P. Morgan Asset Management. "U.S. Office Outlook – 4Q 2023," JLL, February 2024. *Effective rent defined as the gross revenue from rental payments less rental concessions and tenant improvements. **Trophy rent is for the highest-quality properties, as defined by JLL, with building vintages under 10 years old. Data are based on availability as of February 29, 2024.



U.S. real estate: Office supply

GTA

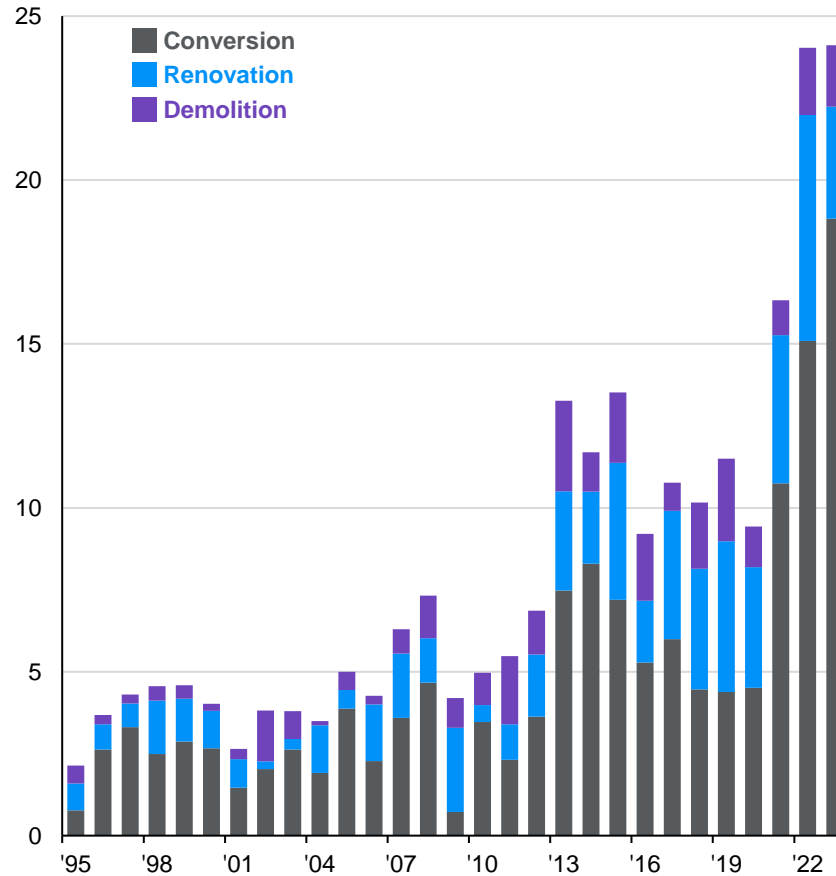
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Real estate

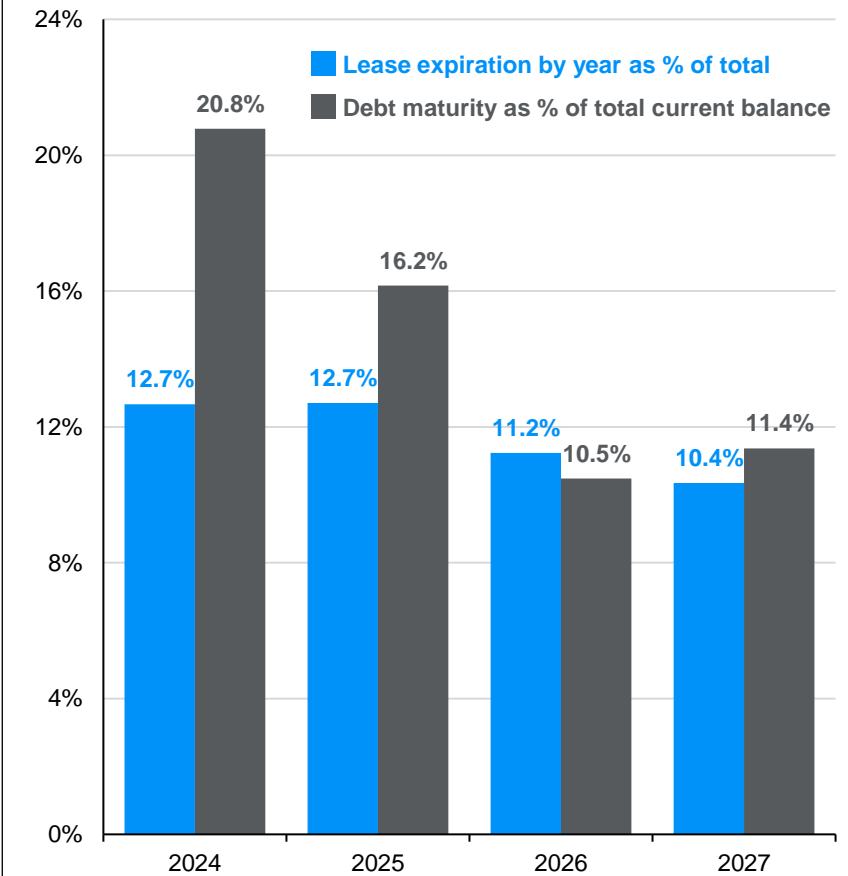
U.S. office stock in redevelopment

In million square feet, 1995 – present



Office real estate lease expiration and debt maturity

U.S. office commercial real estate



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

(Left) "U.S. Office Outlook – 4Q 2023," JLL, February 2024. Includes buildings above 80,000 square feet. Conversions, renovations, and demolitions are completed. Demolition= tear-down of existing office building with no imminent plans for new development. Conversion= change in the use of all or a portion of the asset, while retaining all or a portion of existing structure. Renovation= capital improvement project which changes the use of a site by demolition and ground-up new development. Redevelopments exclude office demolitions replaced with new traditional office ground-up development. (Right) "U.S. Office Outlook – 3Q 2023," JLL, November 2023. "Office Loan Landscape – Distress," JLL, November 2023. Data are based on availability as of February 29, 2024.

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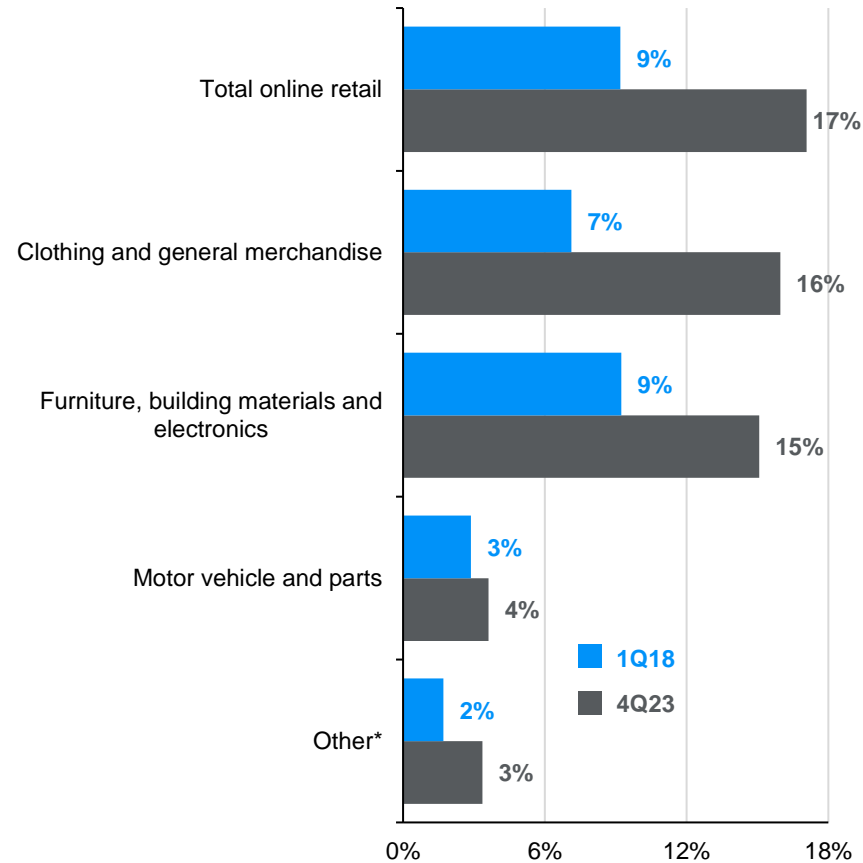
U.S. real estate: Retail

GTA U.S. 22

Real estate

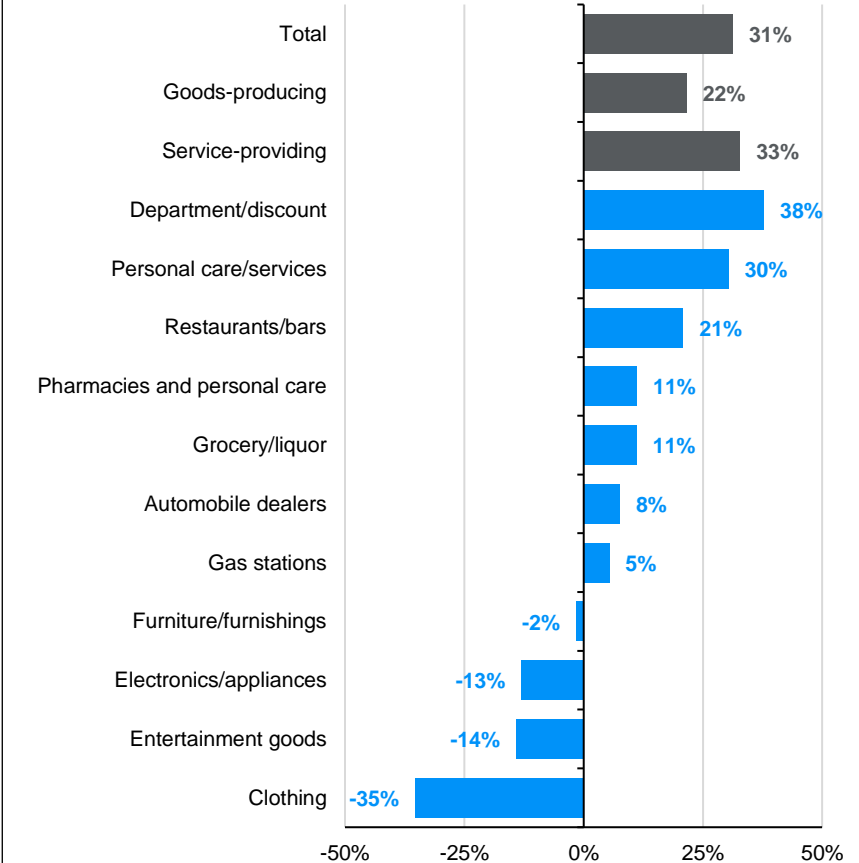
U.S. online retail sales by segment

% of total retail sales by segment, NSA



Change in number of physical retail establishments

2Q13 – 2Q23, percent



Source: Bureau of Labor Statistics, U.S. Census Bureau, J.P. Morgan Asset Management. *Other includes food, health and entertainment. Data are based on availability as of February 29, 2024.



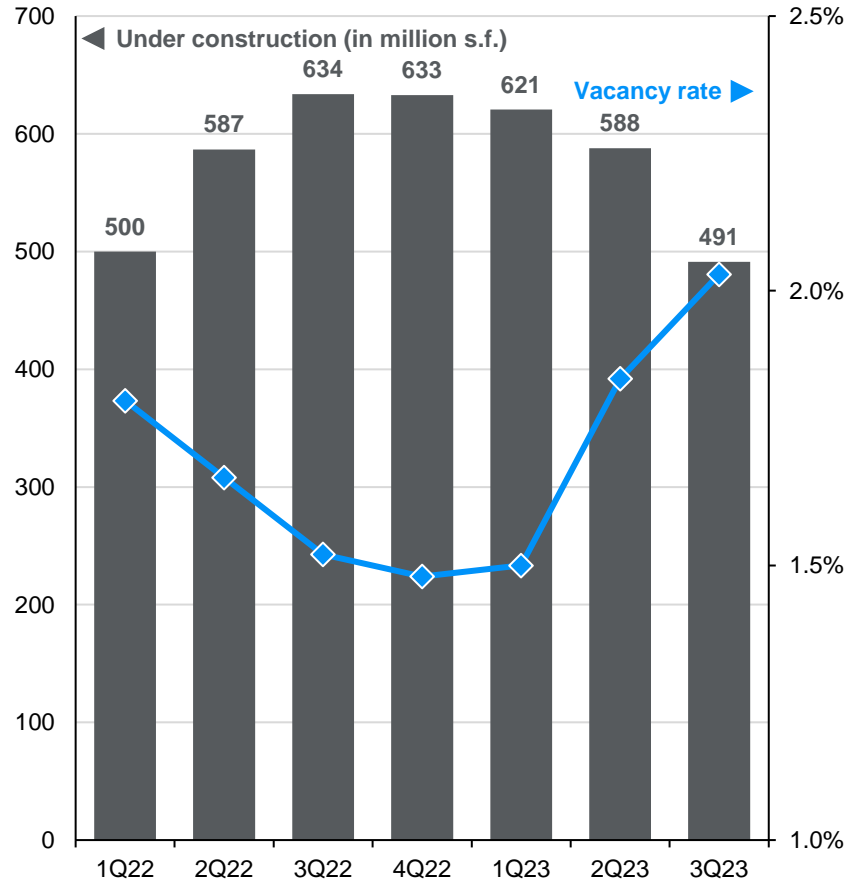
U.S. real estate: Industrial

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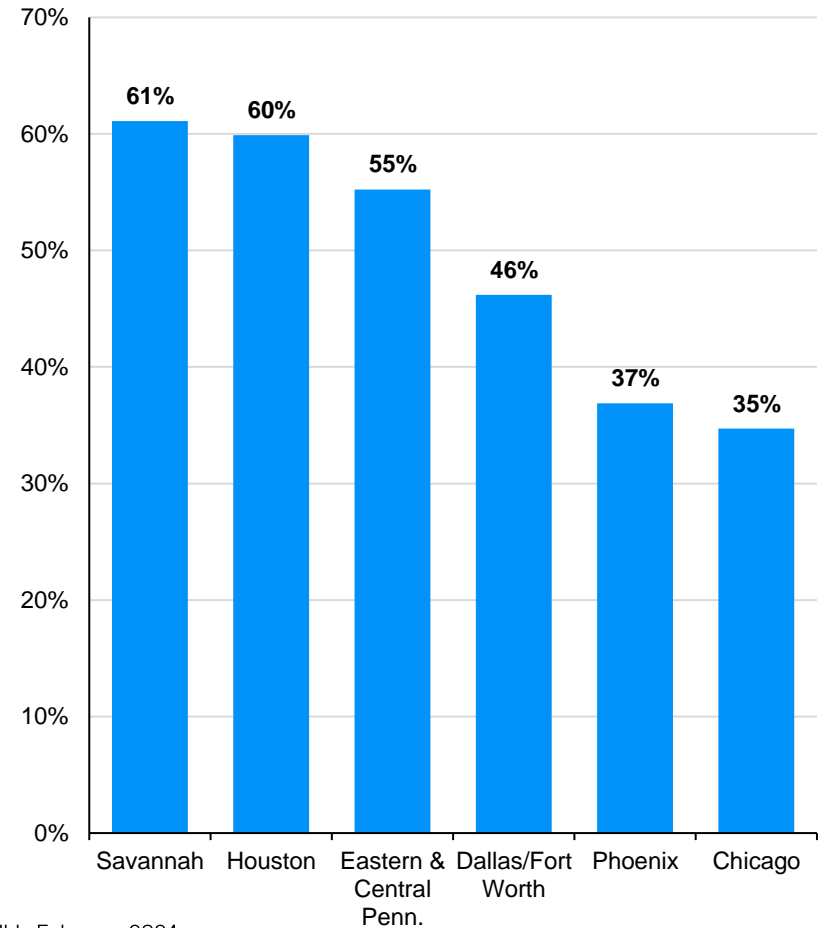
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U.S. industrial construction activity and vacancy rates 2022 – present



U.S. cities with highest industrial net absorption

Net absorption as a % of total deliveries, 3Q23



Source: JLL, NCREIF, J.P. Morgan Asset Management. "U.S. Industrial Outlook – 4Q 2023," JLL, February 2024.
Data are based on availability as of February 29, 2024.



U.S. real estate: Residential

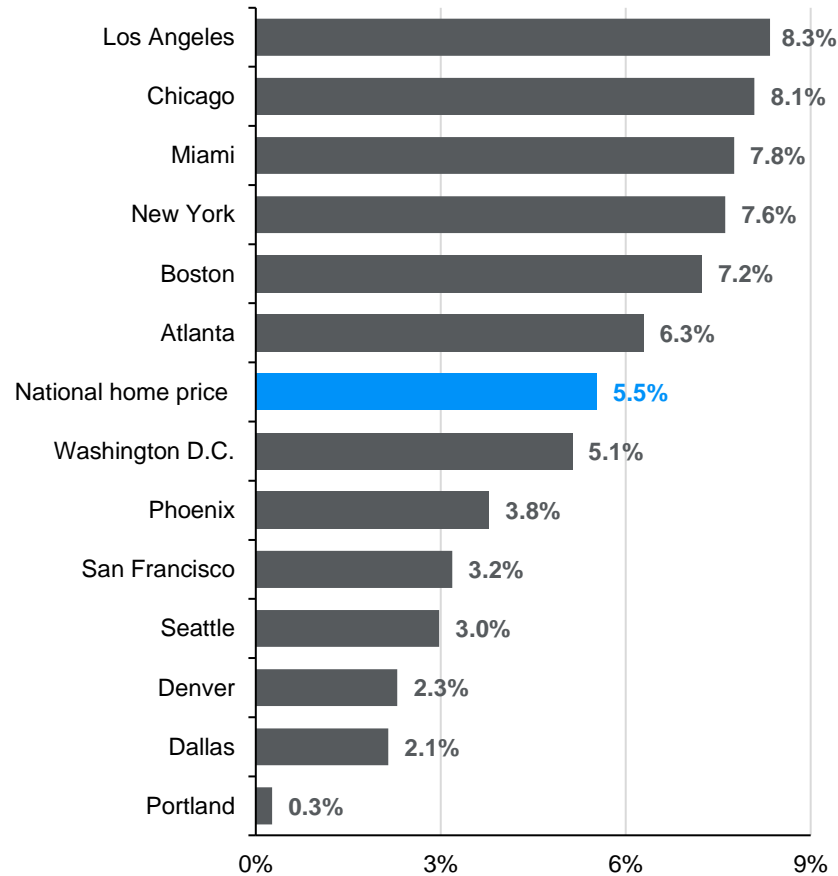
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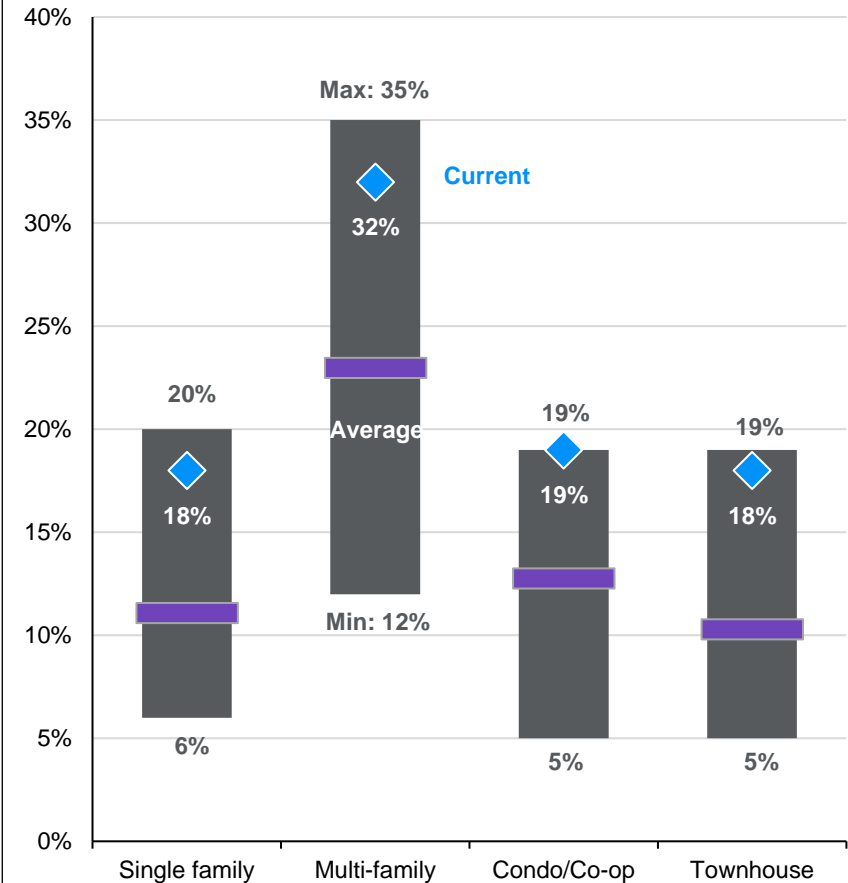
U.S. home price growth by city

S&P Case-Shiller Home Price Index, December 2023, y/y% change



Investor market share by property type

1Q00 – 4Q23, share of sales, 50 most populous U.S. metro areas



Source: FactSet, Redfin, Robert Shiller, Standard & Poor's, J.P. Morgan Asset Management. Investor market share data is from Redfin and is derived using county sale records for homes purchased since January 2000. Redfin defines an investor "as any buyer whose name includes at least one of the following keywords: LLC, Inc, Trust, Corp, Homes" and as any buyer whose ownership code on a purchasing deed includes at least one of the following keywords: association, corporate trustee, company, joint venture, corporate trust. Data are based on availability as of February 29, 2024.



Europe real estate: Transaction volumes

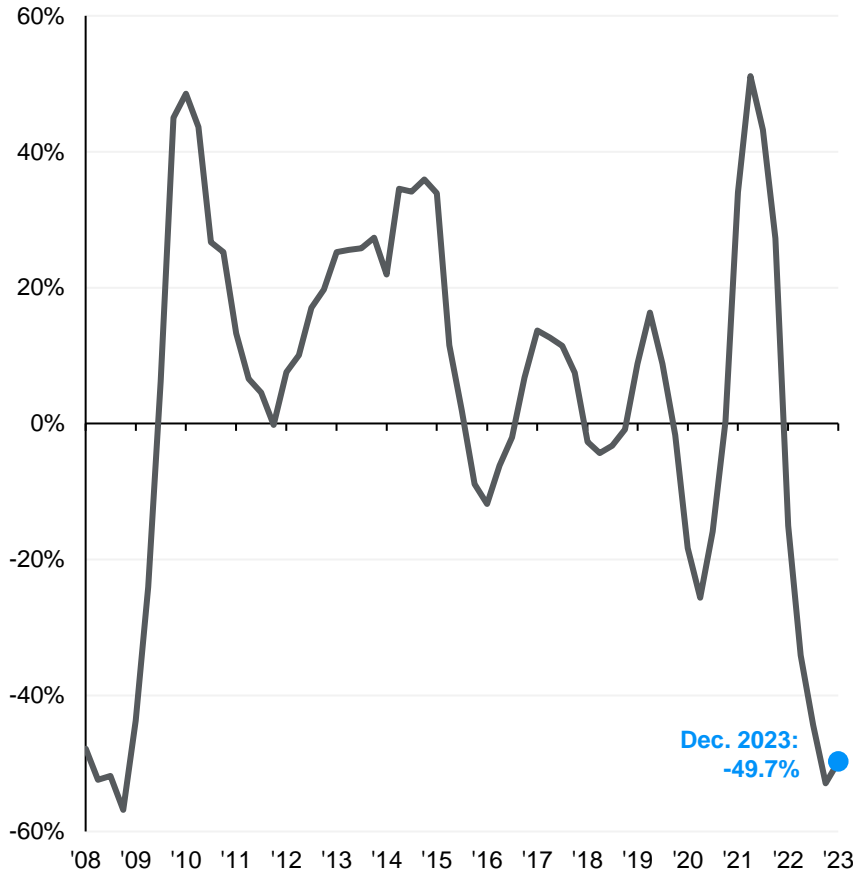
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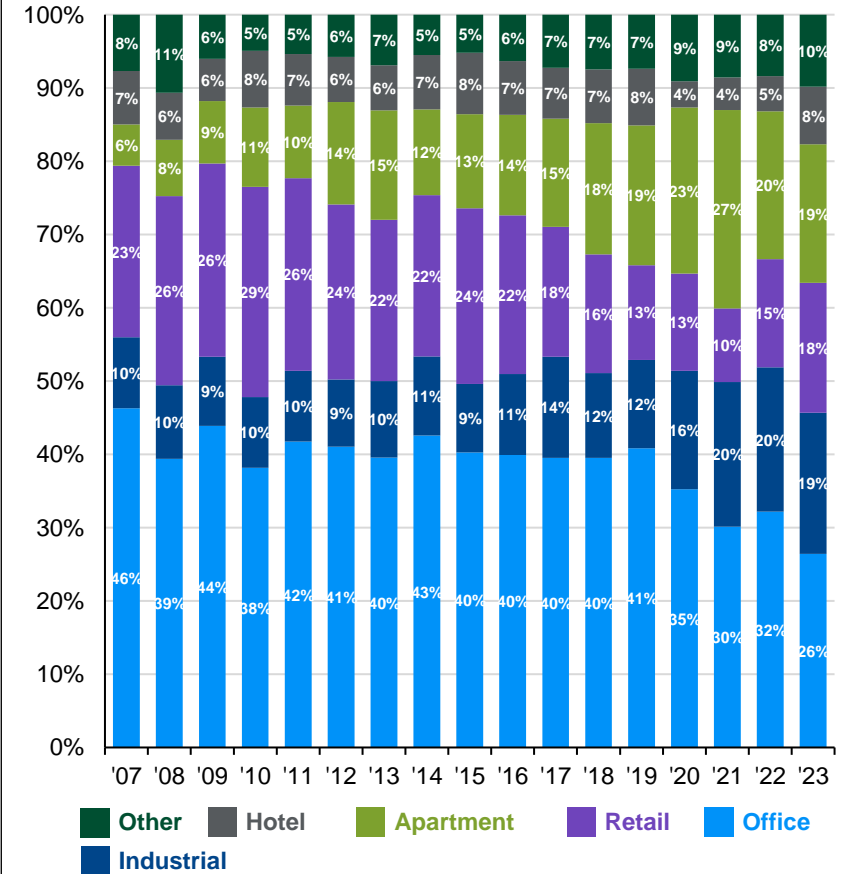
European transaction volumes

Rolling year-over-year % change, 4Q08 – 4Q23



European transaction volumes by property type

2007 – 4Q23



Source: RCA, J.P. Morgan Asset Management. Percentages may not sum to 100 due to rounding. Data are based on availability as of February 29, 2024.



Europe real estate: Yield and income

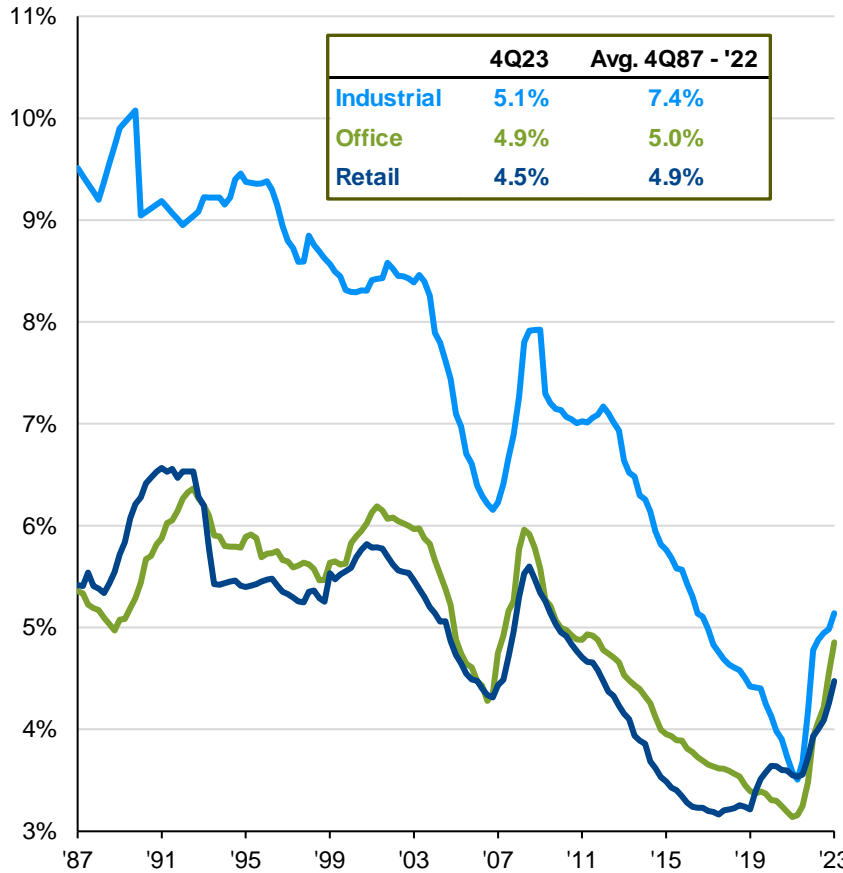
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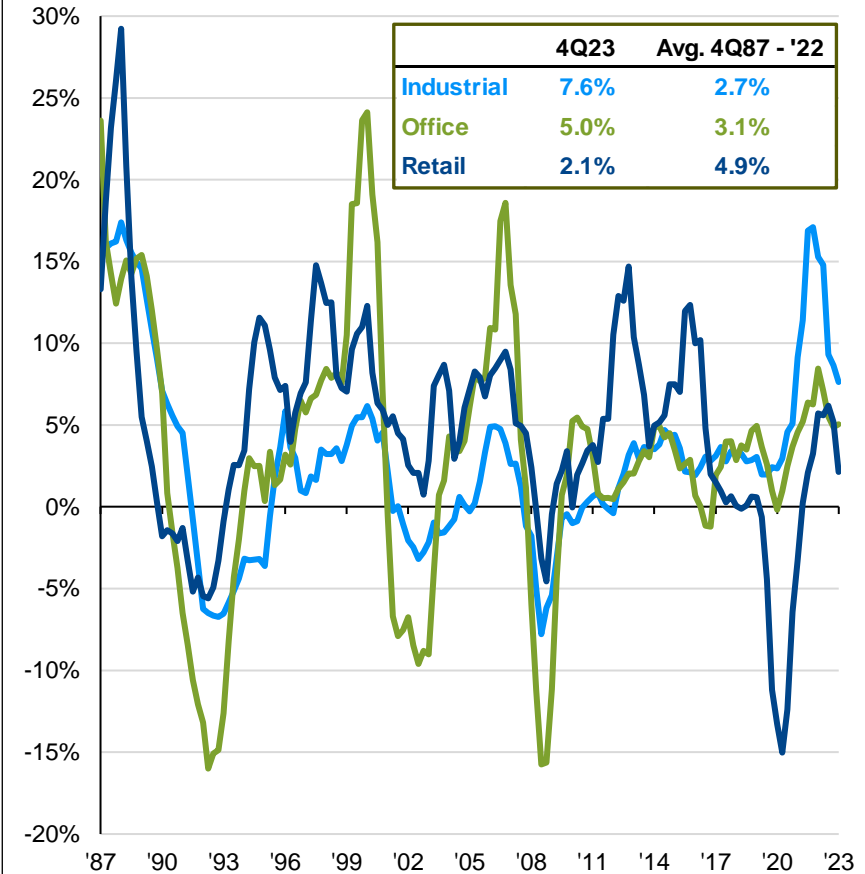
Prime yield by property type*

4Q87 – 4Q23



Prime rent growth by property type

Year-over-year % change, 4Q87 – 4Q23



Source: CBRE ERIX, J.P. Morgan Asset Management. Industrial is represented by industrial logistics. Retail is represented by high street retail.

*Prime yields are absolute and weighted by property value.

Data are based on availability as of February 29, 2024.



Europe real estate: Office vacancy rates

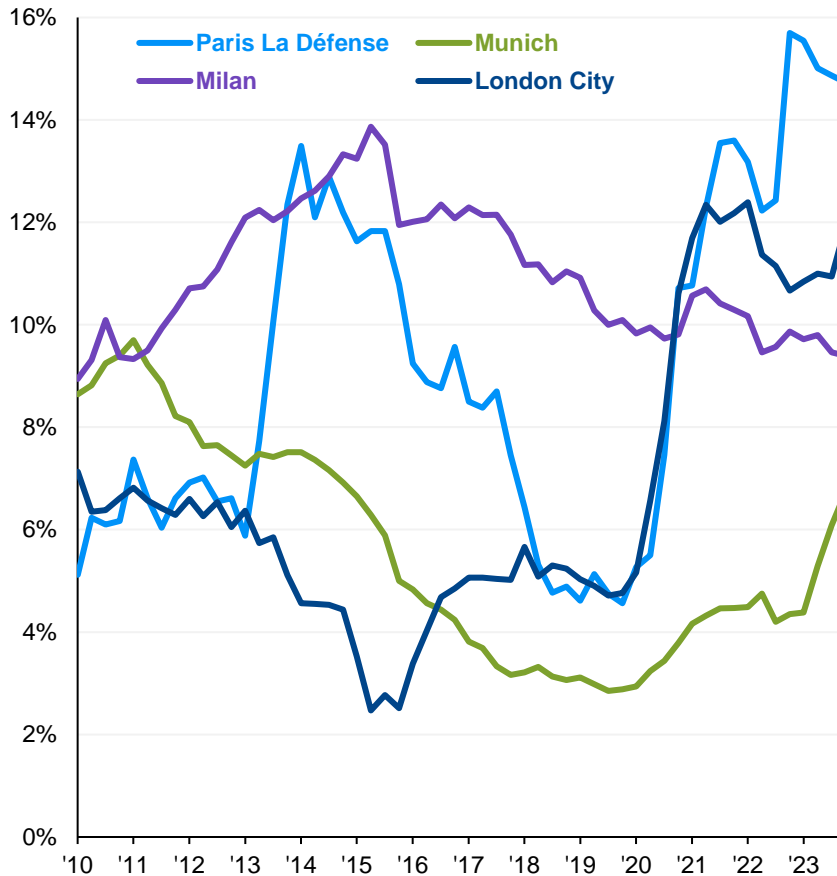
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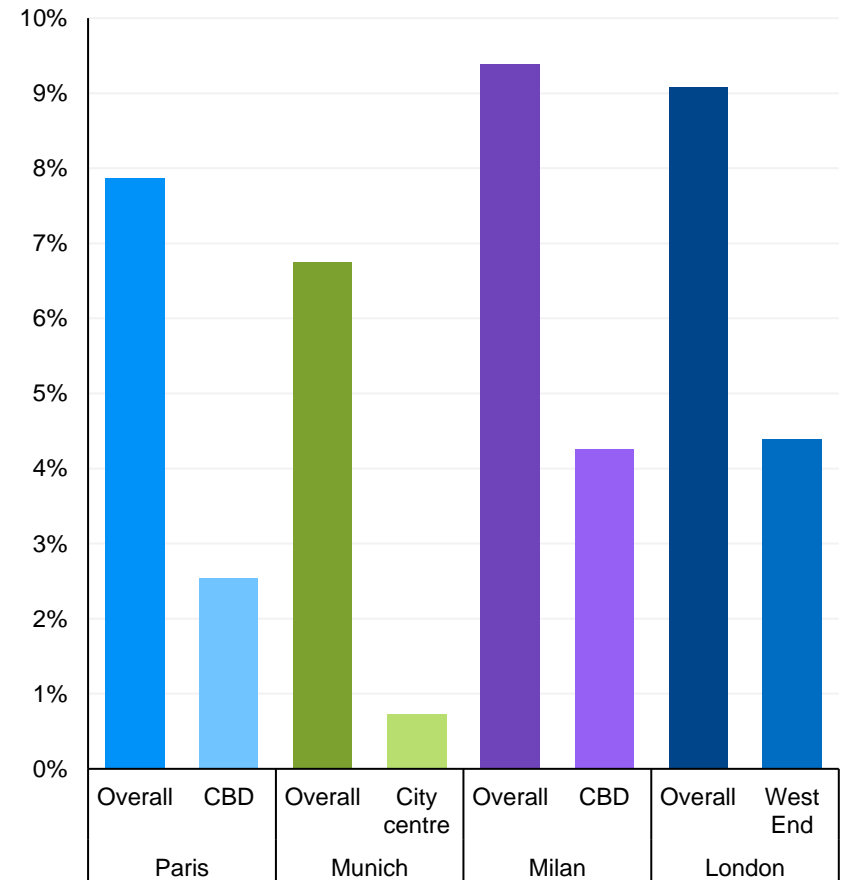
Office vacancy rates by city

2010 – 4Q23



Office vacancy rates within cities

Total city vacancy rates vs. central business districts*, 4Q23



Source: CBREERIX, J.P. Morgan Asset Management. *Includes both central business districts (CBDs) and prime areas. Data are based on availability as of February 29, 2024.



Global real estate: Retail

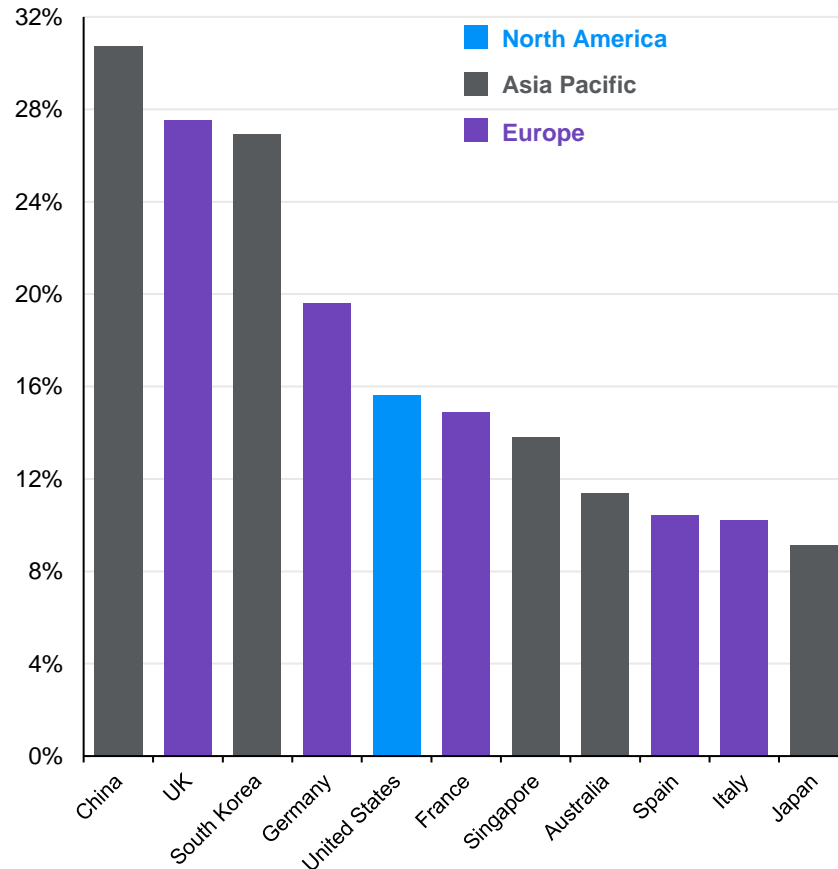
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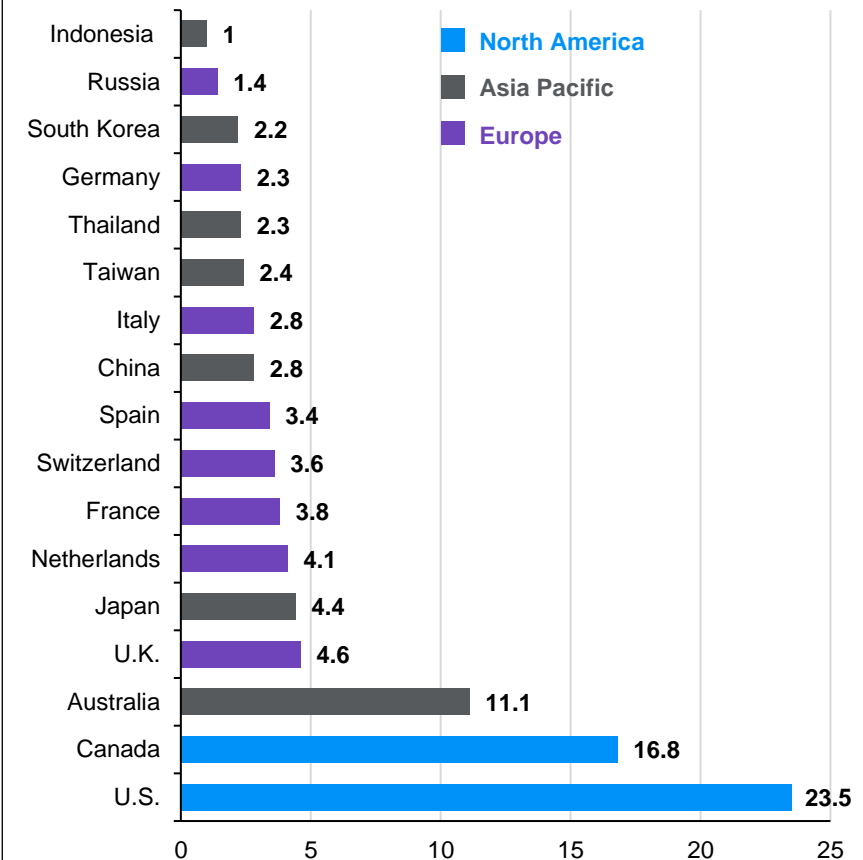
Global online retail sales

Percent of total retail sales, 4Q23*



Retail real estate per capita

Square feet per person



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 4Q23 except Japan, 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 February 29, 2024.



U.S. REIT sector returns

GTA

U.S.

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Real estate

											2014-2023	
2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	YTD '24	Ann.	Vol.
Mfgd. Homes	Self Storage	Industrial	Data Centers	Ret. Free Standing	Mfgd. Homes	Data Centers	Regional Malls	Ret. Free Standing	Data Centers	Data Centers	Mfgd. Homes	Regional Malls
46.2%	40.6%	30.7%	28.4%	13.9%	49.1%	21.0%	92.1%	- 6.5%	30.1%	10.3%	16.1%	35.0%
Apartments	Mfgd. Homes	Lodging/ Resorts	Mfgd. Homes	Mfgd. Homes	Industrial	Self Storage	Self Storage	Shopping Centers	Regional Malls	Lodging/ Resorts	Industrial	Lodging/ Resorts
39.6%	25.6%	24.3%	24.9%	11.4%	48.7%	12.9%	79.4%	- 12.5%	29.9%	4.8%	15.9%	29.8%
Health Care	Apartments	Ret. Free Standing	Industrial	Health Care	Data Centers	Industrial	Shopping Centers	Lodging/ Resorts	Lodging/ Resorts	Regional Malls	Self Storage	Shopping Centers
33.3%	16.5%	17.0%	20.6%	7.6%	44.2%	12.2%	65.1%	- 15.3%	23.9%	4.0%	13.7%	28.9%
Regional Malls	Ret. Free Standing	Mfgd. Homes	All Equity REITs	Apartments	Office	Mfgd. Homes	Apartments	Health Care	Industrial	Mfgd. Homes	Apartments	Ret. Free Standing
32.6%	5.9%	14.2%	8.7%	3.7%	31.4%	- 1.7%	63.6%	- 22.2%	19.2%	- 1.8%	8.5%	22.0%
Lodging/ Resorts	Shopping Centers	Office	Lodging/ Resorts	Self Storage	All Equity REITs	All Equity REITs	Industrial	Regional Malls	Self Storage	Industrial	All Equity REITs	Self Storage
32.5%	4.7%	13.2%	7.2%	2.9%	28.7%	- 5.1%	62.0%	- 22.9%	18.5%	- 2.0%	7.9%	21.8%
Self Storage	Regional Malls	All Equity REITs	Office	Industrial	Apartments	Health Care	Mfgd. Homes	All Equity REITs	Health Care	All Equity REITs	Ret. Free Standing	Office
31.4%	4.2%	8.6%	5.2%	- 2.5%	26.3%	- 9.9%	42.0%	- 24.9%	13.9%	- 3.0%	7.0%	21.7%
Shopping Centers	All Equity REITs	Health Care	Self Storage	All Equity REITs	Shopping Centers	Ret. Free Standing	All Equity REITs	Self Storage	Shopping Centers	Shopping Centers	Health Care	Health Care
30.0%	2.8%	6.4%	3.7%	- 4.0%	25.0%	- 10.5%	41.3%	- 26.7%	12.0%	- 4.5%	4.9%	21.3%
All Equity REITs	Industrial	Shopping Centers	Apartments	Regional Malls	Ret. Free Standing	Apartments	Data Centers	Data Centers	All Equity REITs	Health Care	Shopping Centers	Industrial
28.0%	2.6%	3.7%	3.7%	- 7.0%	24.8%	- 15.3%	25.5%	- 28.0%	11.4%	- 4.6%	4.6%	20.6%
Office	Office	Apartments	Ret. Free Standing	Lodging/ Resorts	Health Care	Office	Office	Mfgd. Homes	Apartments	Office	Regional Malls	Apartments
25.9%	0.3%	2.9%	3.1%	- 12.8%	21.2%	- 18.4%	22.0%	- 28.3%	5.9%	- 4.8%	2.7%	18.9%
Industrial	Health Care	Regional Malls	Health Care	Data Centers	Lodging/ Resorts	Lodging/ Resorts	Ret. Free Standing	Industrial	Mfgd. Homes	Apartments	Lodging/ Resorts	Mfgd. Homes
21.0%	- 7.2%	- 5.2%	0.9%	- 14.1%	15.6%	- 23.6%	19.7%	- 28.6%	2.5%	- 5.3%	2.5%	17.3%
Ret. Free Standing	Lodging/ Resorts	Self Storage	Regional Malls	Office	Self Storage	Shopping Centers	Lodging/ Resorts	Apartments	Office	Ret. Free Standing	Office	All Equity REITs
9.7%	- 24.4%	- 8.1%	- 2.7%	- 14.5%	13.7%	- 27.6%	18.2%	- 32.0%	2.0%	- 8.0%	0.7%	17.3%
Data Centers	Data Centers	Data Centers	Shopping Centers	Shopping Centers	Regional Malls	Regional Malls	Health Care	Office	Ret. Free Standing	Self Storage	Data Centers	Data Centers
N/A	N/A	N/A	- 11.4%	- 14.5%	- 9.1%	- 37.2%	16.3%	- 37.6%	- 1.5%	- 8.9%	N/A	N/A

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

All indices are from FTSE NAREIT. Mfgd. Homes represents manufactured homes. Data for Data Centers begins in 2017.

Data are based on availability as of February 29, 2024.

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Infrastructure investment

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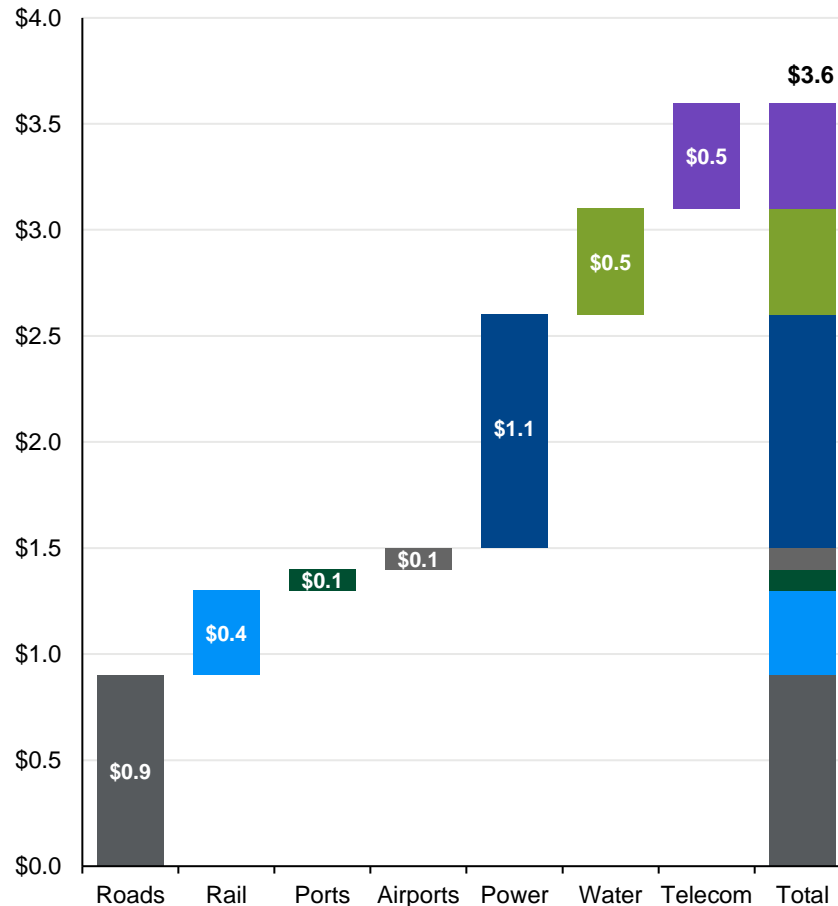
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Infrastructure

Average annual global infrastructure need

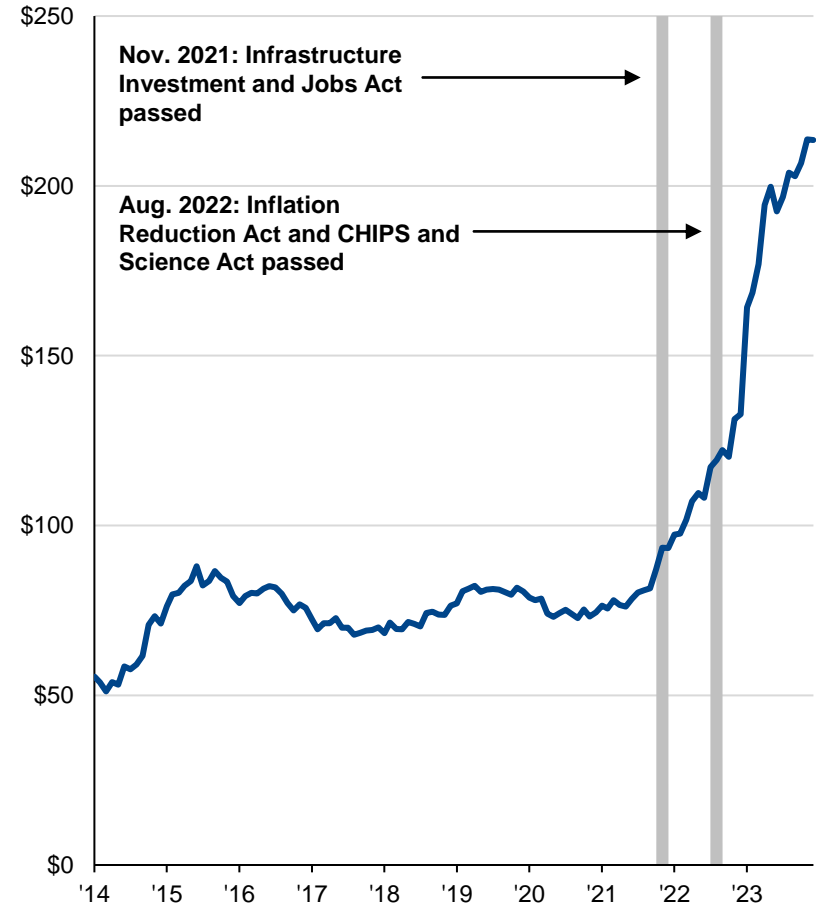
USD trillions, constant 2017 dollars, October 2017



Source: McKinsey Global Institute, U.S. Census Bureau, Whitehouse.gov, J.P. Morgan Asset Management.
Data are based on availability as of February 29, 2024.

U.S. manufacturing construction spending

Private construction spending, USD billions, current dollars, Dec. 2023

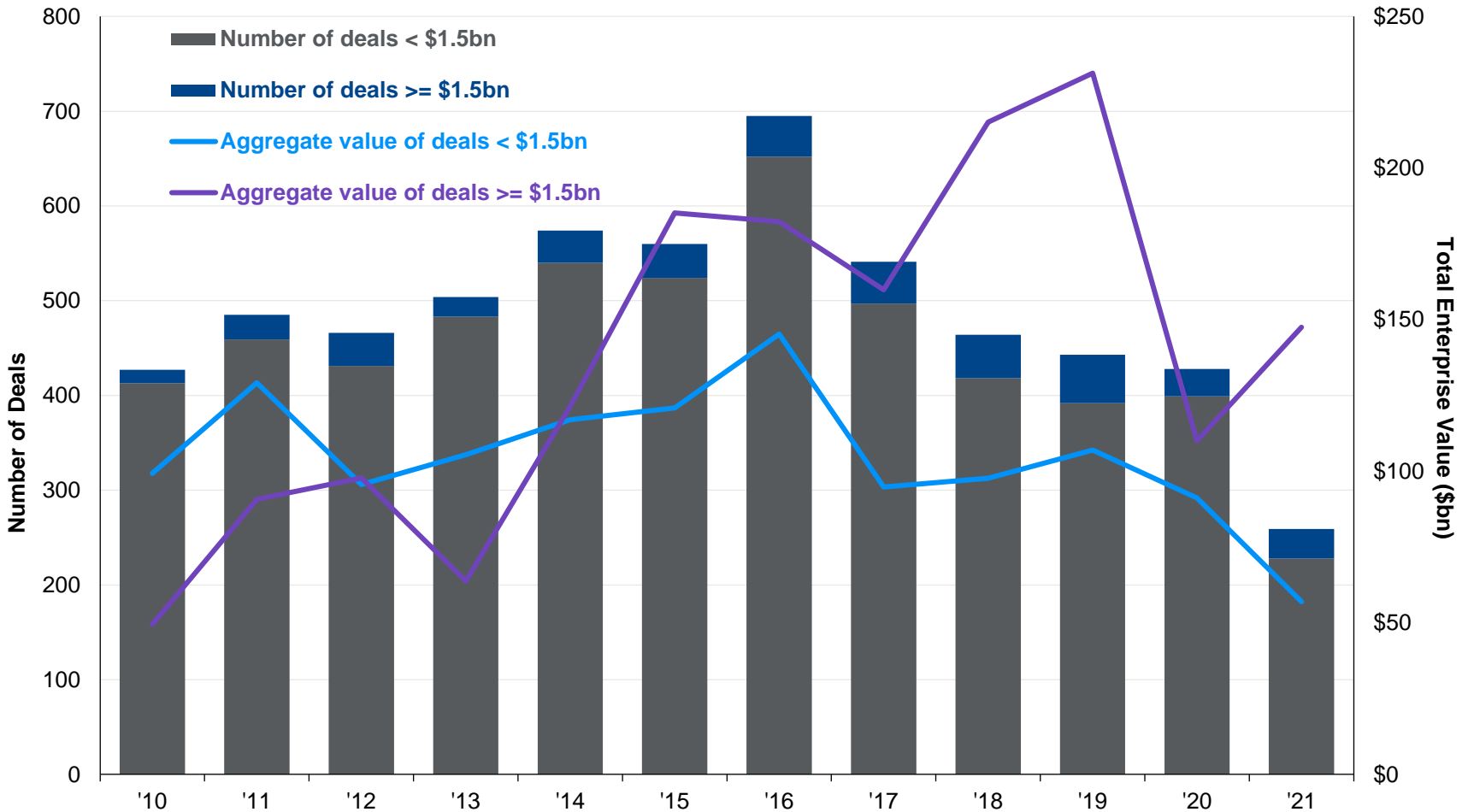




Infrastructure transactions

Infrastructure

Infrastructure deal count and value



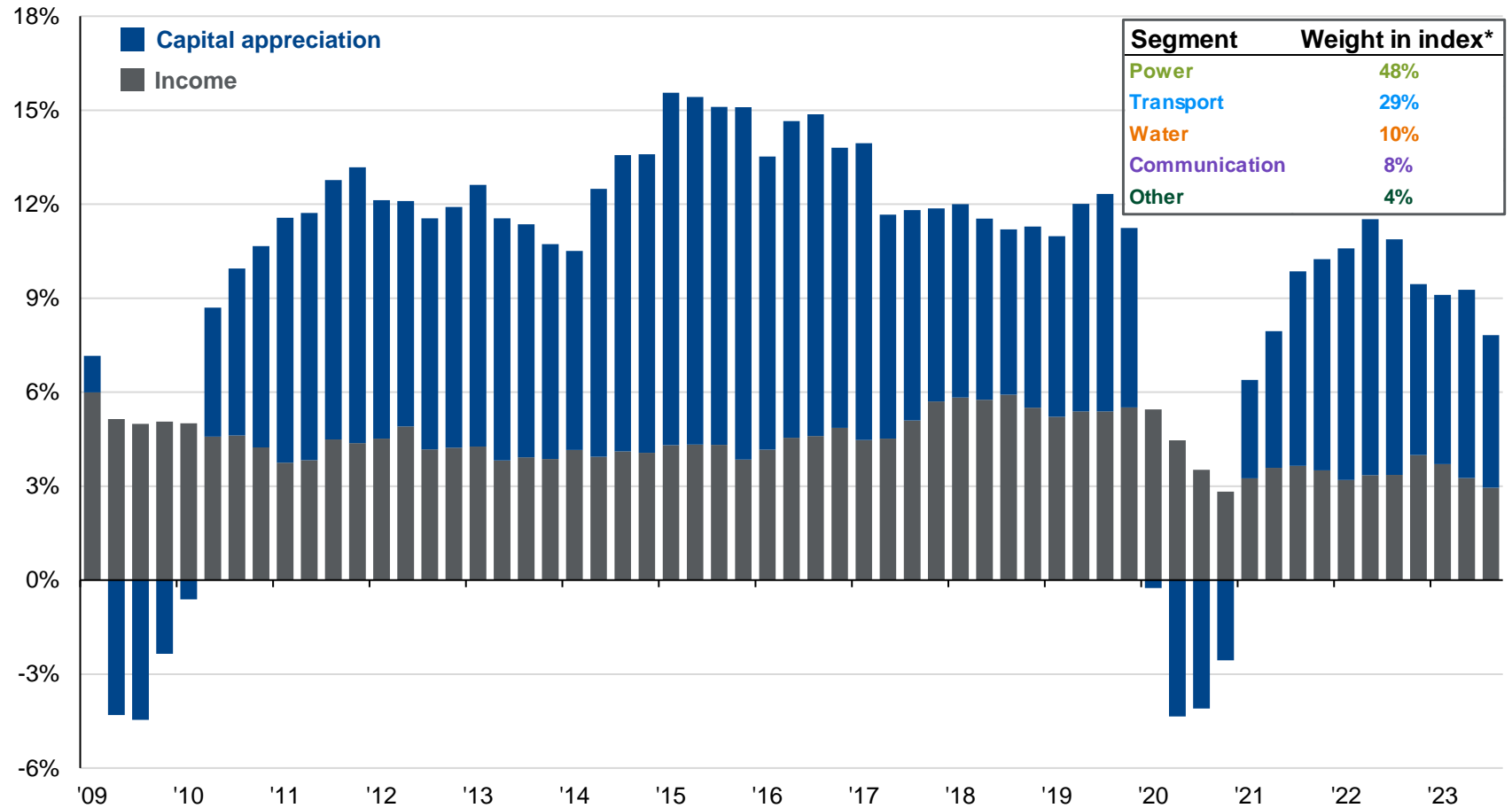
Source: Preqin, J.P. Morgan Asset Management. Transaction data are as of September 2021.
Data are based on availability as of February 29, 2024.



Sources of global infrastructure returns

Global core infrastructure returns

Rolling 4-quarter returns from income and capital appreciation



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 appreciation. The chart shows the full index history, beginning in 1Q09, and ending in 3Q23. *Weights are based on enterprise value. 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. Data are based on availability as of February 29, 2024.



Utility profitability and household spending

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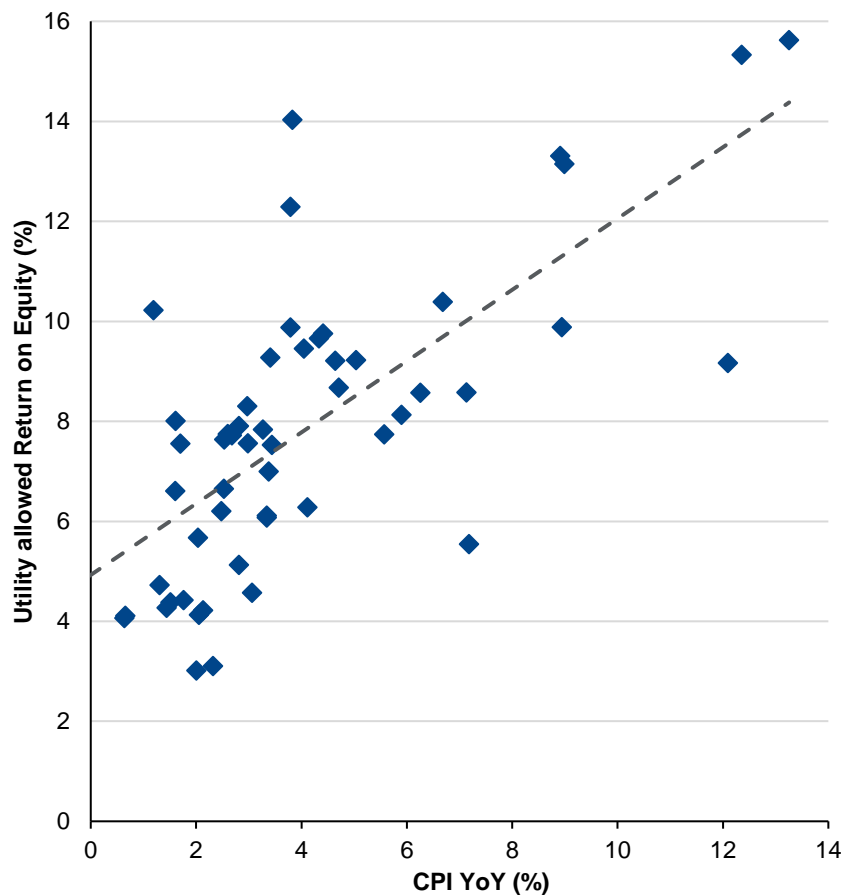
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Infrastructure

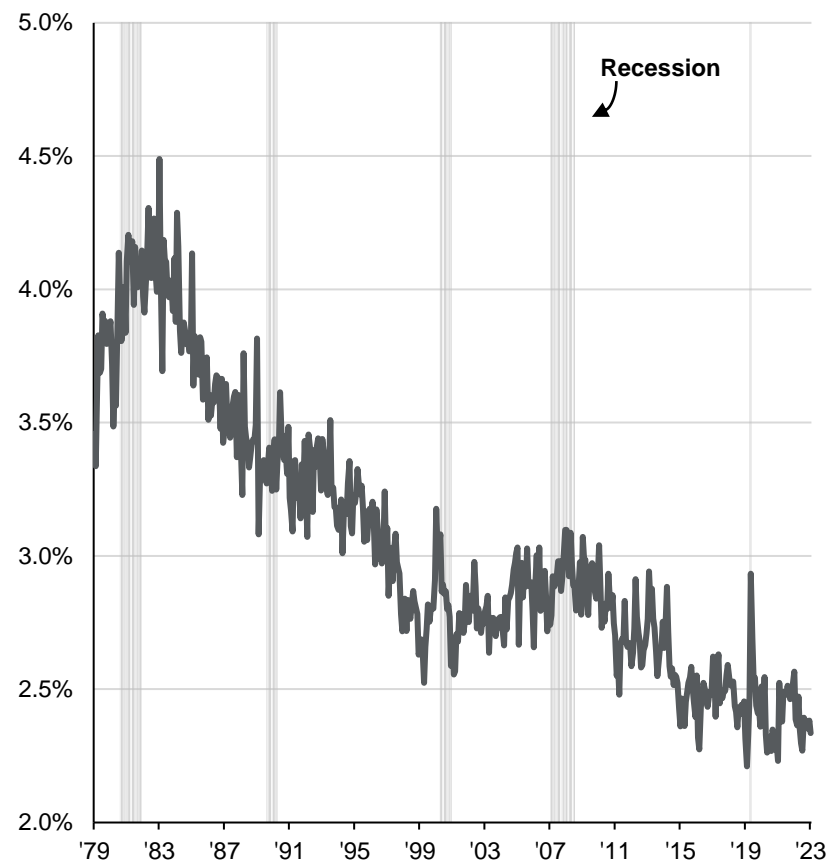
U.S. utilities allowed returns versus inflation

Average allowed return on equity*, annual



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 2023, and annual inflation from 1968 through 2021. *Return on equity is lagged by 2 years. Utility spending is as of December 2023. Data are based on availability as of February 29, 2024.

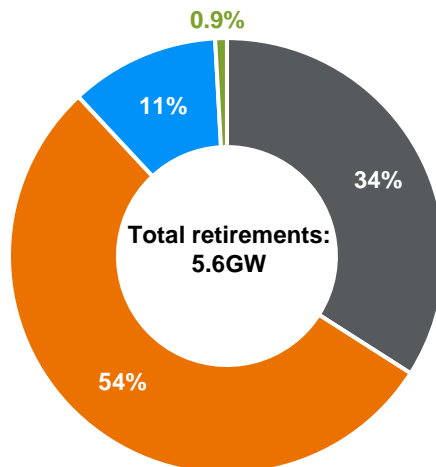


U.S. electricity and the energy transition

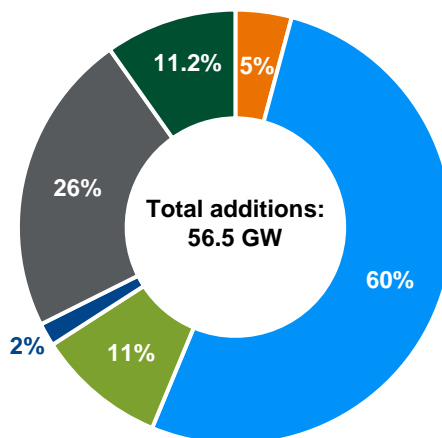
GTA U.S. 34

Planned U.S. electricity generating capacity 2024

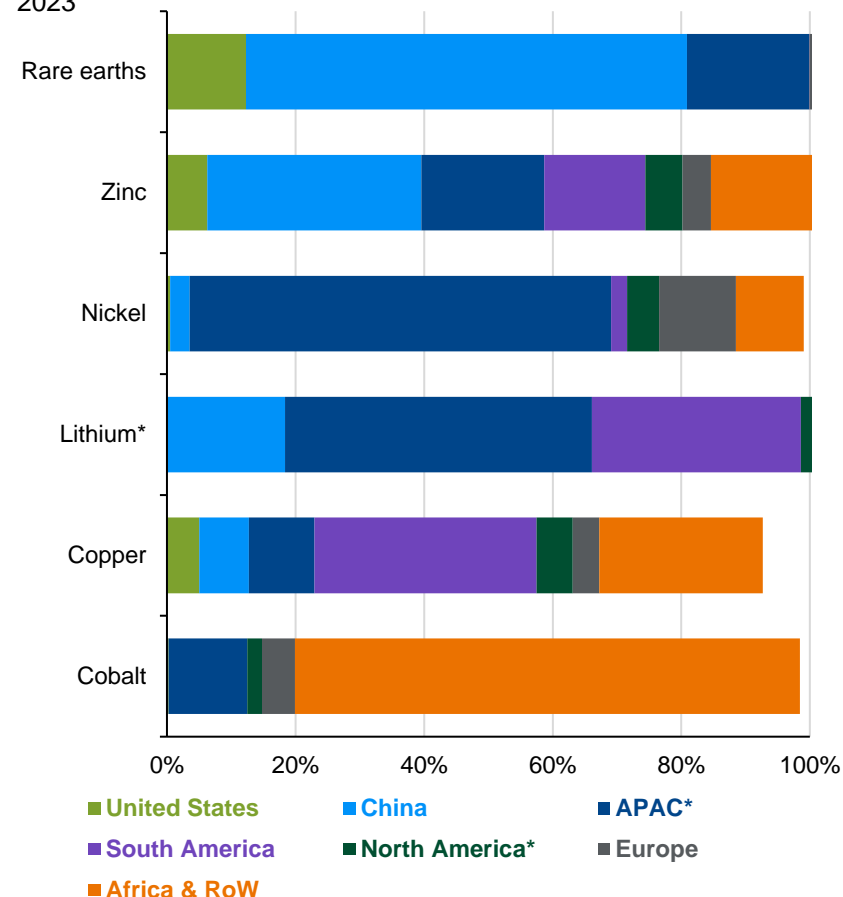
Retirements



Additions



Share of global commodities mining production by region 2023



Source: EIA, U.S. Department of the Interior, U.S. Geological Survey, J.P. Morgan Asset Management.

(Left) 2024 planned capacity retirements and additions are from the January 2024 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, municipal solid waste, and landfill gas. **Other additions include conventional hydroelectric, wind, petroleum liquids, wood and wood biomass, other biomass waste, and landfill gas. (Right) *U.S. lithium mining production is excluded in this analysis to protect individual company information. North America excludes the U.S. APAC excludes China. Data are based on availability as of February 29, 2024.

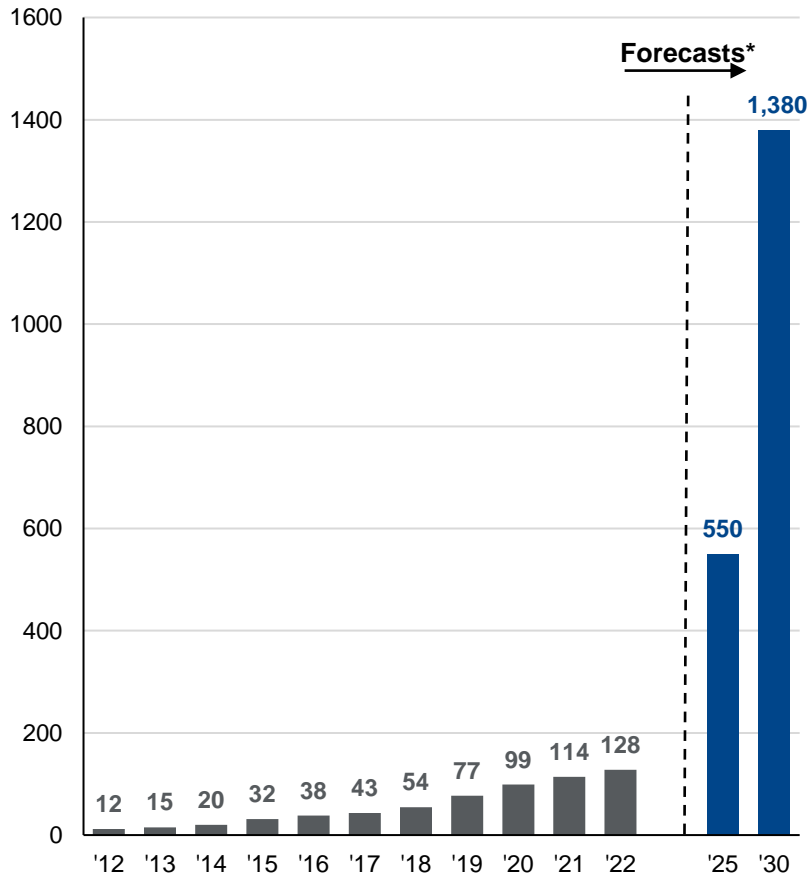


Renewable energy infrastructure

GTA U.S. 35

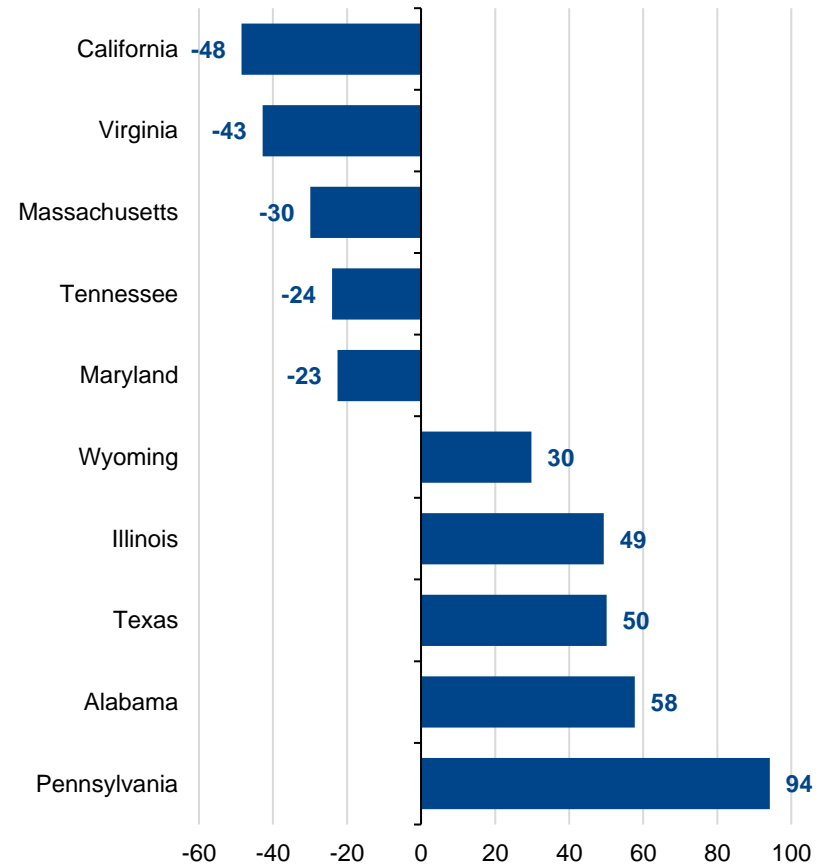
Infrastructure

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



State power balances

Net electricity generation**, in million MWh, 2022



Source: EIA, IEA, 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 February 29, 2024.

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Forestry, inflation and carbon offsets

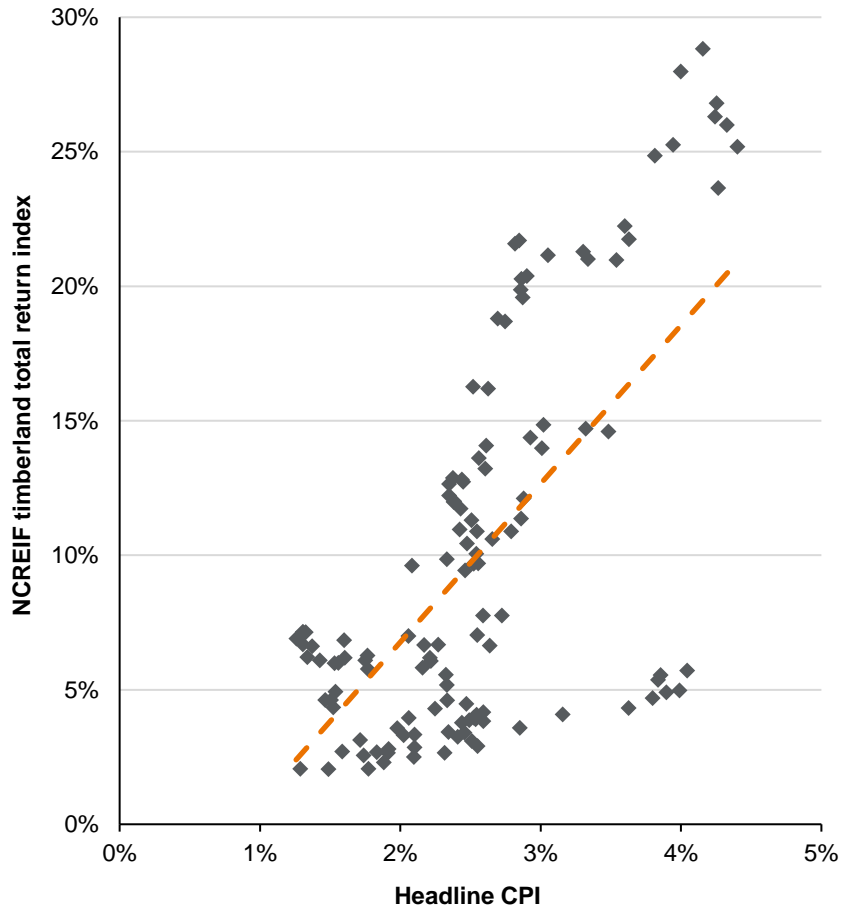
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Timber returns and inflation

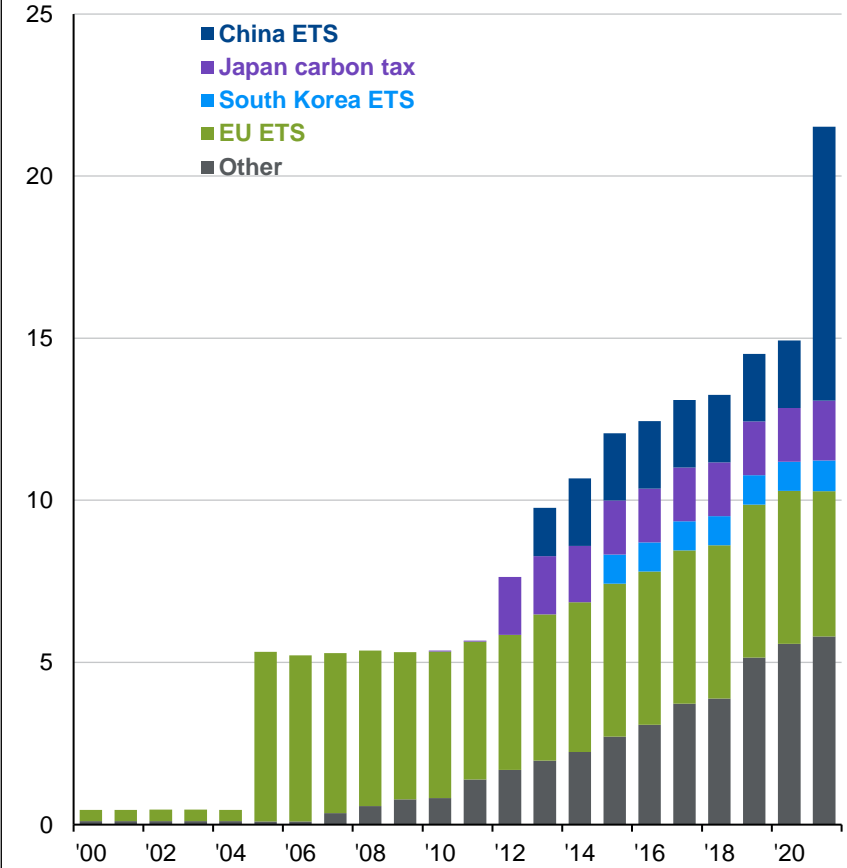
Headline CPI, NCREIF Timberland Index, 5-yr. annualized change



Source: BLS, FactSet, NCREIF, World Bank, J.P. Morgan Asset Management.
Data are based on availability as of February 29, 2024.

Global emissions covered by carbon pricing initiatives

% of global greenhouse gas emissions

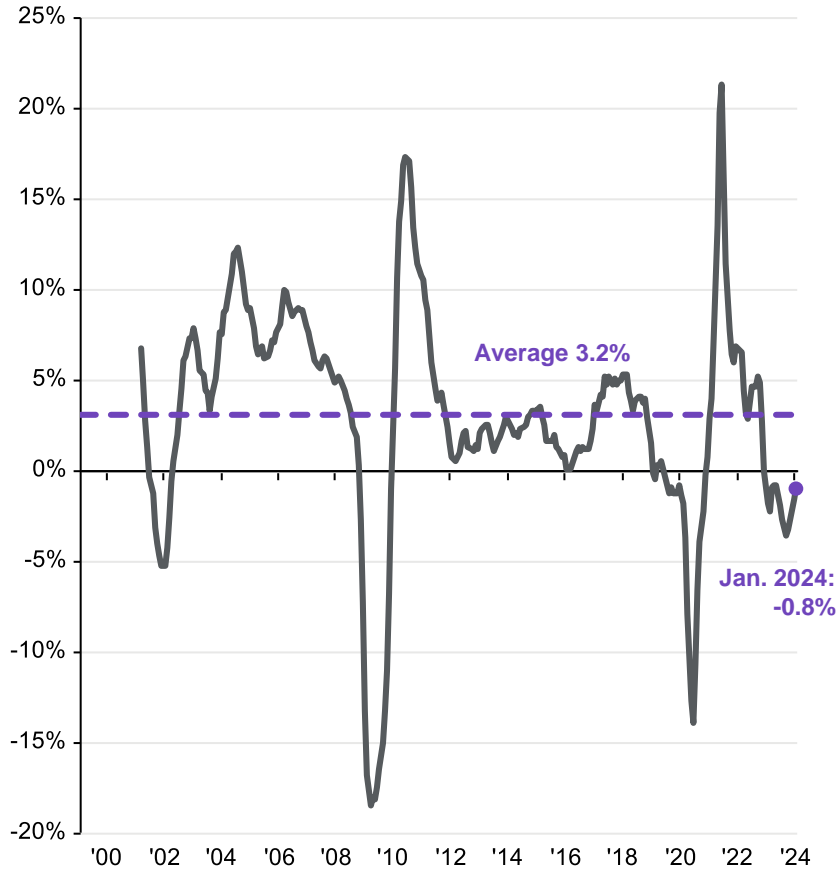




Global trade

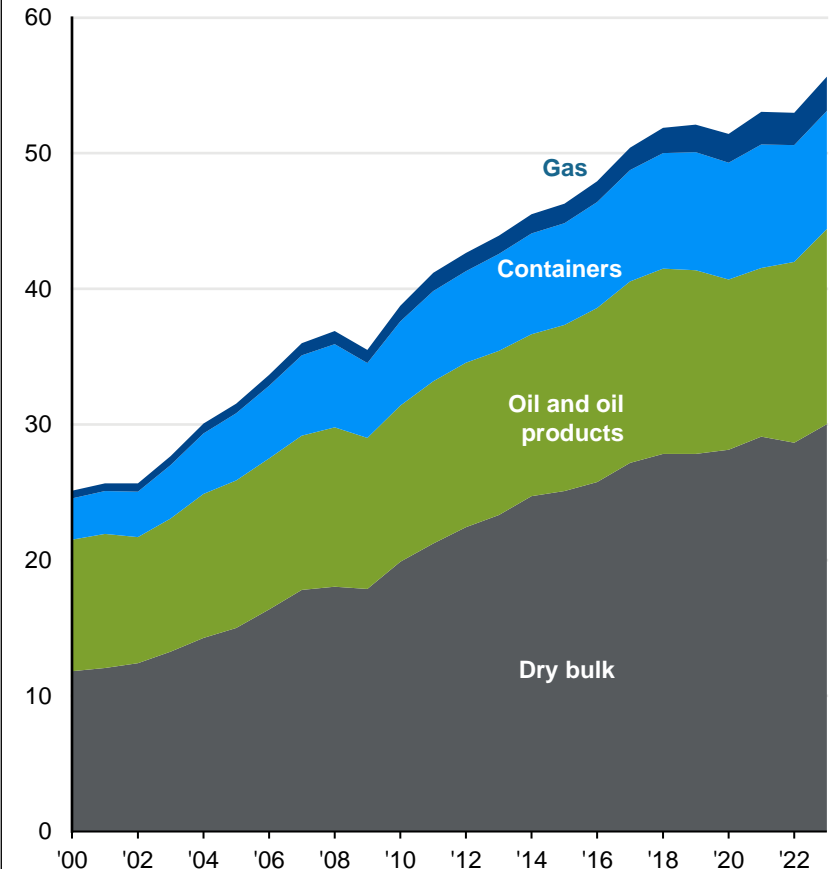
World trade volume

Year-over-year, % change, 3-month moving average, monthly



World seaborne trade by product

Estimated in trillion ton-miles



Source: CPB Netherlands Bureau for Economic Policy Analysis, Clarksons, FactSet, J.P. Morgan Asset Management. World seaborne trade by product as of November 2023.

Data are based on availability as of February 29, 2024.



Shipping trends: Orderbook

GTA

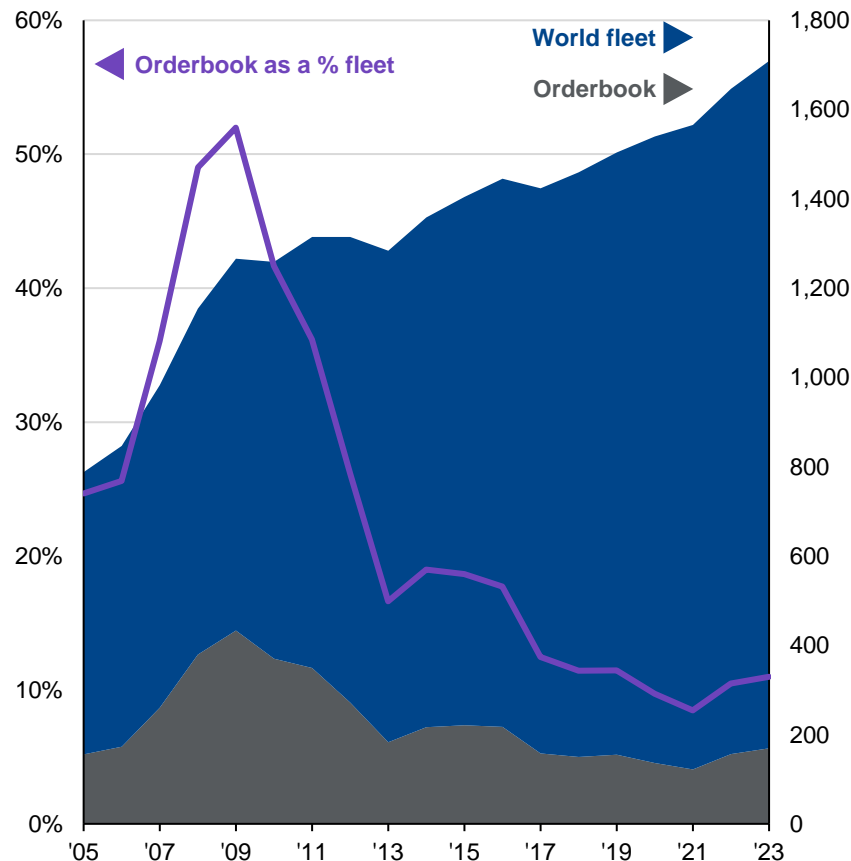
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Transport

Global fleet and orderbook

Gross tonnage

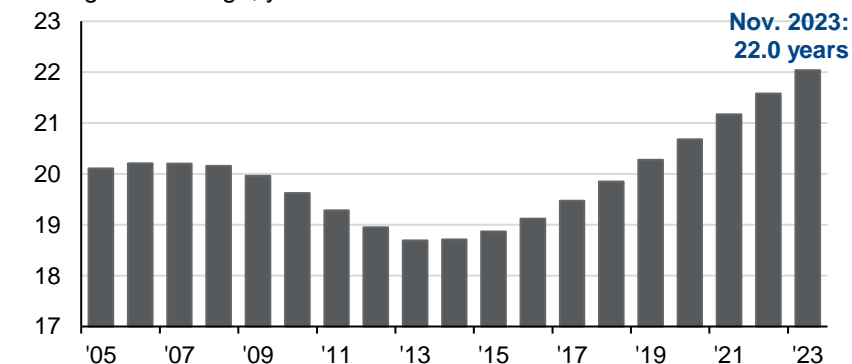


Idle containership capacity as % of fleet



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 February 29, 2024.

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Shipping trends: Pricing and port calls

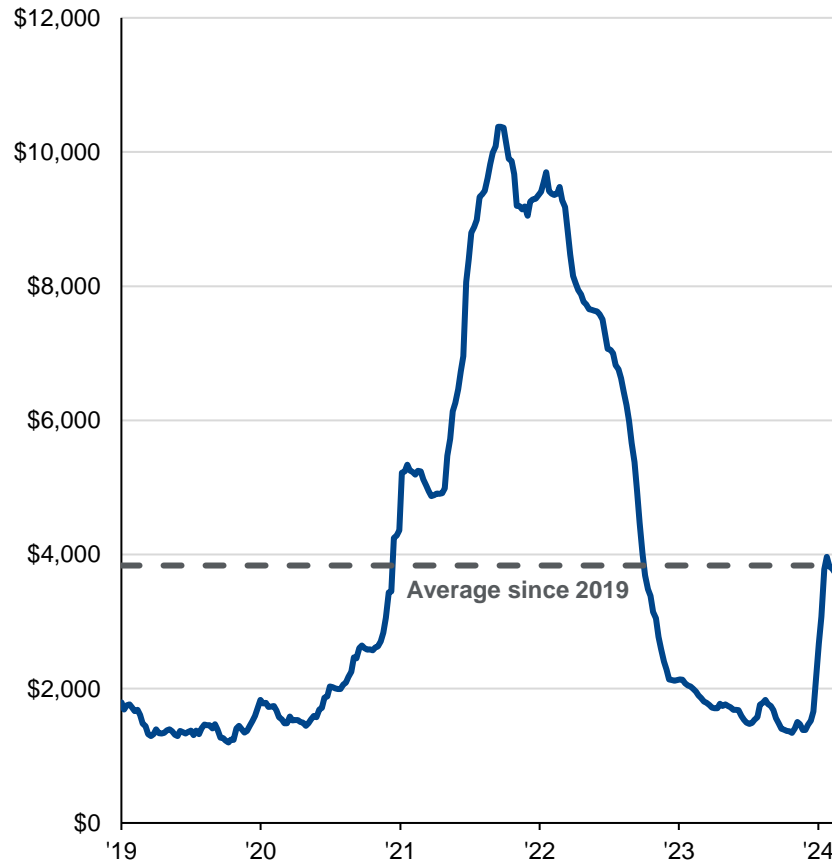
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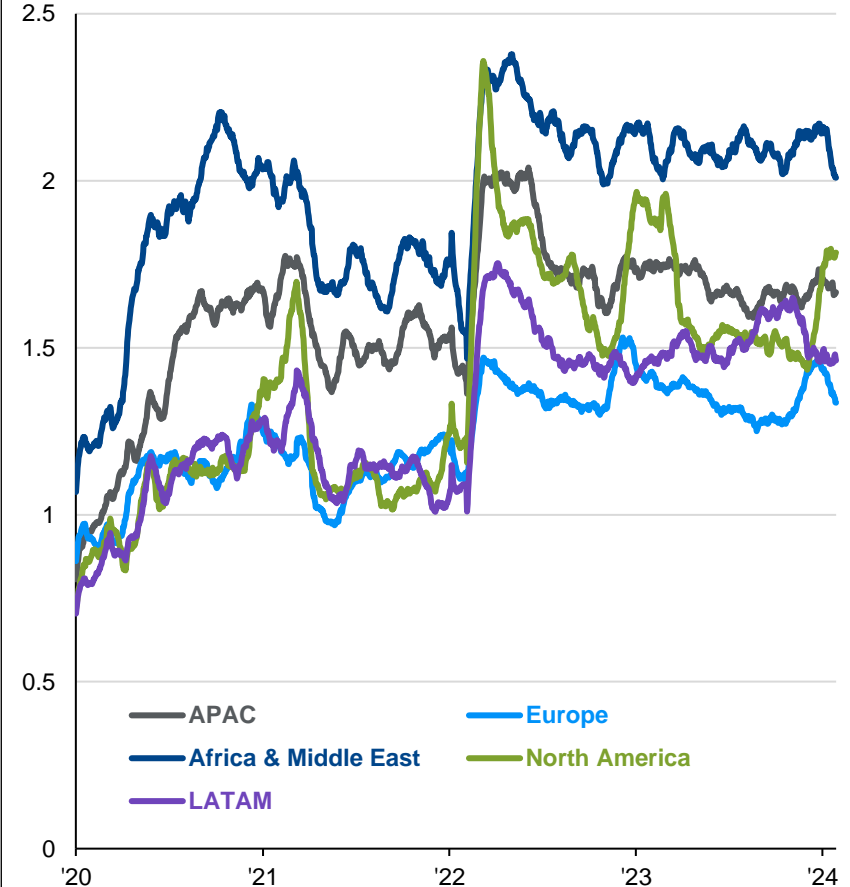
Global shipping costs

USD per 40-foot container, 2019 – present



Global port call duration*

Number of days, 30-day moving average, 2020 – present



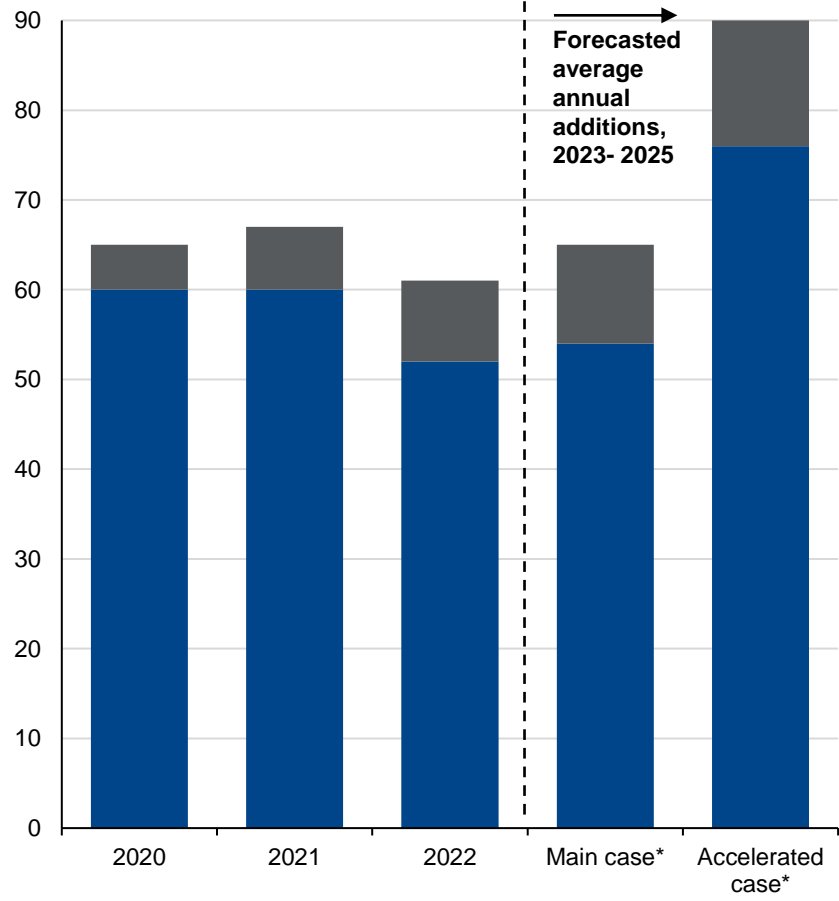
Source: Bloomberg, Clarksons Research, MSI, Sea/net, J.P. Morgan Asset Management. Port calls defined as all instances of a vessel entering and leaving a defined port location, excluding instances where vessel not recorded as travelling at less than 1 knot, and combining multiple consecutive instances 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 to complete the visit based on the time arrival and time of departure. Data are based on availability as of February 29, 2024.



Wind power

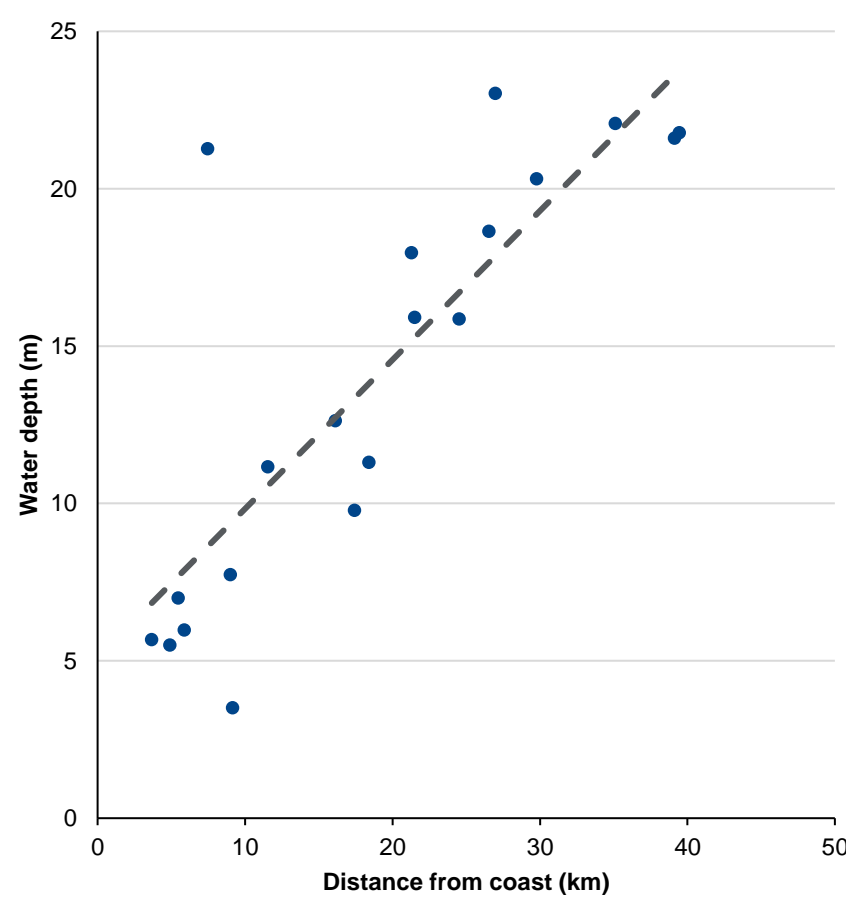
Global wind net capacity additions

Onshore versus offshore, gigawatt



Offshore wind project locations

Distance from shore and water depth



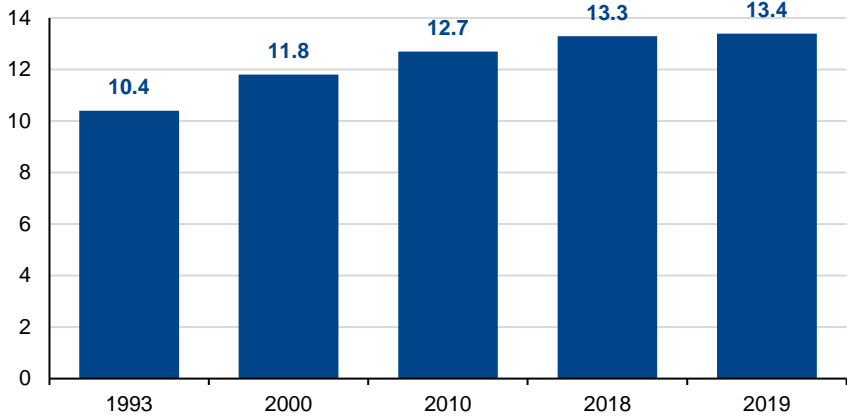
Source: IEA, The Wind Power, J.P. Morgan Asset Management. *In its “main case” scenario, the IEA projects wind, solar, hydro, and other renewable sources of energy accounting for 95% of the increase in the world’s electricity generating capacity over the next 5 years. In its “accelerated case” scenario, the IEA projects renewable capacity increases more quickly due to countries addressing policy, regulatory, and financial challenges. Data are based on availability as of February 29, 2024.



Aircraft trends

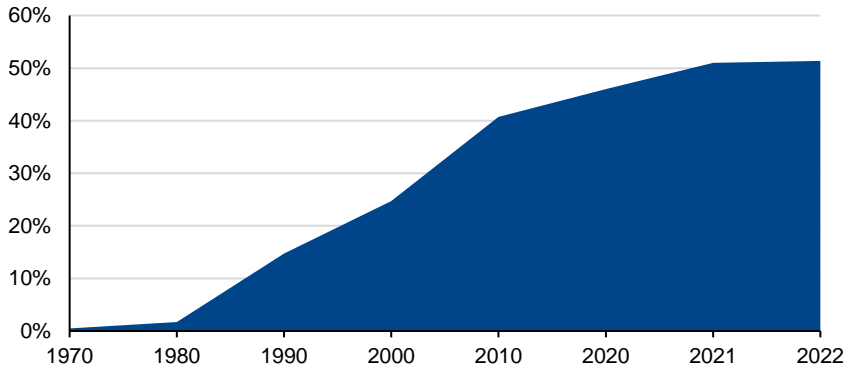
Average age of major airline aircraft

Years, U.S.



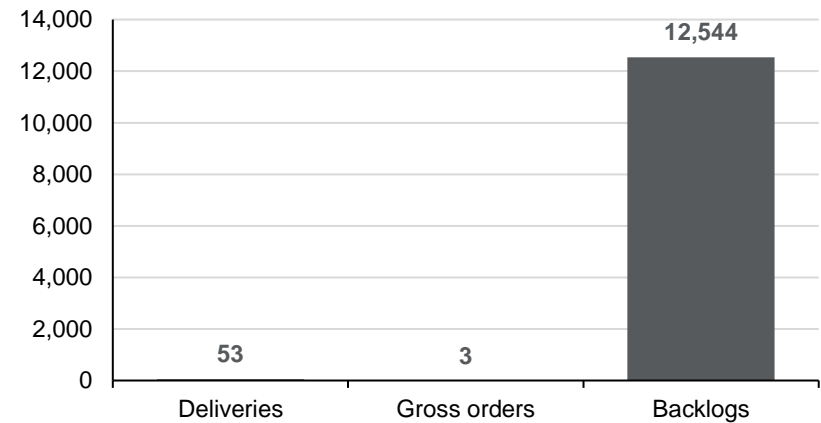
Percent of industry wide aviation fleet leased*

Global



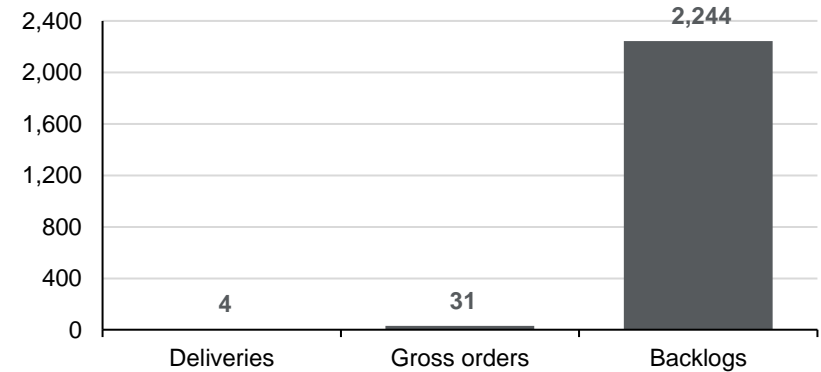
Narrow-body aircraft demand**

Year-to-date January 2024, number



Wide-body aircraft demand**

Year-to-date January 2024, number



Source: Cirium, Defense & Security Monitor, Statista, U.S. Bureau of Transportation Statistics, J.P. Morgan Asset Management. *Includes parked and in-service regional, single-aisle and widebody aircraft. **Aircraft demand is based on aggregate data released by Airbus and Boeing. Data are based on availability as of February 29, 2024.



U.S. public vs. private equity

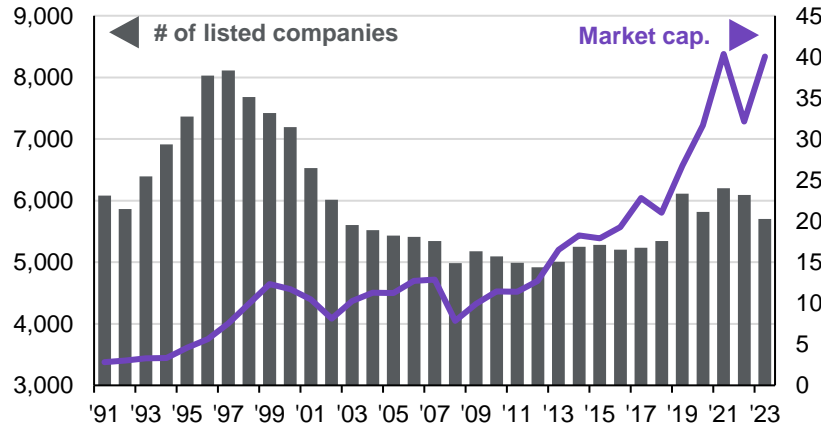
GTA

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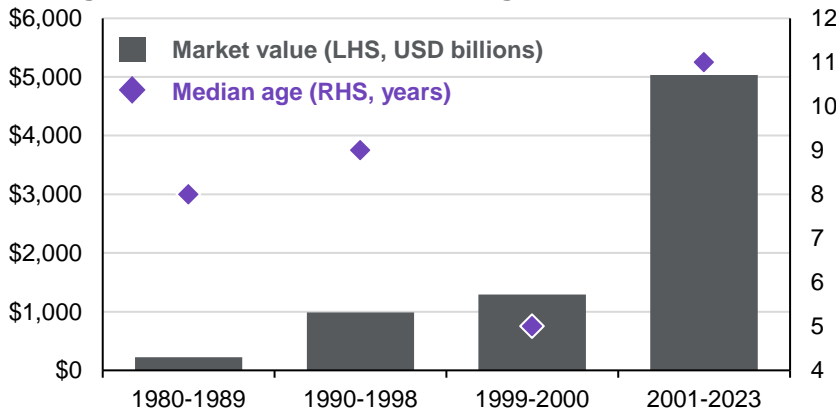
42

Number of listed U.S. companies* and market cap.

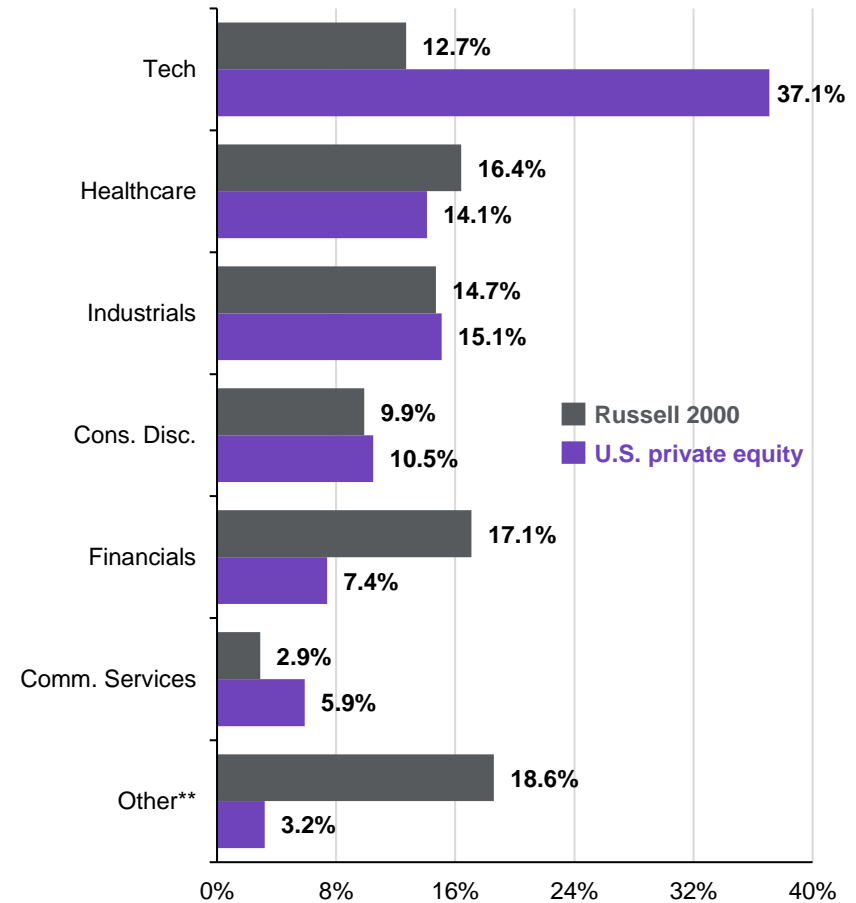
Number, S&P 500 market capitalization in USD trillions



Average market value and median age at IPO



Private vs. public equity sector weights

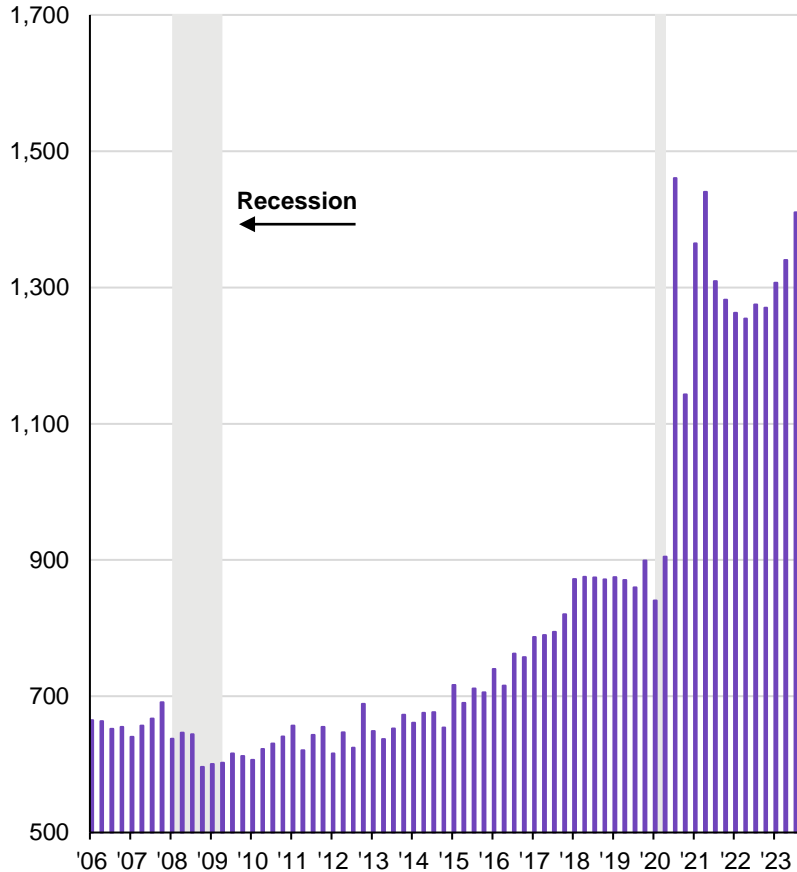


Sources: Cambridge Associates, Jay Ritter, University of Florida, Russell, World Federation of Exchanges, J.P. Morgan Asset Management.
(Top left) *Number of listed U.S. companies is represented by the sum of number of companies listed on the NYSE and the NASDAQ. (Bottom left) Market value is calculated at first closing price. The sample is IPOs with an offer price of at least \$5, excluding ADRs, unit offers, closed-end funds, REITs, natural resource limited partnerships, small best efforts offers, banks and S&Ls and stocks not listed on CRSP (CRSP includes Amex, NYSE and NASDAQ stocks). Average IPO size is defined as the aggregate IPO proceeds during the period shown, divided by the number of IPOs. (Right) **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 February 29, 2024.

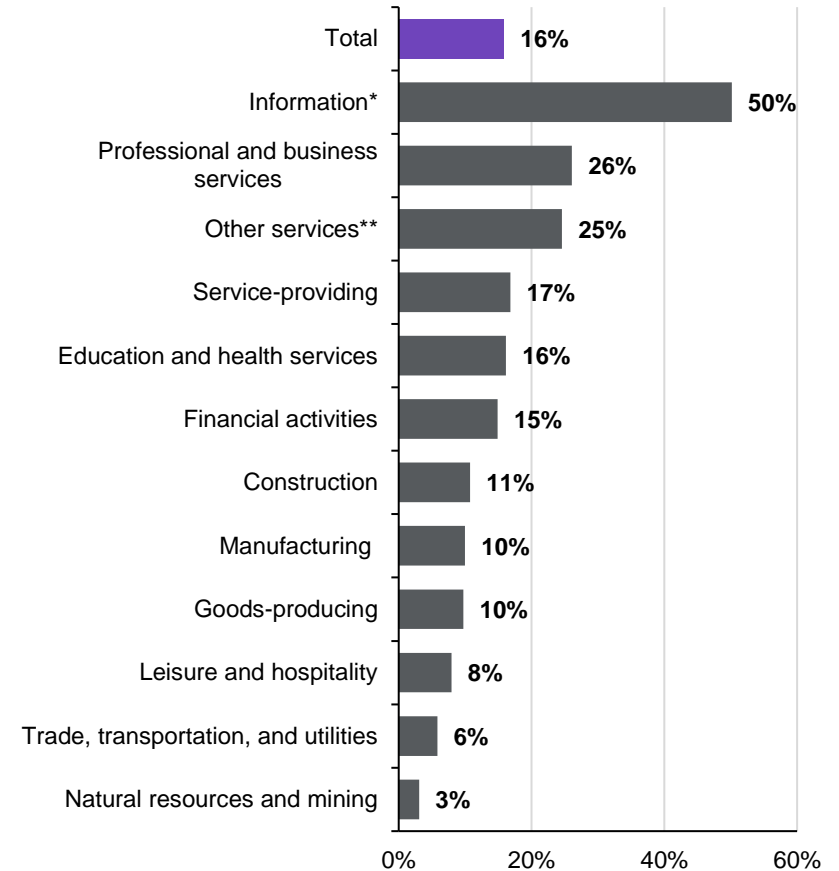


U.S. business formation

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



Growth in business establishments by private industry
December 2019 – June 2023



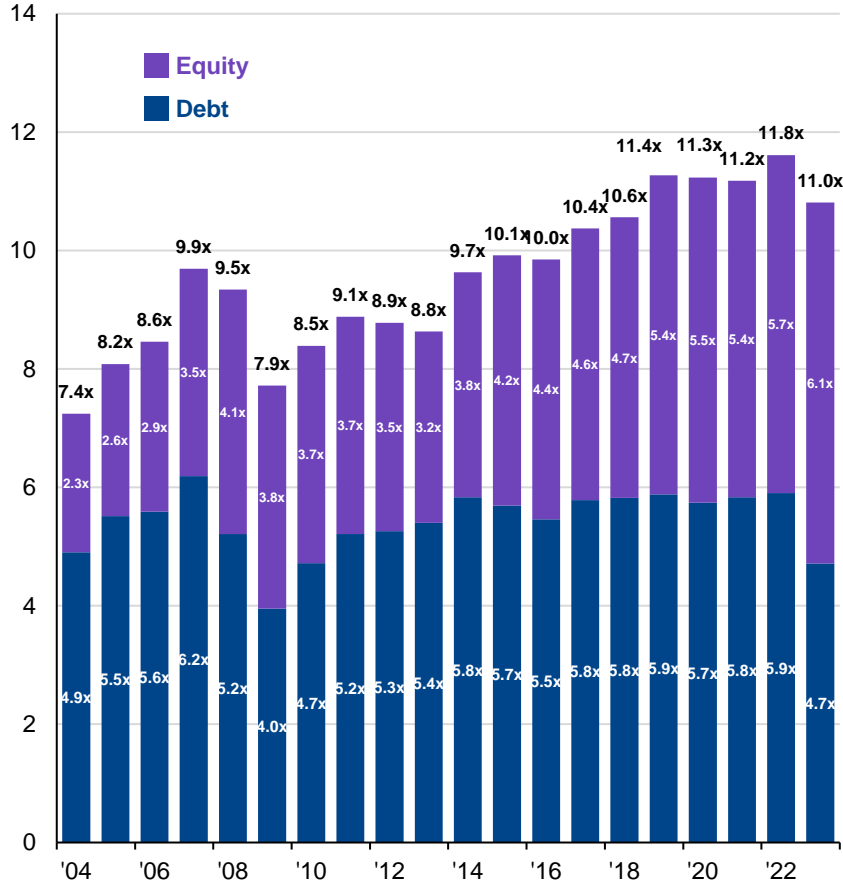
Source: Bureau of Labor Statistics, U.S. Census Bureau, J.P. Morgan Asset Management.
Business formation data are as of 4Q23. *Information includes broadcasting (excluding internet), data processing, hosting and related services, motion picture and sound recording industries, publishing industries (excluding internet) and telecommunications. **Other services includes unclassified businesses.
Data are based on availability as of February 29, 2024.



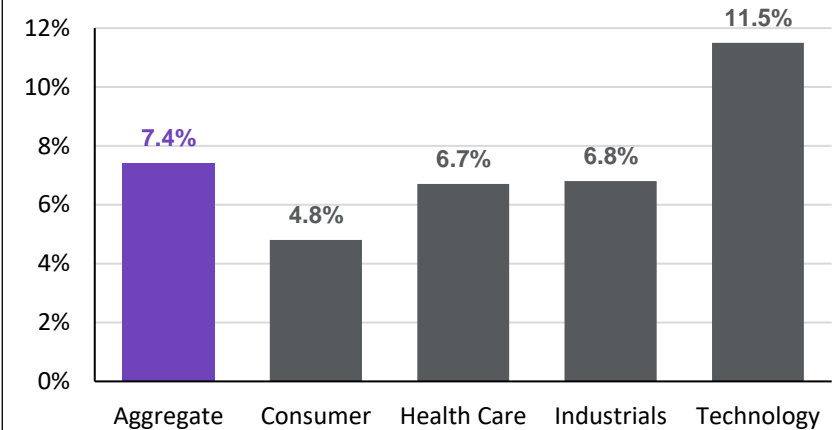
Private equity valuations

GTA U.S. 44

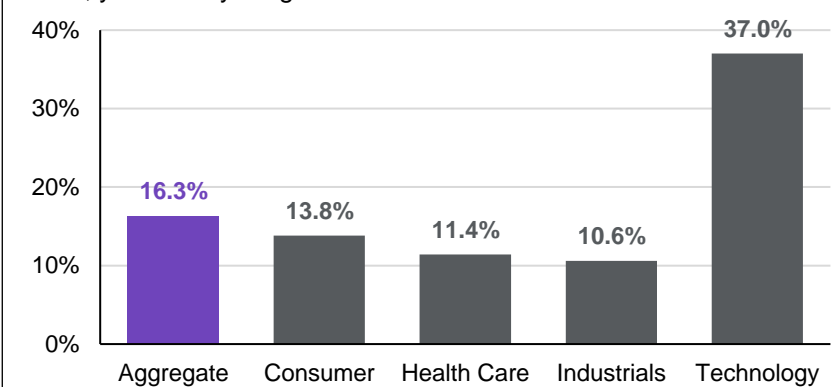
U.S. LBOs: purchase price multiples Equity and debt over trailing EBITDA



U.S. middle market private company revenues by sector 4Q23, year-over-year growth



U.S. middle market private company earnings by sector 4Q23, year-over-year growth



Source: Golub Capital, PitchBook, LCD, J.P. Morgan Asset Management. Purchase price multiples are as of December 31, 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 February 29, 2024.

J.P.Morgan
ASSET MANAGEMENT



Private equity deals and exits

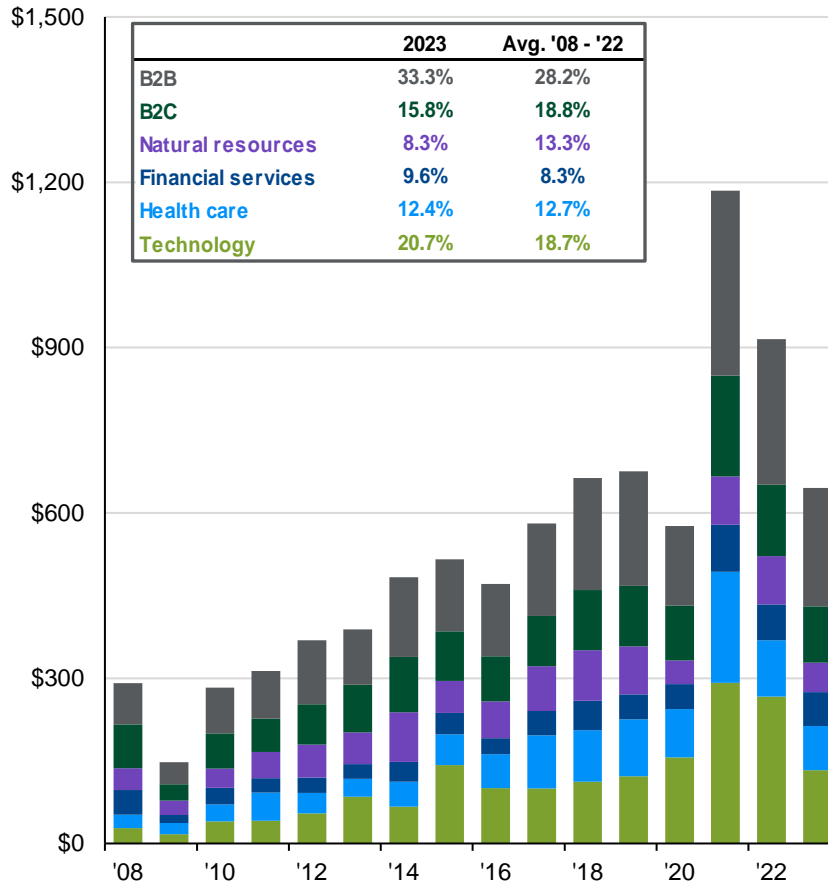
GTA

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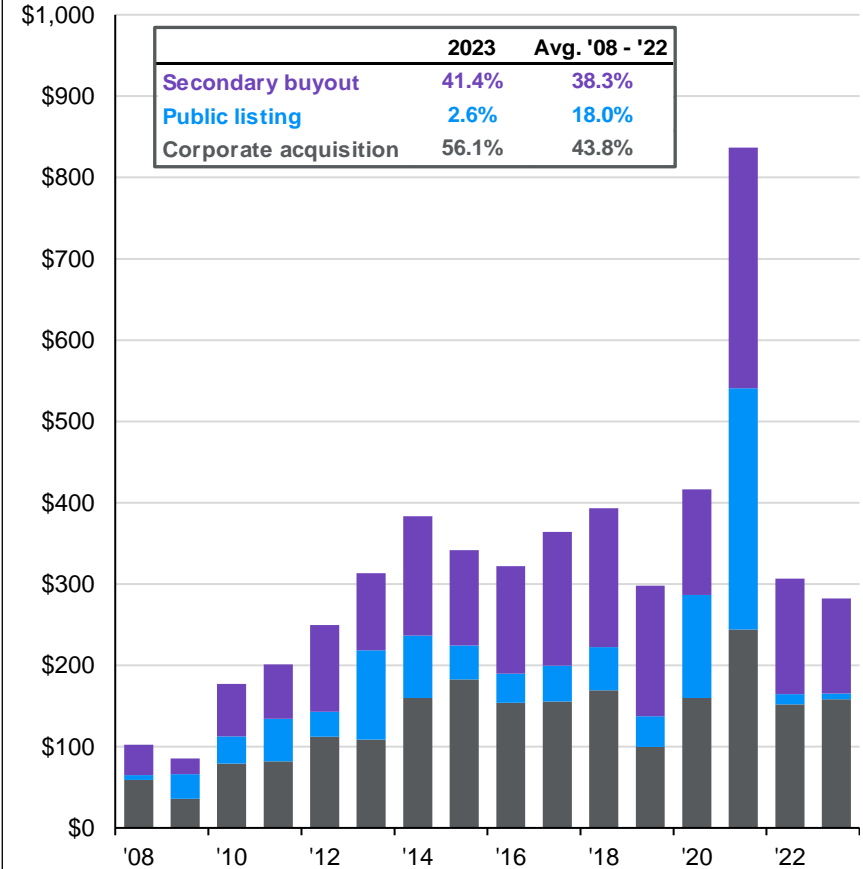
U.S. private equity deals

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 December 31, 2023.

Data are based on availability as of February 29, 2024.

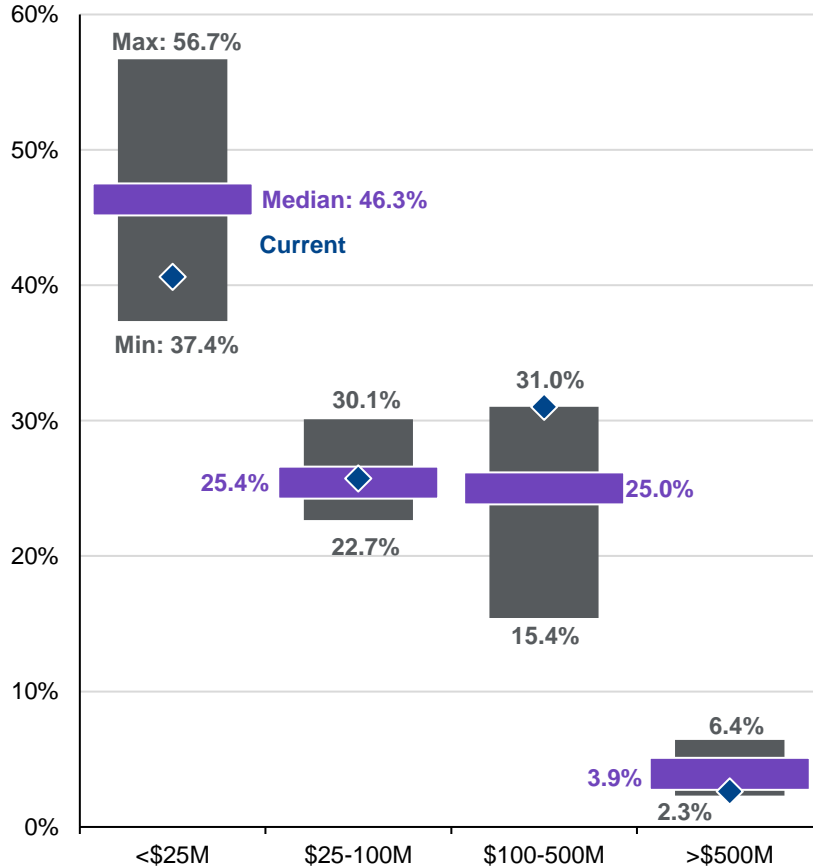


Private equity deals by size and type

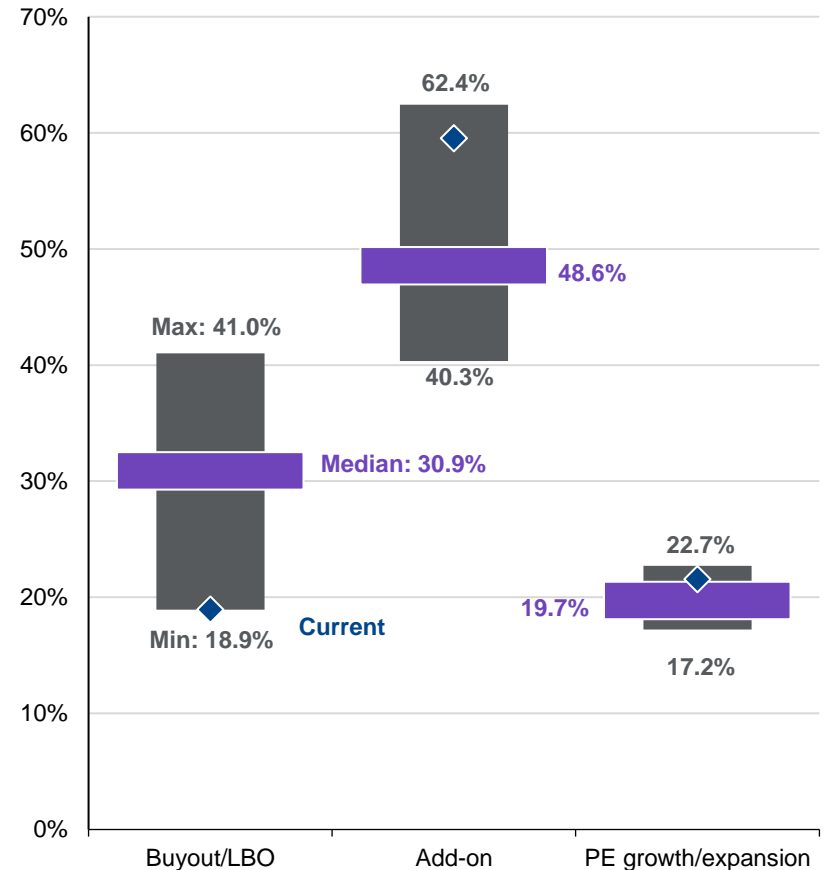
GTA U.S. 46

Private markets

U.S. private equity deals by size
% of total deals, 2008 – 2023



U.S. private equity deals by type
% of total deals, 2008 – 2023



Source: PitchBook, J.P. Morgan Asset Management. Private equity deal size and type activity are as of September 30, 2023. Data are based on availability as of February 29, 2024.



Private equity returns

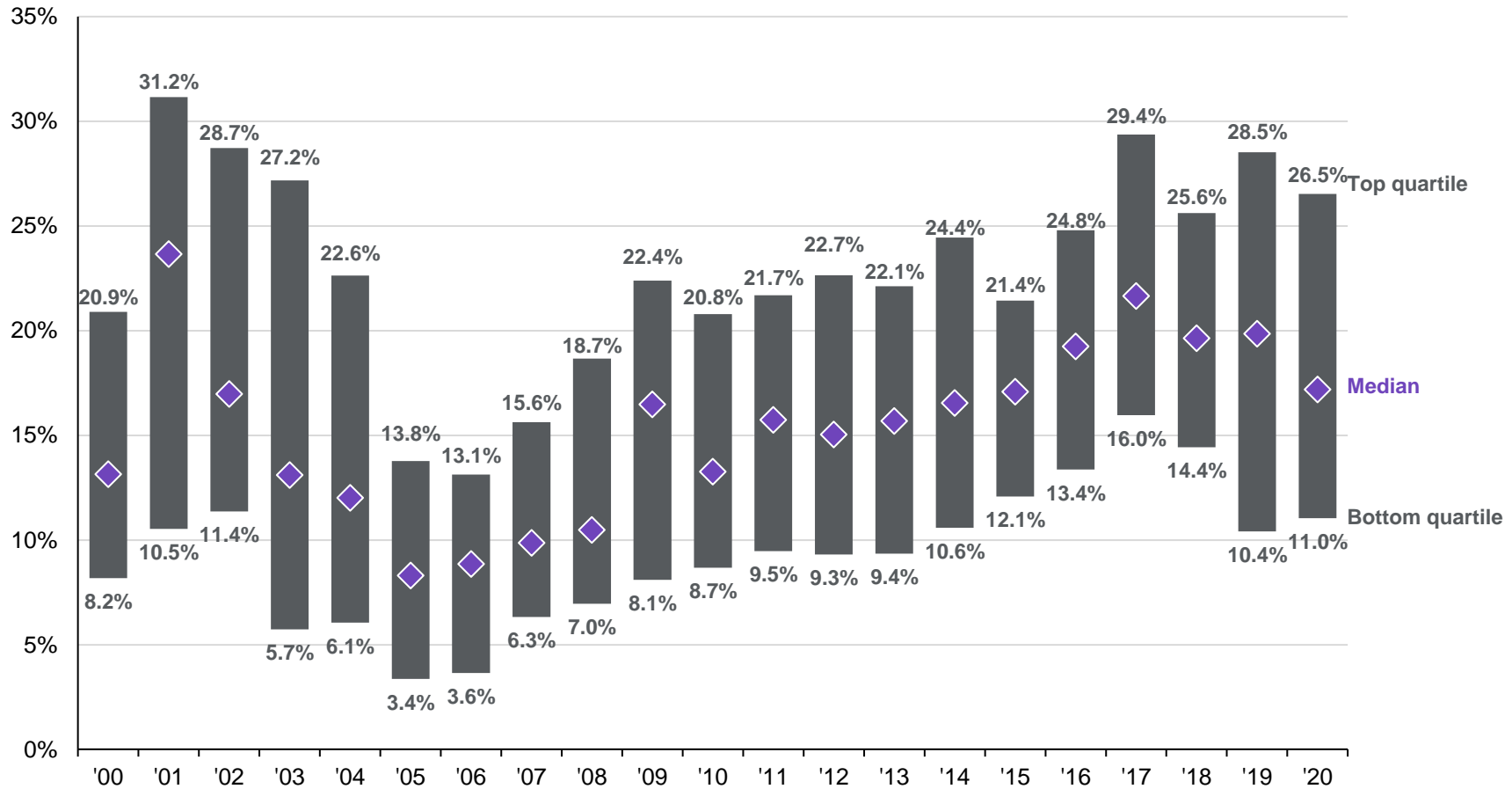
GTA

U.S.

47

Global private equity return dispersion by vintage year

2000 - 2020, Internal rate of return (IRR)



Source: Burgiss, J.P. Morgan Asset Management. Global private equity is represented by global buyout funds. IRR performance data is as of September 30, 2023.

Data is based on availability as of February 29, 2024



Secondary market

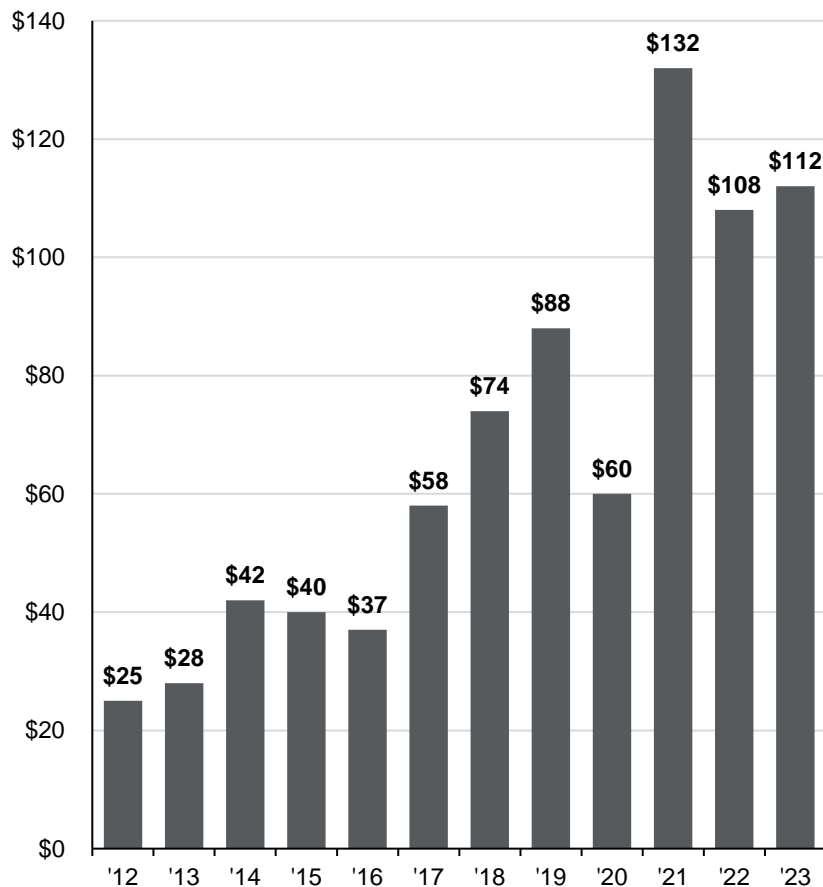
GTA

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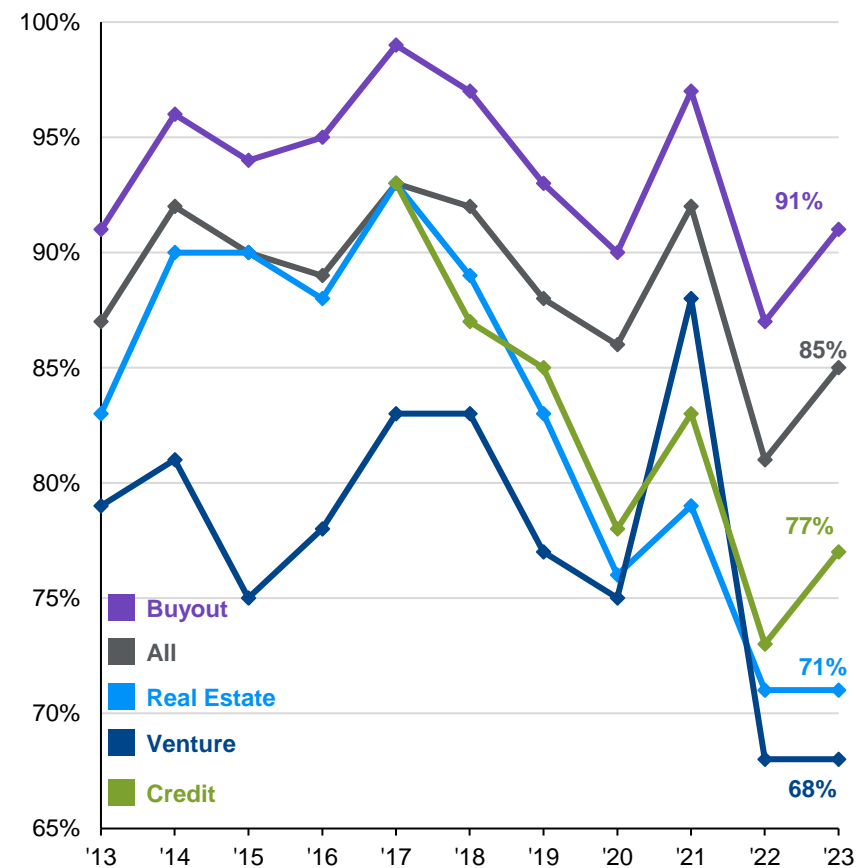
Secondary market volume

USD billions



Secondary pricing*

Percent of net asset value (NAV)



Source: Greenhill, Jefferies, J.P. Morgan Asset Management. "Global Secondary Market Review," Jefferies, January 2024. *Secondary pricing of LP portfolios.

Data are based on availability as of February 29, 2024.



Venture capital

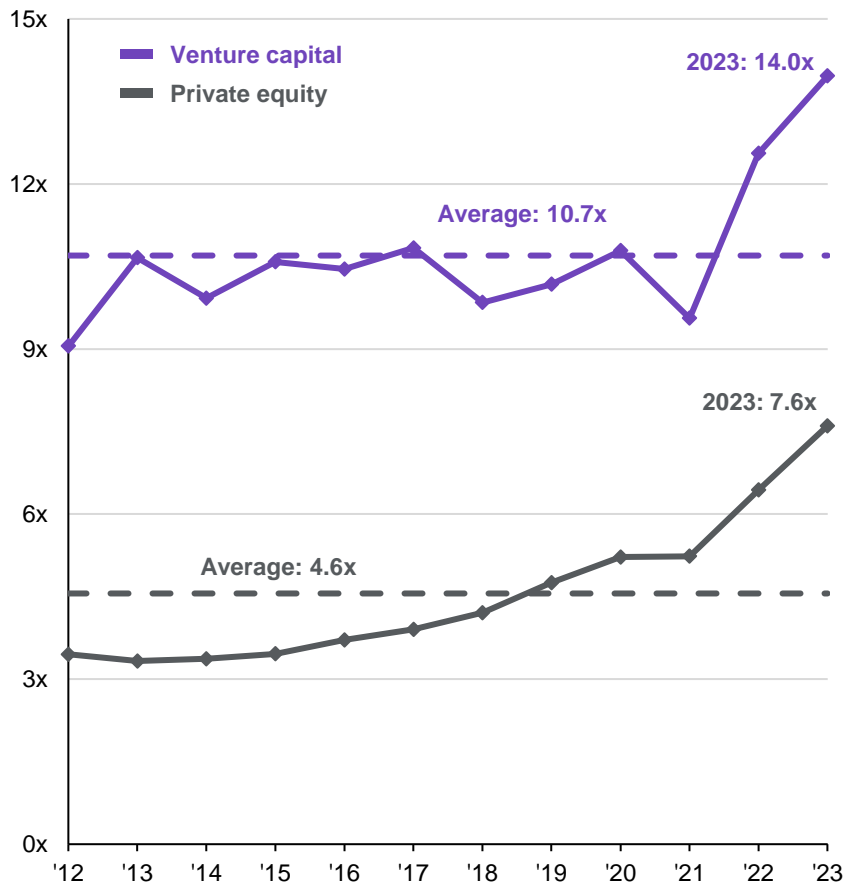
GTA

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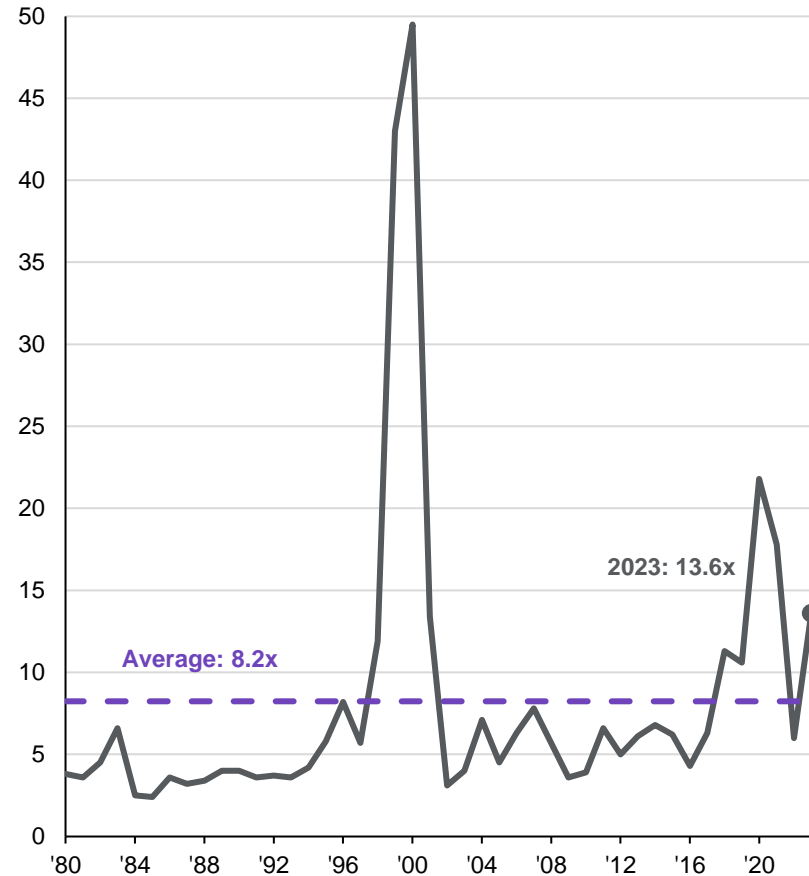
Investment and exit activity

Number of investments/number of exits*, 2012 - present



Venture capital IPO price-to-sales

1980 – 2023, market price



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 4Q23. Data are based on availability as of February 29, 2024.

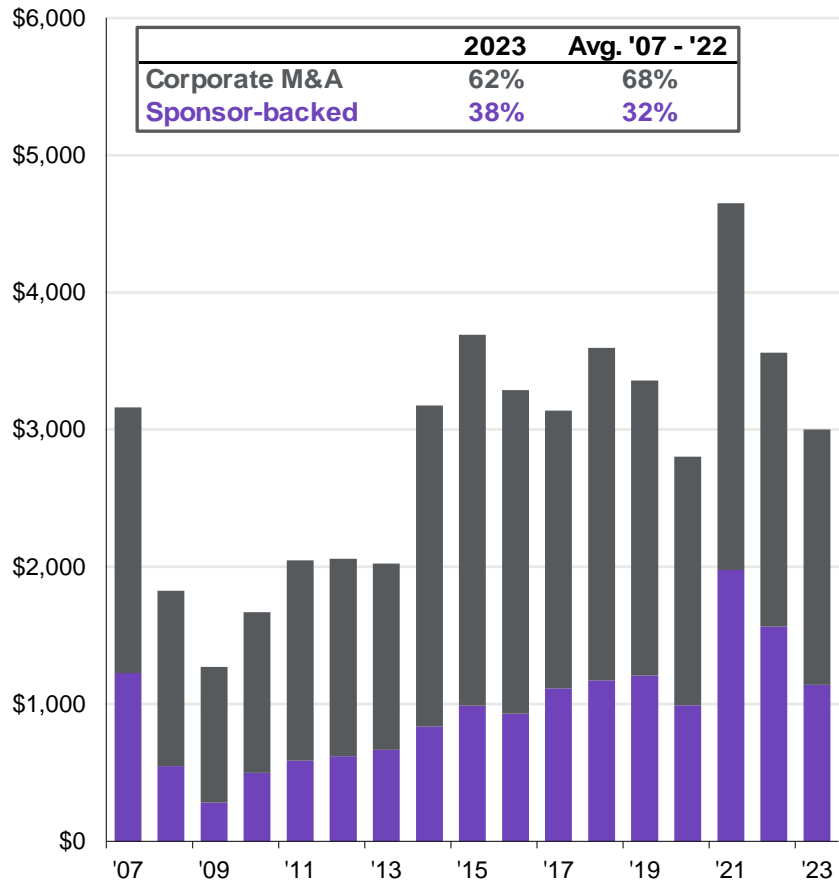


Global M&A

GTA U.S. 50

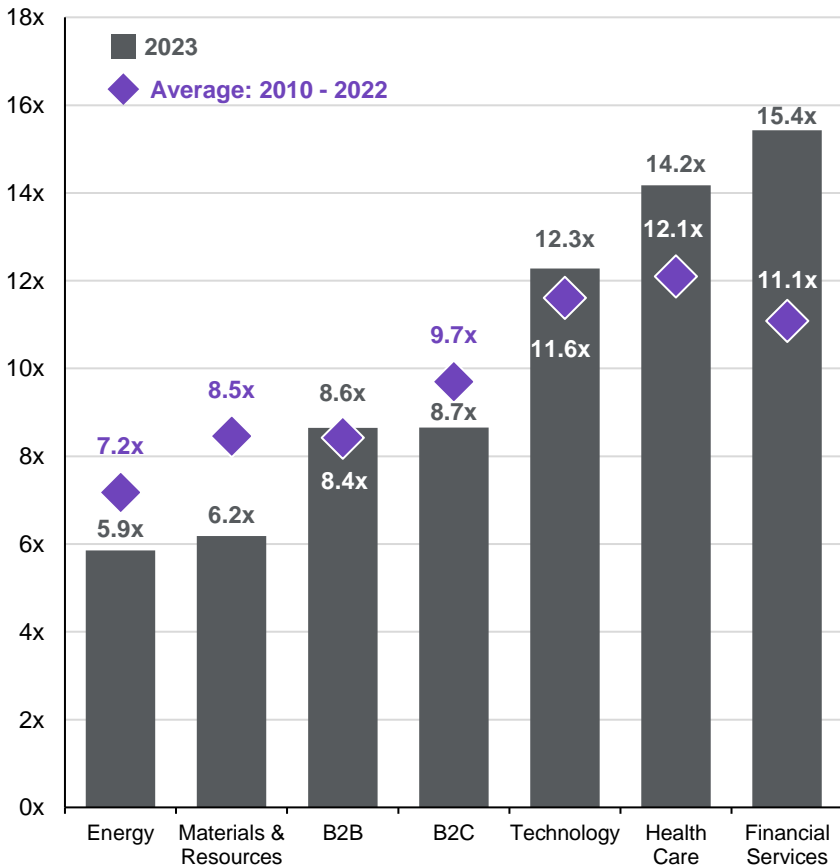
Global M&A by acquirer type

USD billions



Global M&A multiples by sector

Enterprise value/EBITDA, trailing 12-month multiples



Source: PitchBook, J.P. Morgan Asset Management. M&A deal data are as of December 31, 2023. Percentages may not sum to 100 due to rounding. Data are based on availability as of February 29, 2024.



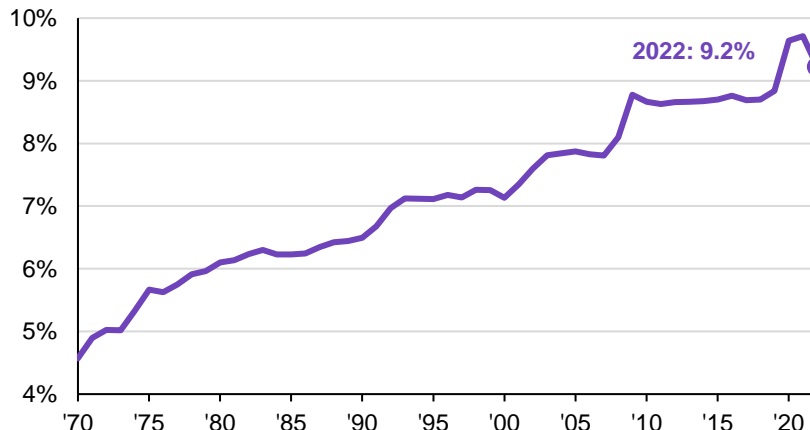
Health care dynamics

GTA U.S. 51

Private markets

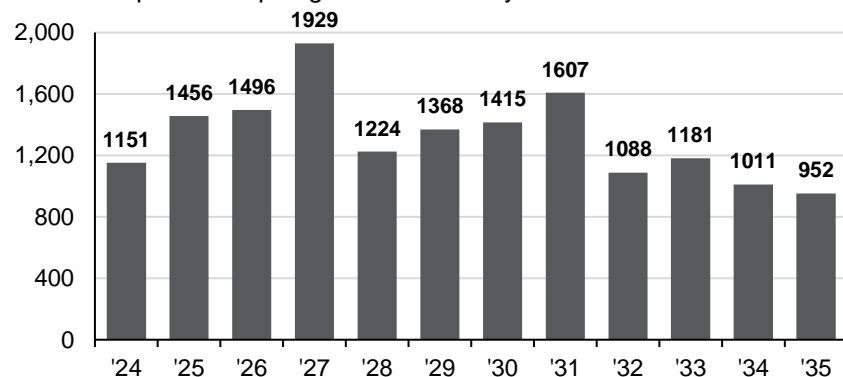
OECD average current expenditure on health

Percent of GDP



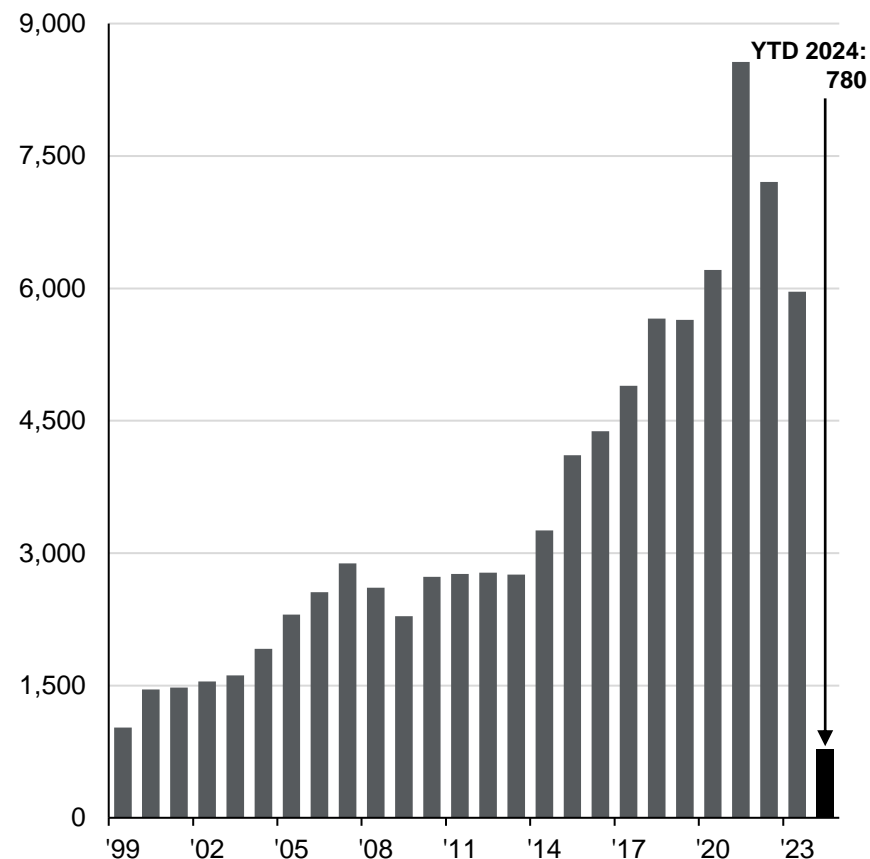
Drug patent expiration

Number of patents expiring each calendar year



Health care M&A activity

Global deal count, 25 years



Source: Bloomberg, FDA, OECD, J.P. Morgan Asset Management.

(Top left) OECD Health Statistics 2023. (Bottom left) Total patents expiring are from the FDA's Orange Book and Purple Book.

Data are based on availability as of February 29, 2024.

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Global investment in artificial intelligence

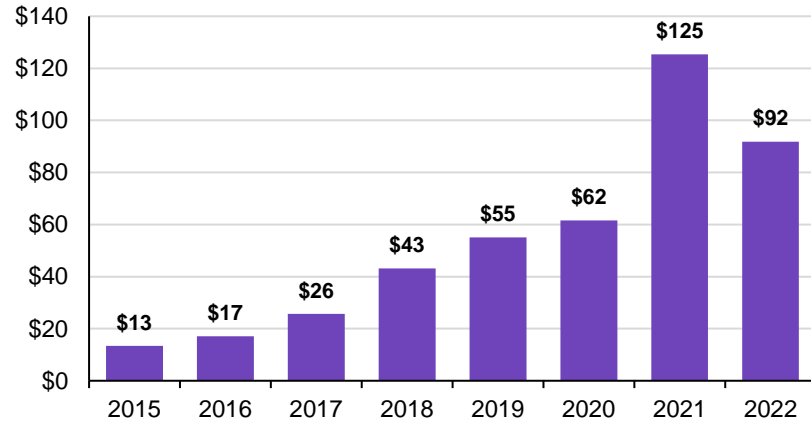
GTA

U.S.

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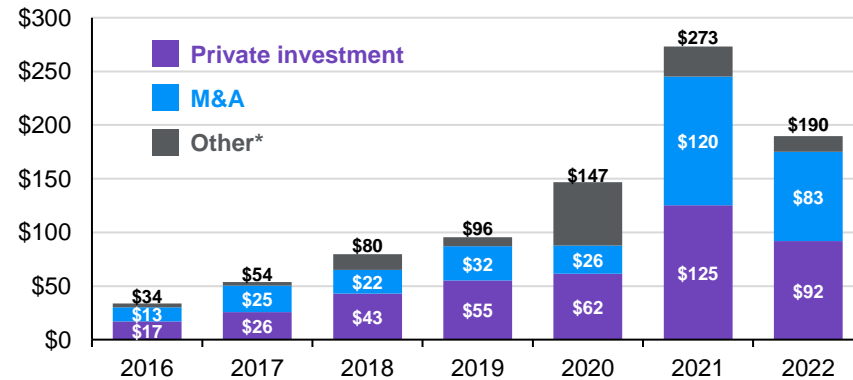
Global private investment in AI

USD billions



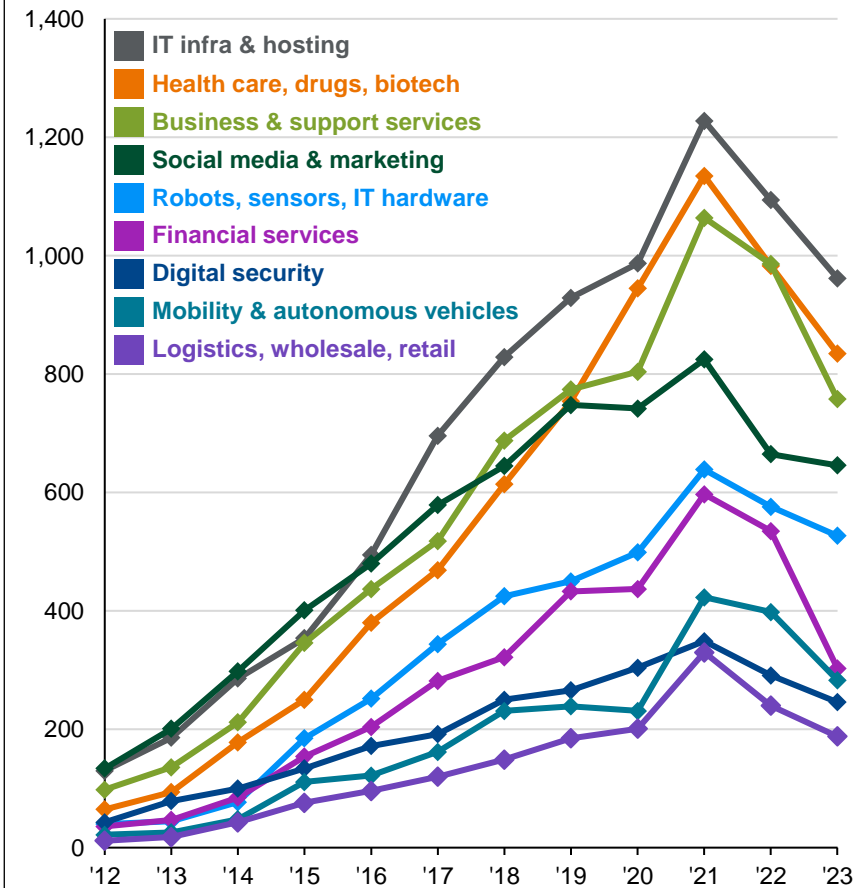
Global corporate AI investment by type

USD billion



Global venture capital investments in AI by industry

Number of investments



Source: Stanford University, OECD, Preqin, J.P Morgan Asset Management.

(Left) Stanford Artificial Intelligence Index Report 2023. *Other includes minority stake and public offering. (Right) Data from OECD.AI. 2023 data is an estimate.

Data are based on availability as of February 29, 2024.



Private credit fundraising

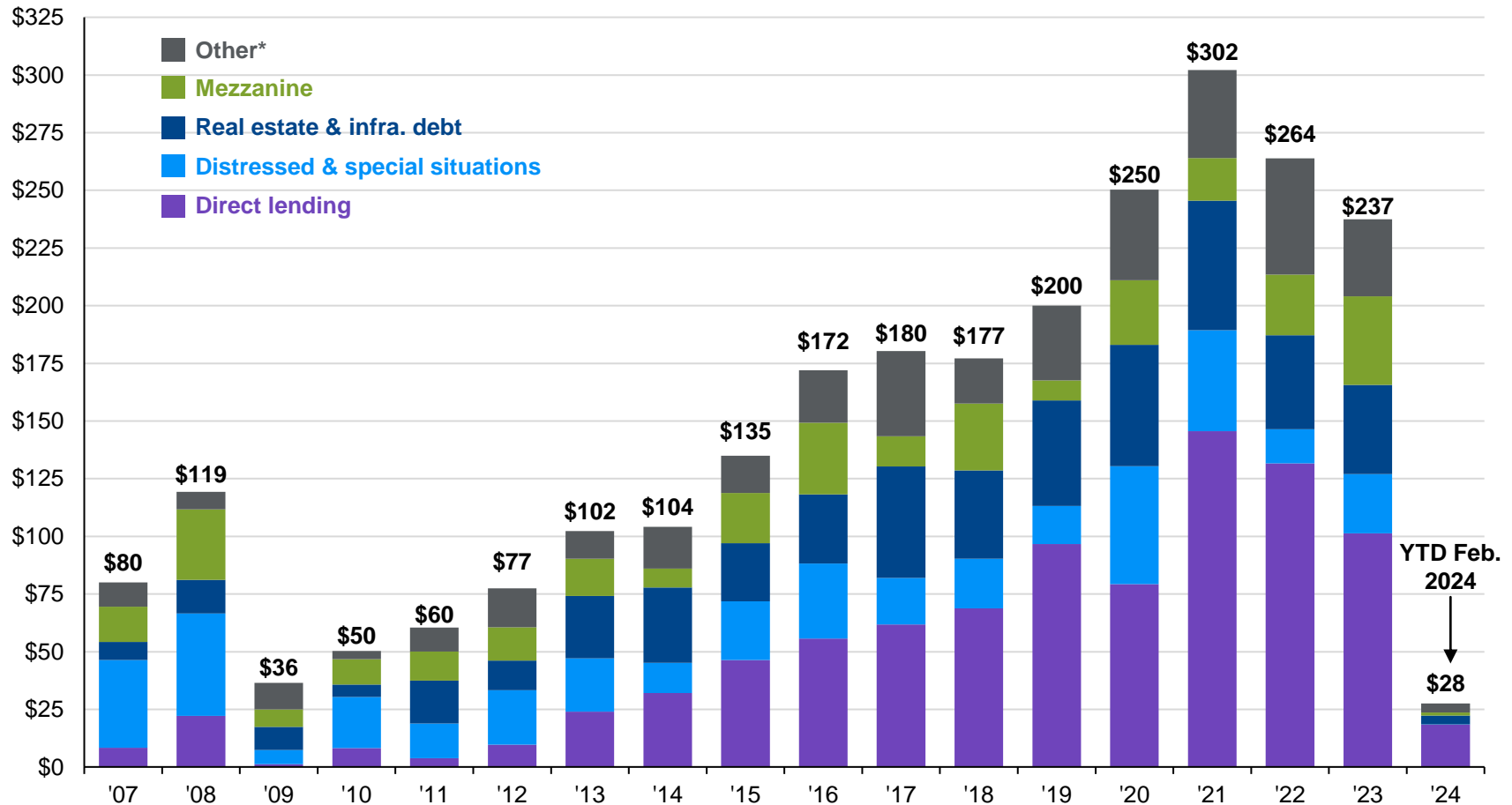
GTA

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Private credit fundraising by type

USD billions



Sources: Preqin, J.P. Morgan Asset Management. *Other includes venture debt, fund of funds, and special situations.
Data are based on availability as of February 29, 2024.



Credit returns across recent economic cycles

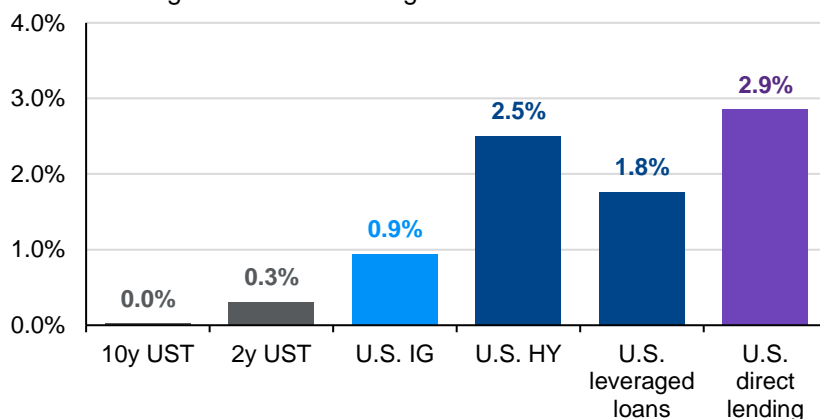
GTA

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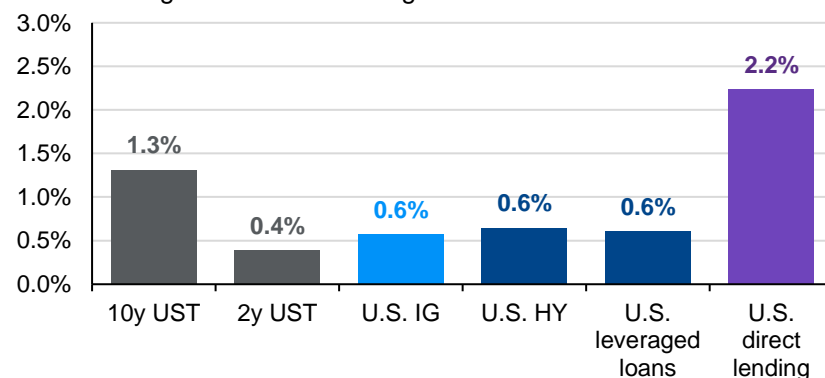
Expansion

Manufacturing ISM > 50 and rising



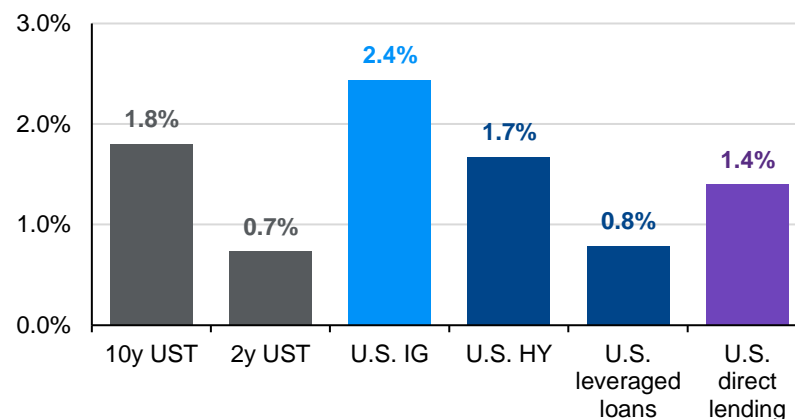
Late cycle cooling

Manufacturing ISM > 50 and falling



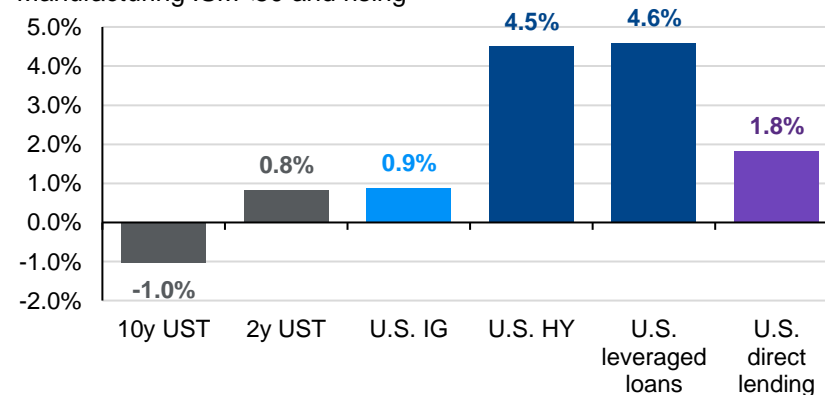
Recession

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: Leveraged loans: Morningstar LSTA US Leveraged Loan Total Return Index, U.S. direct lending: Cliffwater Direct Lending Index. All returns are from 12/31/2004 through 12/30/2023, except Direct Lending (9/30/2023).

Data are based on availability as of February 29, 2024.



U.S. banks and credit market participants

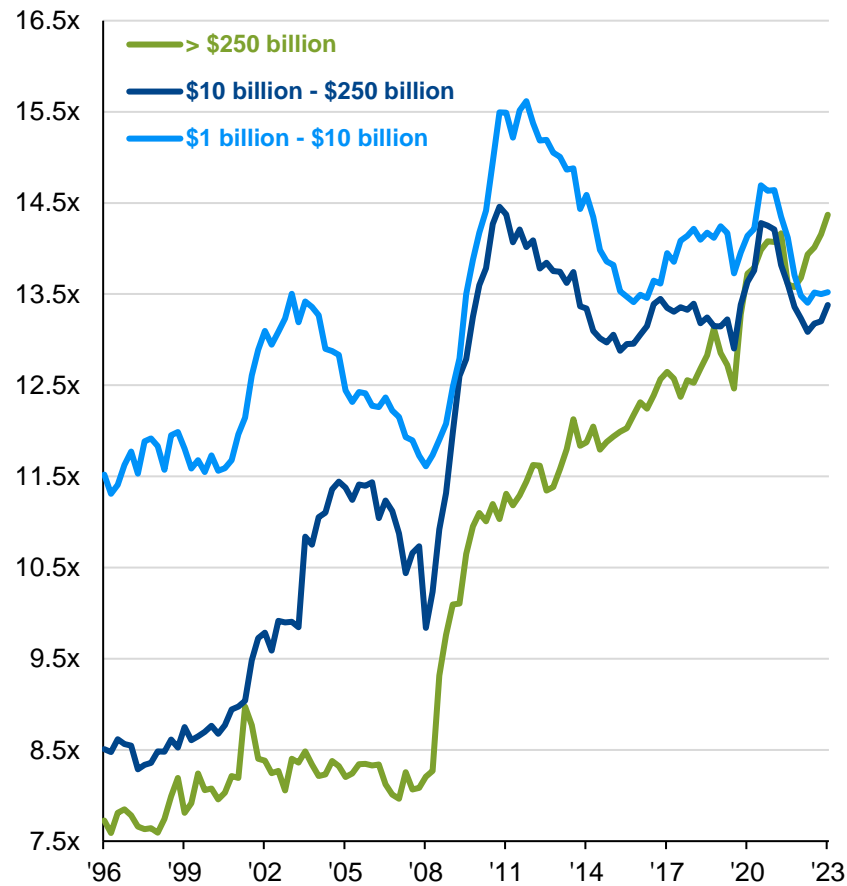
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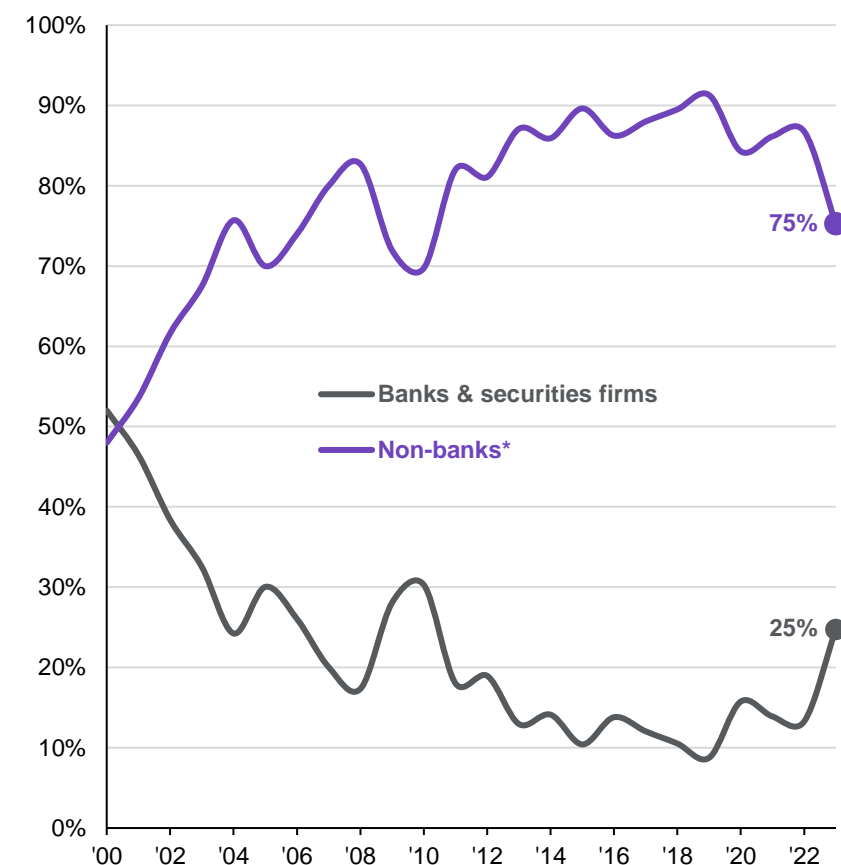
Tier 1 risk-based capital ratios by bank asset size

Percentage, quarterly, 4Q96 – 3Q23



Primary market sources of financing

New-issue market for broadly syndicated loans, 1999 – 2022



Source: FDIC, LCD, PitchBook, J.P. Morgan Asset Management. Broadly syndicated loans are the most common type of leveraged loans and represent lending to below investment grade companies by institutional investors (banks and non-banks). Broadly syndicated loans are senior secured. *Non-bank includes institutional investors and finance companies. Data are based on availability as of February 29, 2024.



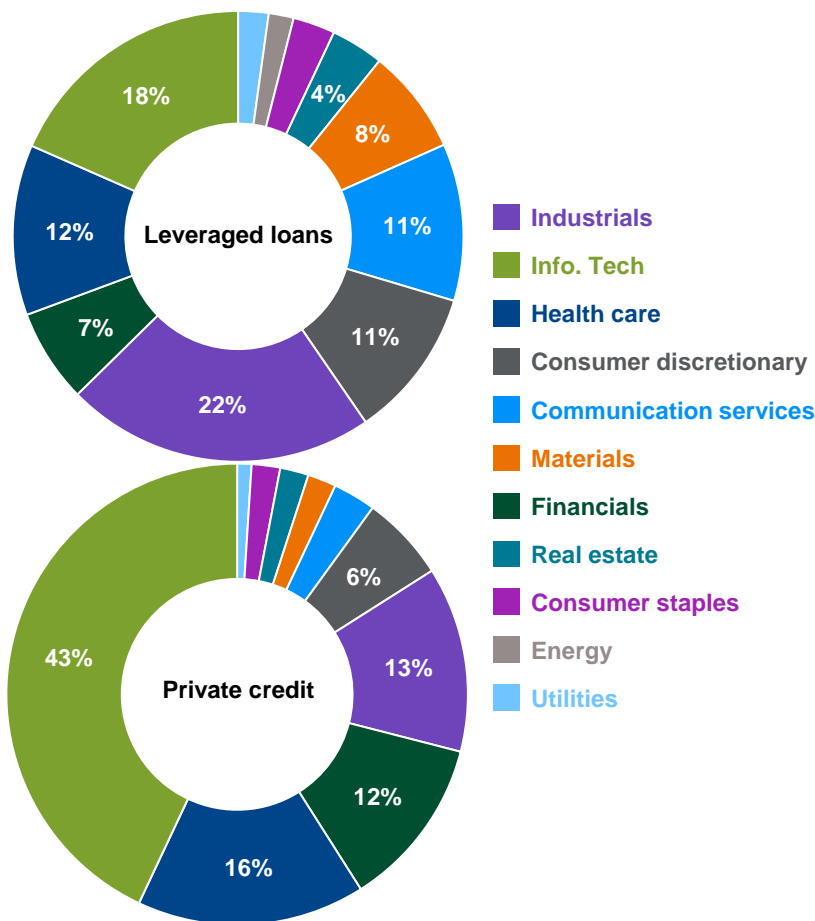
Private credit vs. leveraged loans

GTA

U.S.

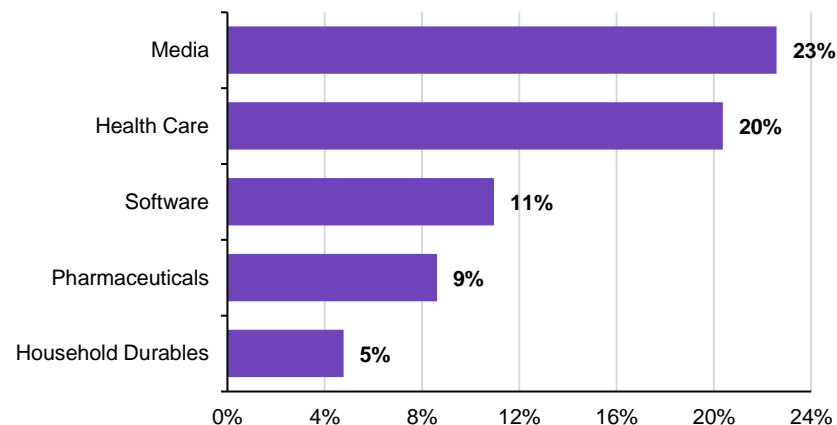
56

Leveraged loans vs. private credit sector exposure



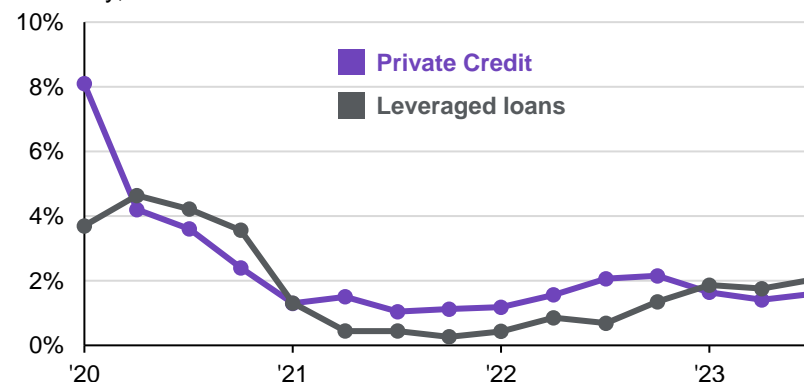
Share of leveraged loan defaults by industry

U.S., December 2023, last twelve months, % of total default volume



Private credit and leveraged loans default rate

Quarterly, 2Q20 – 4Q23



Source: Cliffwater, LCD, Standard & Poor's, Pitchbook, Proskauer, J.P. Morgan Markets Research, J.P. Morgan Asset Management. Pitchbook defines leveraged loans as a commercial loan provided by a group of lenders that is either: 1) rated BB+ or lower, 2) not rated or rated BBB- or higher and has a base rate spread of 125 bps or higher and is secured by a first or second lien. Private credit (direct lending) is defined as when a non-bank lender directly lends to a company. All leveraged loans data are from the Morningstar LSTA U.S. Leveraged Loan Index. (Left) For private credit, information technology includes business services. Private credit sector exposure is as of September 30, 2023. Leveraged loans sector exposure is as of December 2023. (Top right) Health care includes providers and services. (Bottom right) The leveraged loans default rate is calculated using the LTM number of defaults as a % of total issuers. 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 February 29, 2024



Sponsored vs. non-sponsored leveraged loans

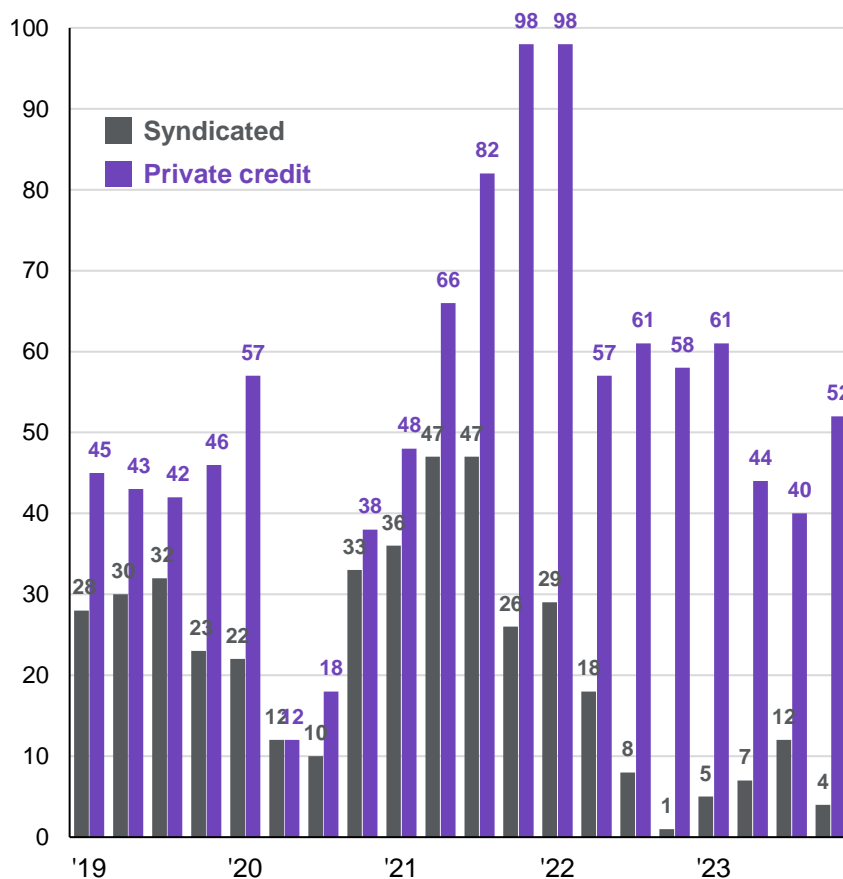
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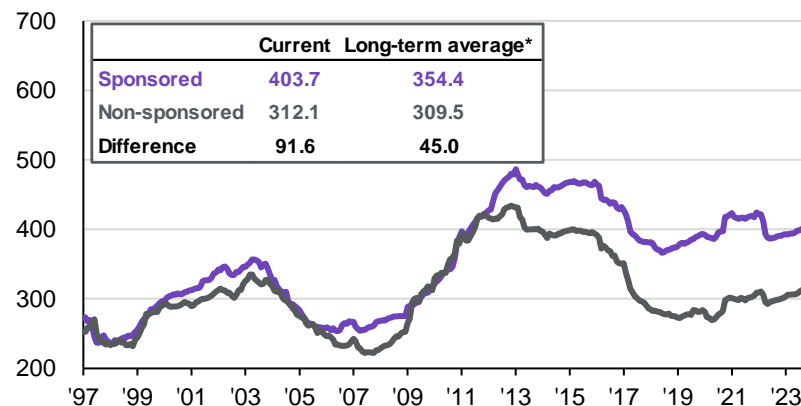
Sources of LBO financing

Number of deals of bank syndicated or private credit loans, quarterly



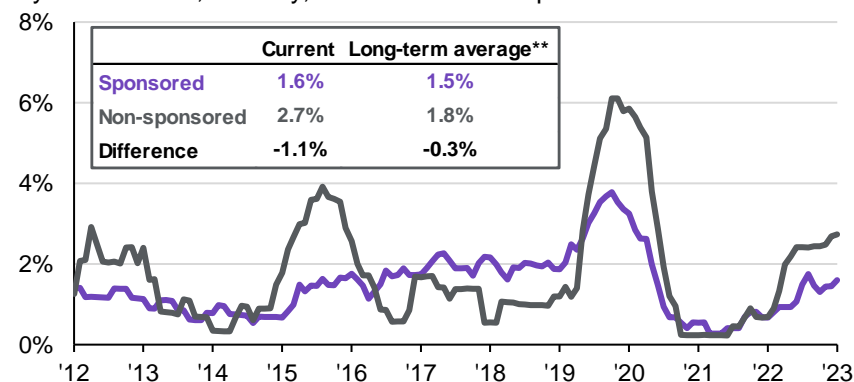
Sponsored and non-sponsored leveraged loan spreads

Weighted average nominal spreads, monthly, 1997 – present



Sponsored and non-sponsored leveraged loan default rates

By issuer count, monthly, December 2012 – present



Source: Pitchbook, LCD, Morningstar LSTA U.S. Leveraged Loan Index, J.P. Morgan Asset Management. LBO financing and sponsored and non-sponsored leveraged loan data are as of December 31, 2023. Sponsored financing is when a non-bank lender provides credit to a business that is either wholly-owned or majority-owned by a private equity firm. Non-sponsored financing is when a lender provides credit to a company not backed by a financial institution. *Averages are since 1997. **Average default rates are since December 2012. Data are based on availability as of February 29, 2024.



Middle market lending dynamics

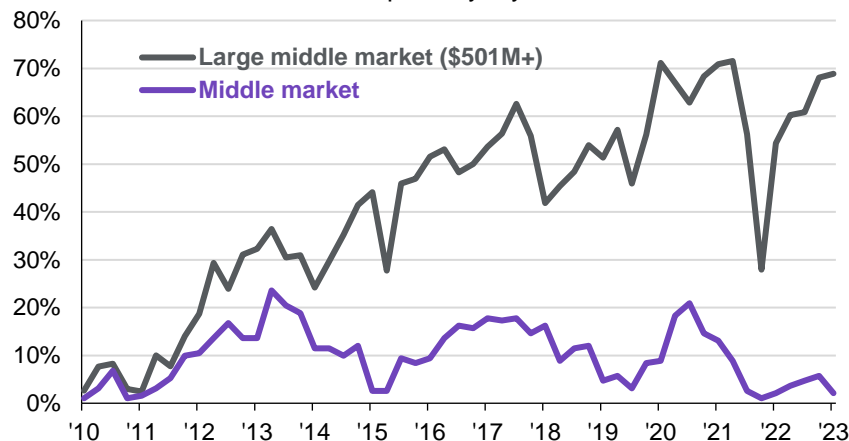
GTA

U.S.

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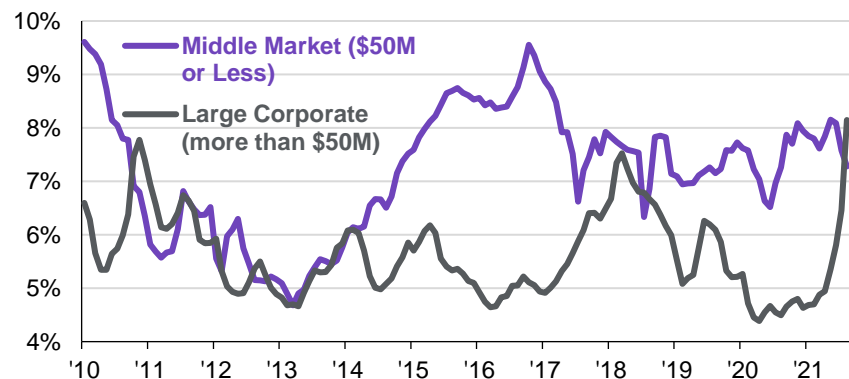
Covenant-lite loans*

% of total loans, 4Q10 – 4Q23, quarterly, by deal size



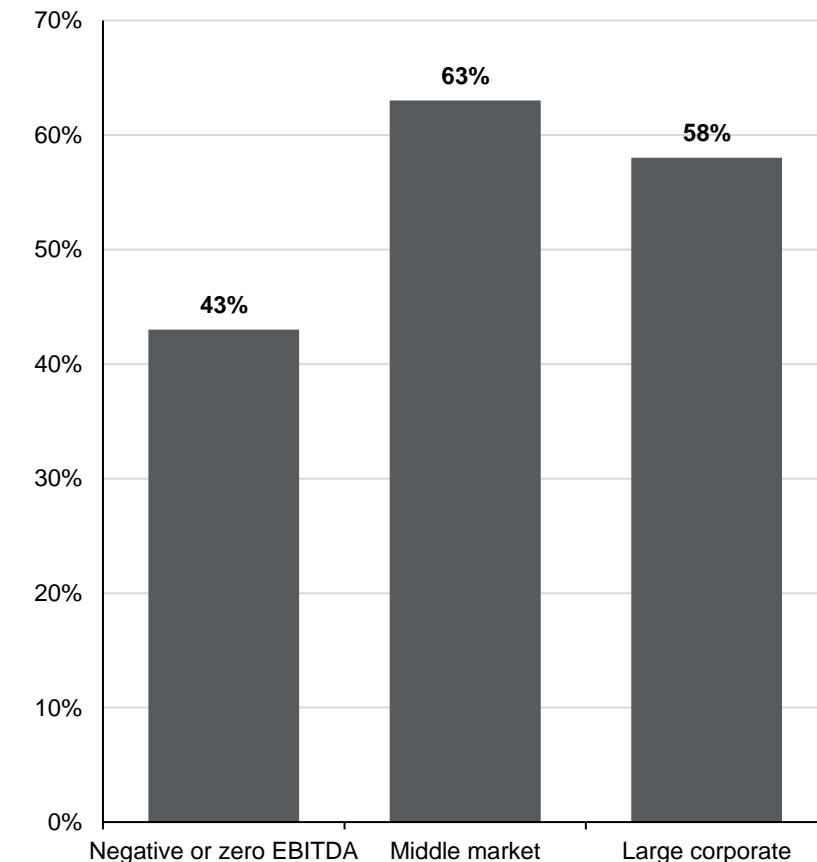
New issue yields

December 2010 – July 2022**, monthly, by EBITDA



Average discounted recovery rates by EBITDA

1978 – 2022



Source: Pitchbook, LCD, S&P, J.P. Morgan Asset Management.

(Top left) *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. (Bottom left) **Due to a decline in loan issuance, data is only available through July 2022. 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 period. (Right) Middle market corporate are companies with EBITDA of \$50 million or less. Large corporate are companies with EBITDA greater than \$50 million. Data are based on availability as of February 29, 2024.



Credit market stress

GTA

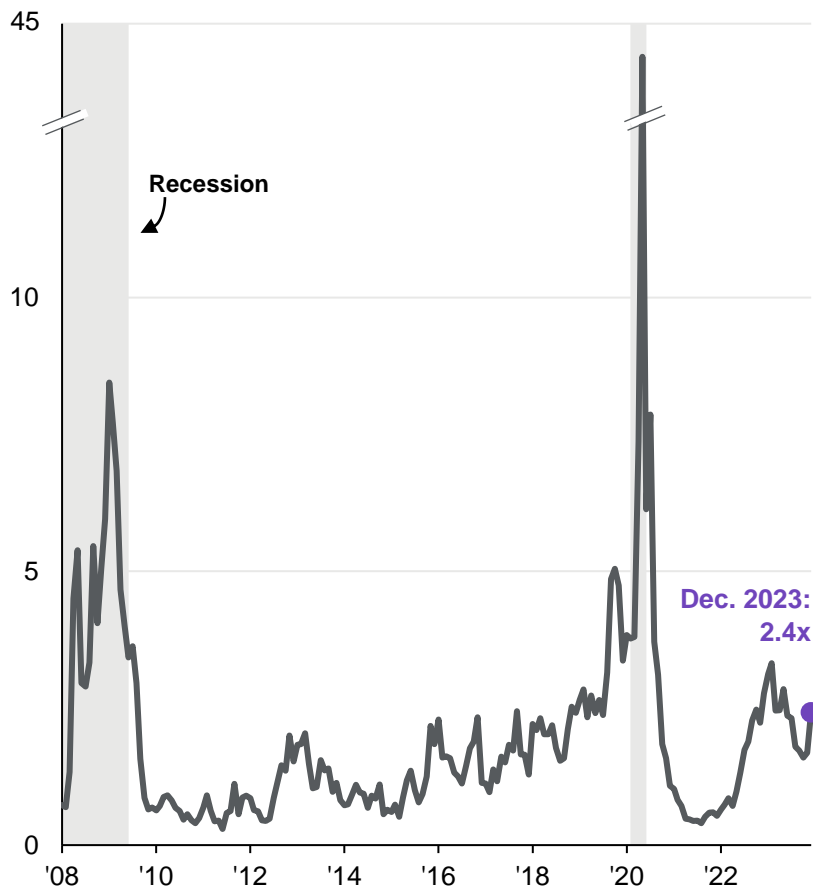
U.S.

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Private markets

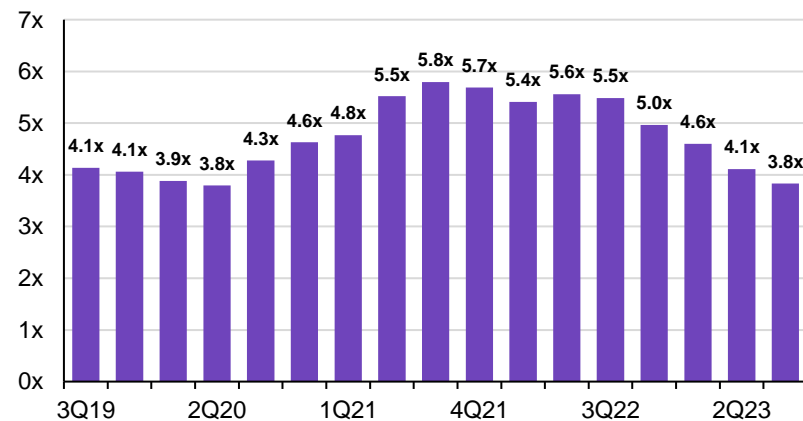
U.S. leveraged loans downgrade/upgrade ratio

Rolling 3-month average



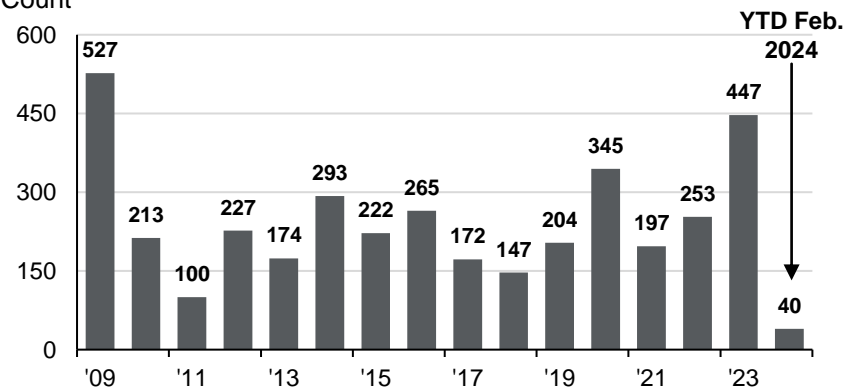
U.S. leveraged loans interest rate coverage

Weighted average*, EBITDA/Interest expense, 3Q23



U.S. leveraged loans amendments and extensions by year

Count



Source: LCD, PitchBook, J.P. Morgan Asset Management. *Averages are weighed by outstanding loan amount. Data are based on availability as of February 29, 2024.



U.S. distressed loans

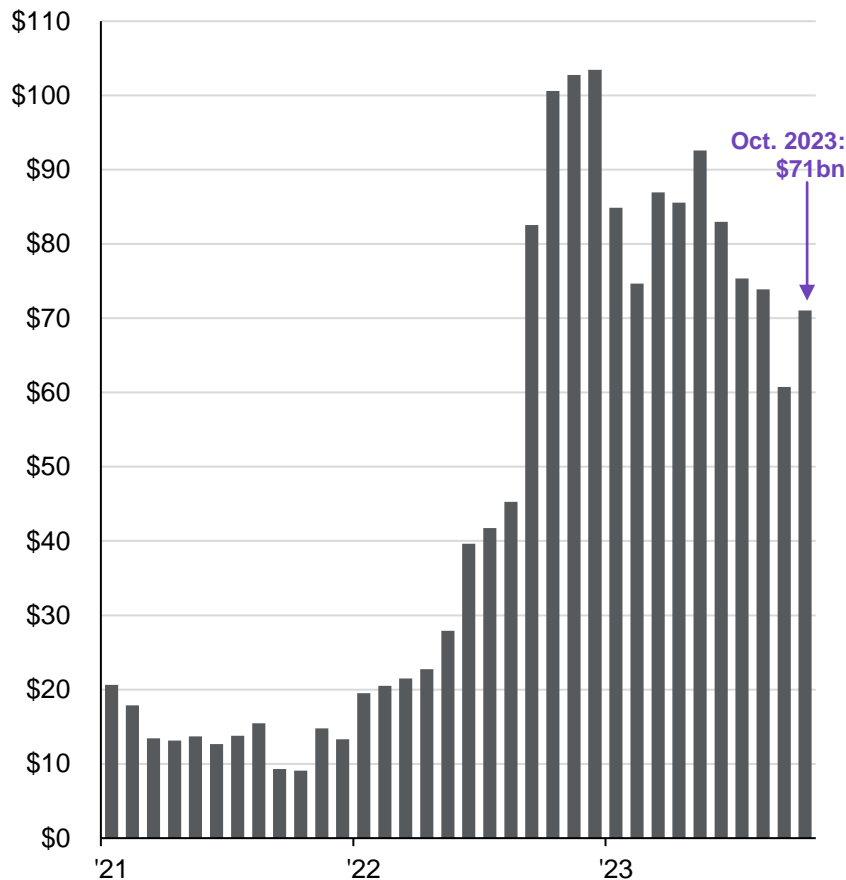
GTA

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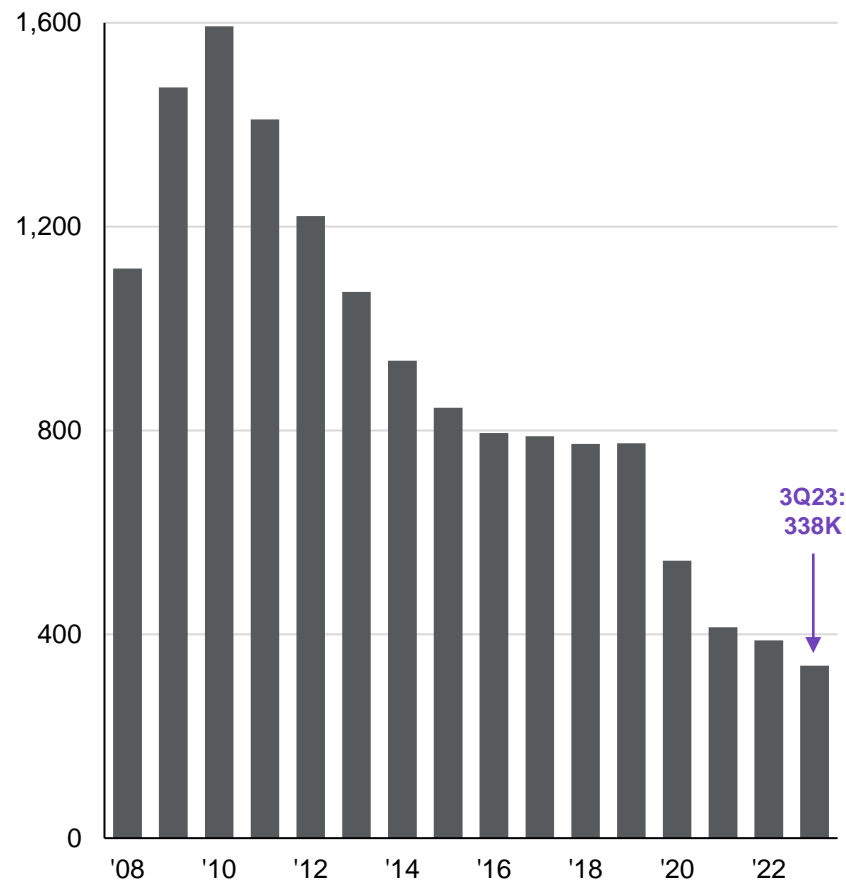
U.S. distressed loan volume outstanding

In USD billions, last-twelve-months



Bankruptcy filings by year

U.S., 2008 – 3Q23, in thousands



Source: Pitchbook, LCD, Morningstar, United States Courts, J.P. Morgan Asset Management. Distressed loan data are from the Morningstar LSTA 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 February 29, 2024.

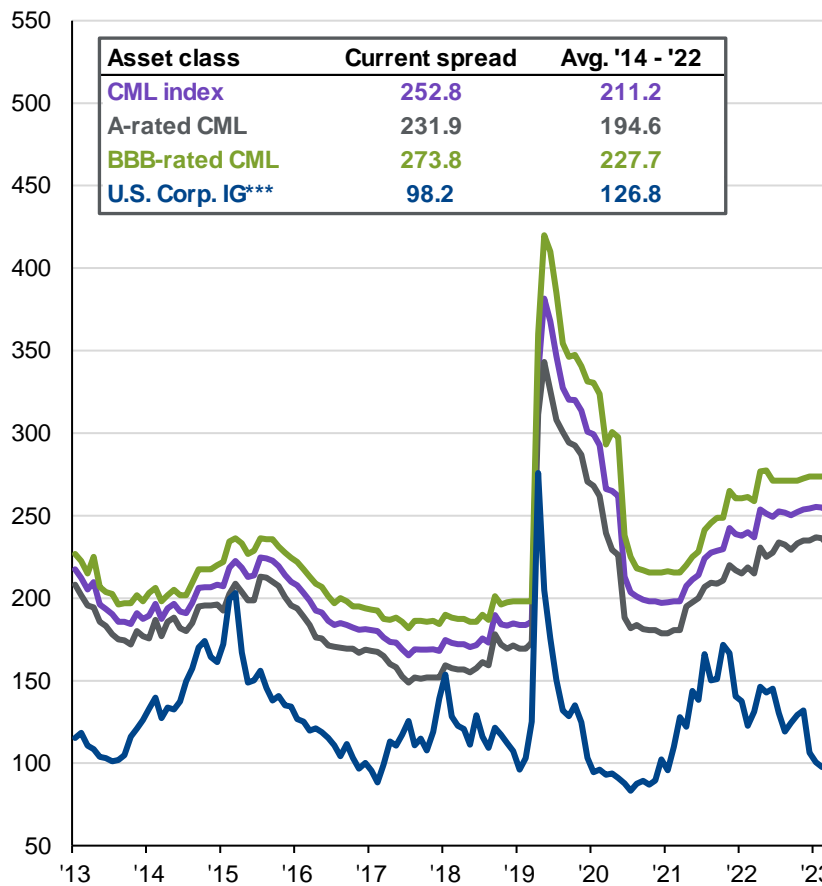


Commercial mortgage loans

GTA U.S. 61

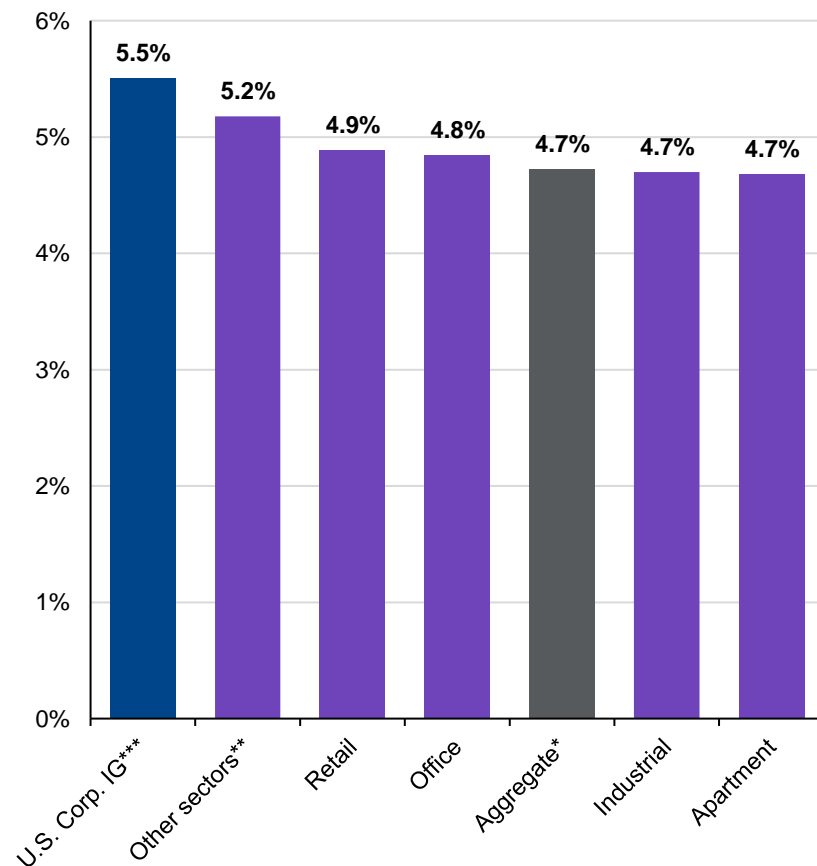
Commercial mortgage spreads

Spreads over Treasury, basis points, senior loans



Commercial mortgage yields

12-month income return, unlevered, senior loans, 4Q23



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 December 31, 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 February 29, 2024.



Hedge fund strategy returns

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Hedge funds

											2014-2023	
2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	YTD '24	Ann.	Vol.
Global Macro 5.8%	Eq. Market Neutral 4.5%	Distressed 9.8%	Global Equities 24.6%	Merger Arbitrage 4.3%	Global Equities 27.3%	Global Equities 16.8%	Distressed 20.0%	Global Macro 9.7%	Global Equities 22.8%	Global Equities 5.0%	Global Equities 8.5%	Global Equities 15.5%
Relative Value 5.3%	Merger Arbitrage 2.6%	Global Equities 8.5%	Equity Long/Short 12.8%	Relative Value 2.1%	Global Bonds 6.8%	Equity Long/Short 14.2%	Global Equities 19.0%	Merger Arbitrage 2.7%	Equity Long/Short 5.9%	Equity Long/Short 4.4%	Equity Long/Short 5.0%	Distressed 7.8%
Global Equities 4.7%	Global Macro 0.4%	Relative Value 5.4%	HFRI Composite 8.5%	Distressed 2.1%	Equity Long/Short 6.7%	Global Bonds 9.2%	Equity Long/Short 16.3%	Eq. Market Neutral 1.8%	Relative Value 5.8%	HFRI Composite 3.4%	Merger Arbitrage 4.4%	Equity Long/Short 7.7%
HFRI Composite 4.3%	Relative Value 0.2%	Merger Arbitrage 3.5%	Distressed 7.7%	Eq. Market Neutral -0.8%	Global Macro 6.0%	HFRI Composite 8.9%	HFRI Composite 13.9%	Relative Value -0.6%	Global Bonds 5.7%	Distressed 3.4%	HFRI Composite 4.4%	Global Bonds 6.5%
Equity Long/Short 3.6%	Equity Long/Short -0.2%	Equity Long/Short 3.4%	Global Bonds 7.4%	Global Bonds -1.2%	HFRI Composite 5.6%	Distressed 8.4%	Merger Arbitrage 13.4%	HFRI Composite -2.8%	Eq. Market Neutral 5.2%	Eq. Market Neutral 2.5%	Relative Value 4.0%	HFRI Composite 5.6%
Eq. Market Neutral 3.2%	HFRI Composite -0.2%	HFRI Composite 3.2%	Relative Value 5.5%	HFRI Composite -1.2%	Merger Arbitrage 5.3%	Merger Arbitrage 2.9%	Global Macro 11.1%	Distressed -3.1%	HFRI Composite 4.5%	Merger Arbitrage 2.1%	Distressed 3.9%	Global Macro 5.0%
Merger Arbitrage 1.9%	Global Equities -1.8%	Global Bonds 2.1%	Merger Arbitrage 5.0%	Equity Long/Short -2.2%	Relative Value 4.1%	Relative Value 2.7%	Relative Value 9.5%	Equity Long/Short -8.1%	Distressed 3.4%	Relative Value 1.9%	Global Macro 3.0%	Merger Arbitrage 4.1%
Distressed 1.2%	Global Bonds -3.2%	Eq. Market Neutral 1.6%	Eq. Market Neutral 4.9%	Global Macro -3.6%	Eq. Market Neutral 2.3%	Global Macro 2.0%	Eq. Market Neutral 7.4%	Global Bonds -16.2%	Merger Arbitrage 3.2%	Global Macro 1.4%	Eq. Market Neutral 2.9%	Relative Value 4.1%
Global Bonds 0.6%	Distressed -7.4%	Global Macro -1.3%	Global Macro 2.5%	Global Equities -8.9%	Distressed -0.7%	Eq. Market Neutral -1.2%	Global Bonds -4.7%	Global Equities -18.0%	Global Macro -1.0%	Global Bonds -2.6%	Global Bonds 0.4%	Eq. Market Neutral 2.2%

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 February 29, 2024.

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Hedge funds and manager selection

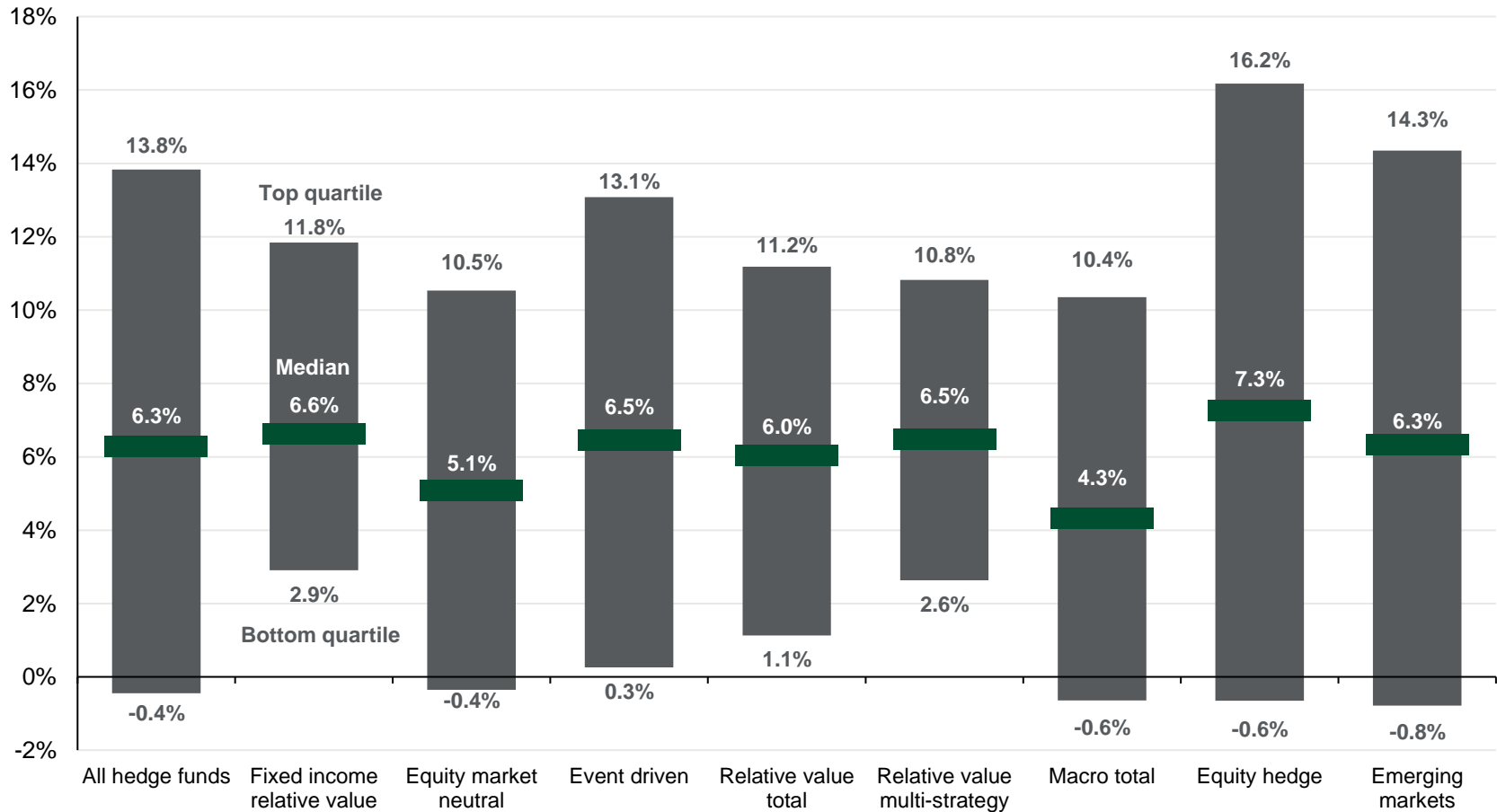
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Hedge fund manager dispersion

Based on 10-year trailing returns



Sources: PivotalPath, J.P. Morgan Asset Management.

Manager dispersion is based on monthly returns for hedge funds. Green 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 3Q23.

Data are based on availability as of February 29, 2024.



Hedge funds and traditional portfolios

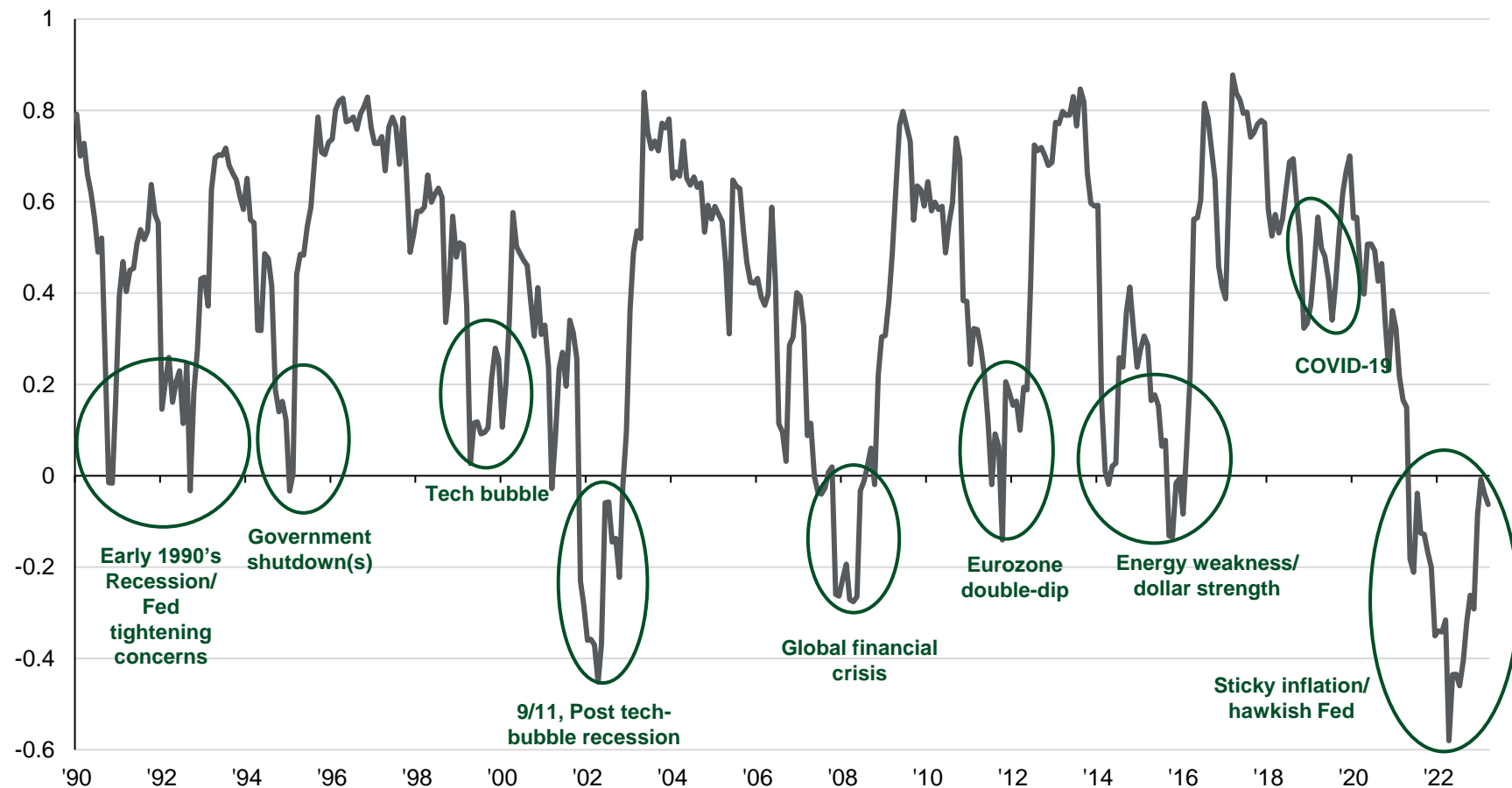
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Hedge fund correlation with a 60/40 stock-bond portfolio*

1990 – present, 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 February 29, 2024.

Hedge funds

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Hedge funds and volatility

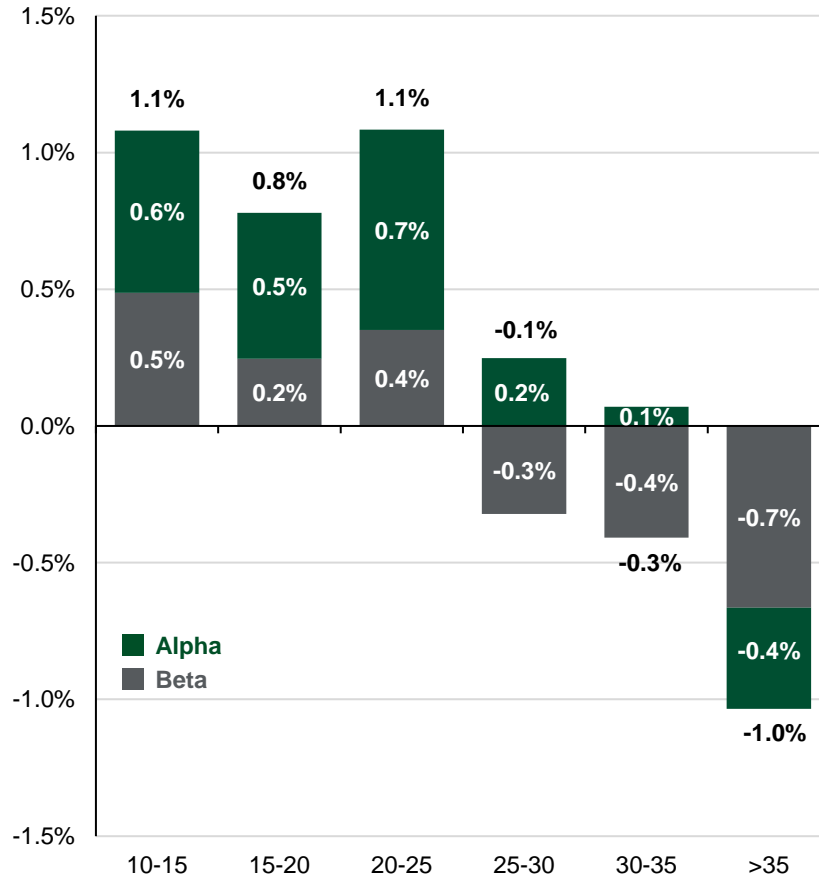
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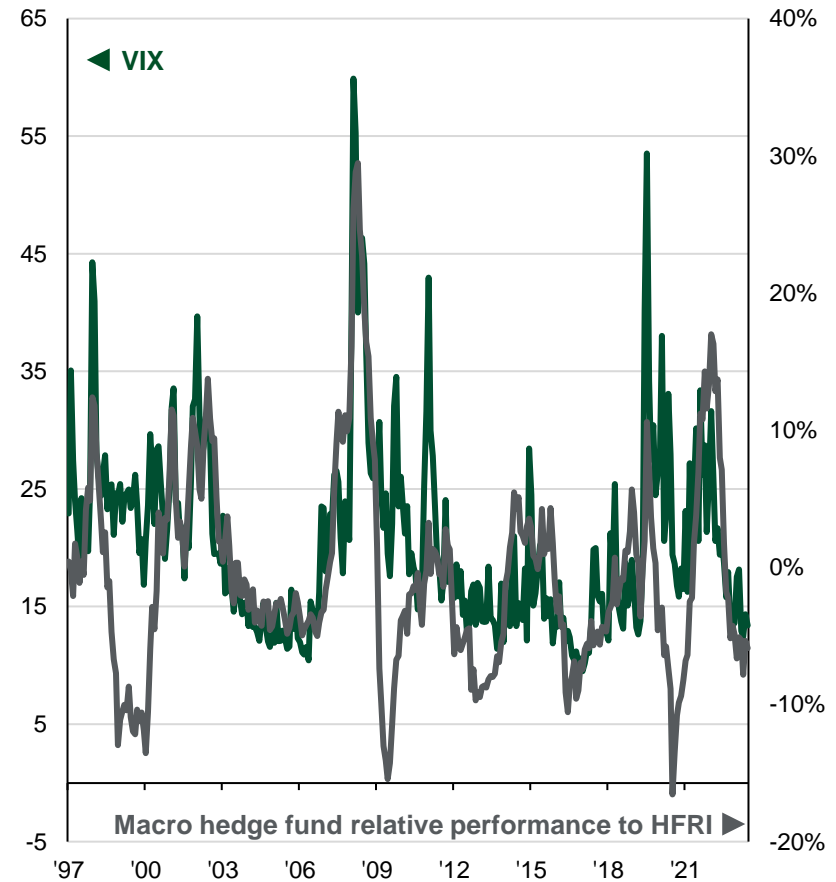
Hedge funds and volatility

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. Macro hedge fund relative performance volatility is over the last 30 years. Numbers may not sum to aggregate total return due to rounding.
Data are based on availability as of February 29, 2024

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Equity market dispersion and positioning

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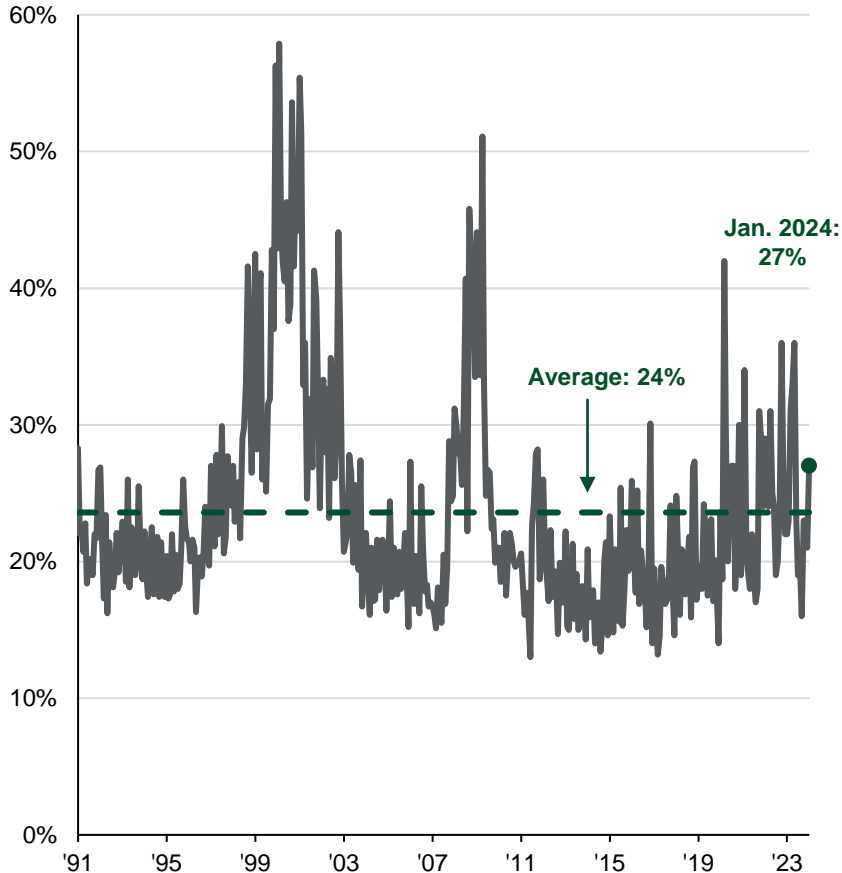
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Hedge funds

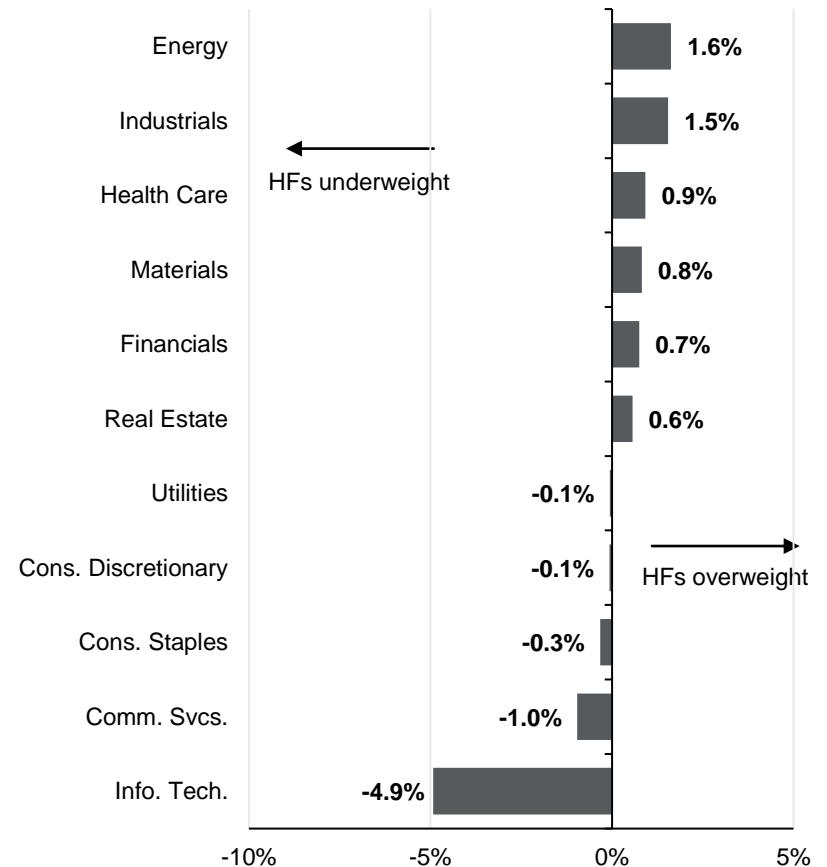
S&P 500 Index dispersion*

Monthly, 1991 – present



Hedge fund sector exposure relative to S&P 500

4Q23



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 constituents' 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 February 29, 2024

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Volatility, rates and hedge fund returns

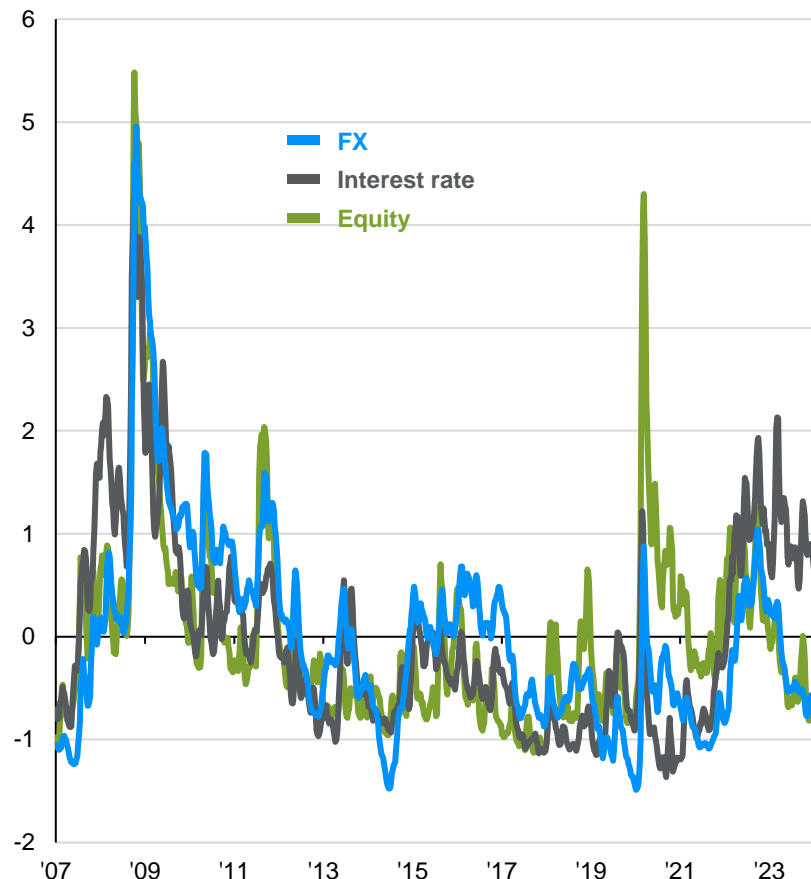
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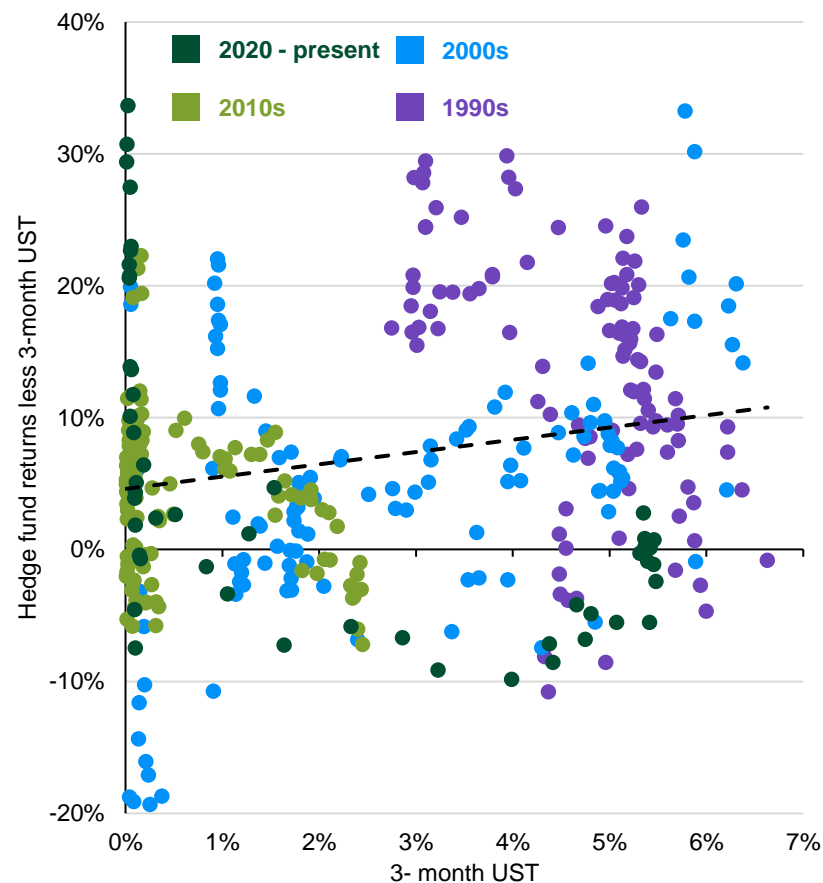
Equity, interest rate and foreign exchange volatility

Z-score, 4-week moving average, 2007 – present



Hedge fund returns and short-term rates

December 1990 – present, monthly, year-over-year total returns



Source: CBOE, ICE BofA, HFRI, FactSet, J.P. Morgan Index Research, 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 February 29, 2024.



J.P. Morgan Asset Management – Definitions

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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.

Dispersion – Difference between the best-performing and worst-performing strategies.

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 (L/S) Equity involves long and/or short positions in equity securities deemed to be under- or overvalued, respectively. Exposures to sectors, geographies, 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 down 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-way between equity and secured debt, either unsecured or with junior access to security. A mezzanine fund is a fund focusing on mezzanine financing.

Multiple of Invested Capital (MOIC) – 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.



J.P. Morgan Asset Management – Definitions

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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.



J.P. Morgan Asset Management – Risks & disclosures

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Unless otherwise stated, all data are as of February 29, 2024 or most recently available.

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