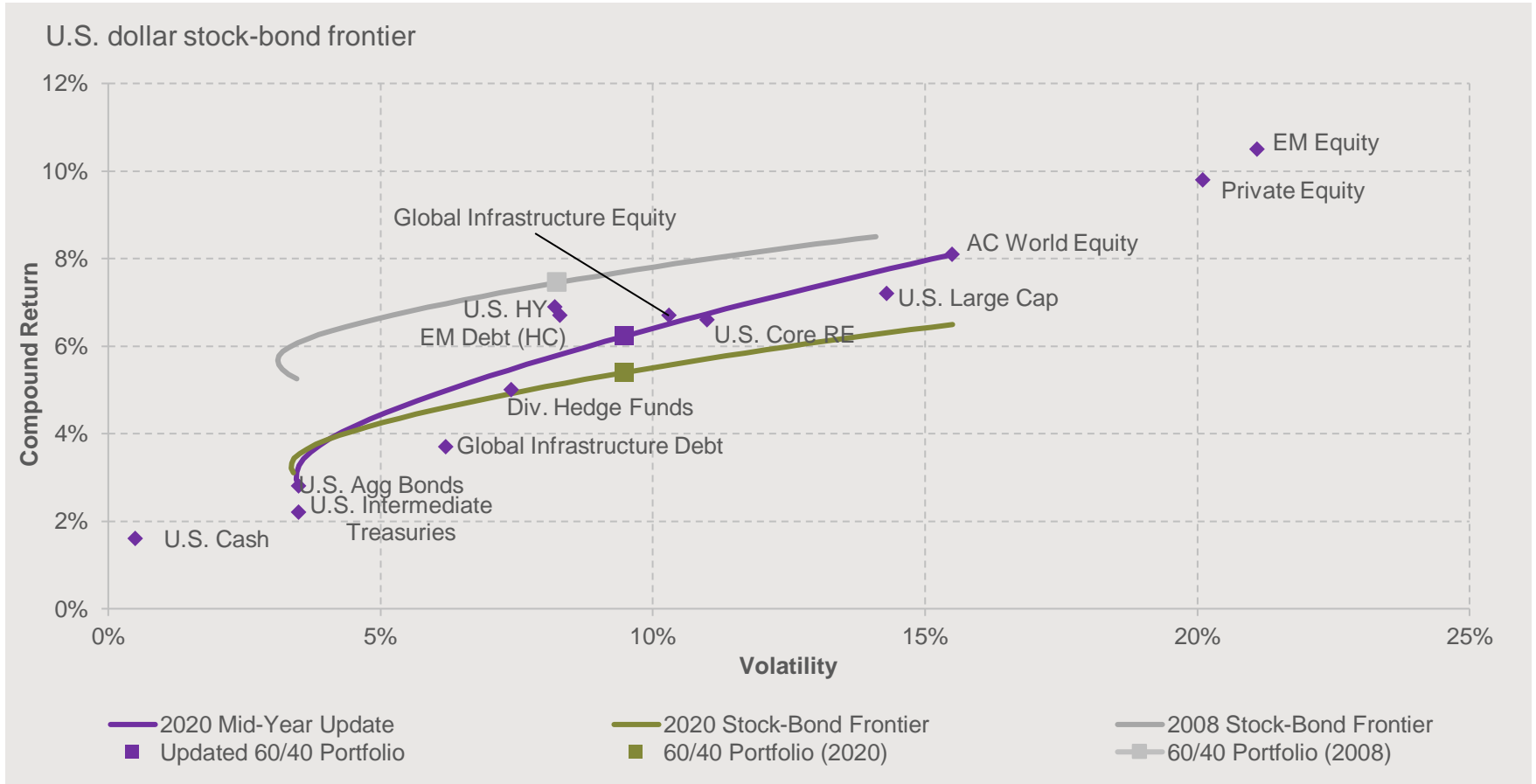


Guide to Alternatives

1Q 2020 | As of February 29, 2020

J.P. Morgan

The stock-bond frontier has steepened, which is common in recession/early cycle

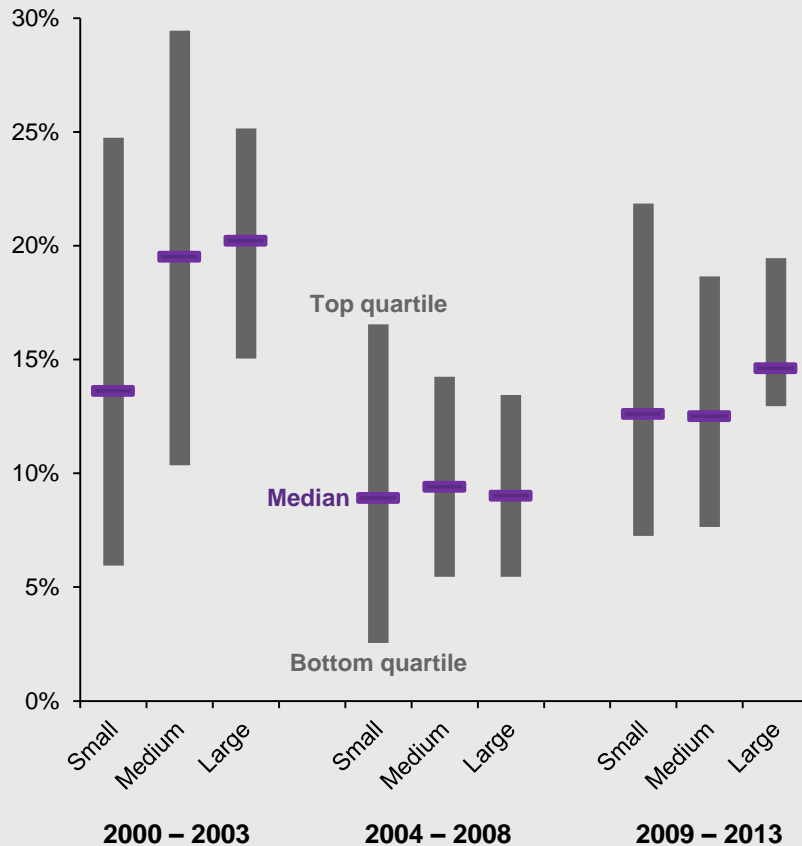


Source: LTCMAs, J.P.Morgan Asset Management Multi-Asset Solutions; data as of April 2020

- **Private equity: Dry powder and valuations**
- **Real estate: A broader opportunity set**
- **Infrastructure: Focusing on renewable energy**
- **Private credit: Not a silver bullet**

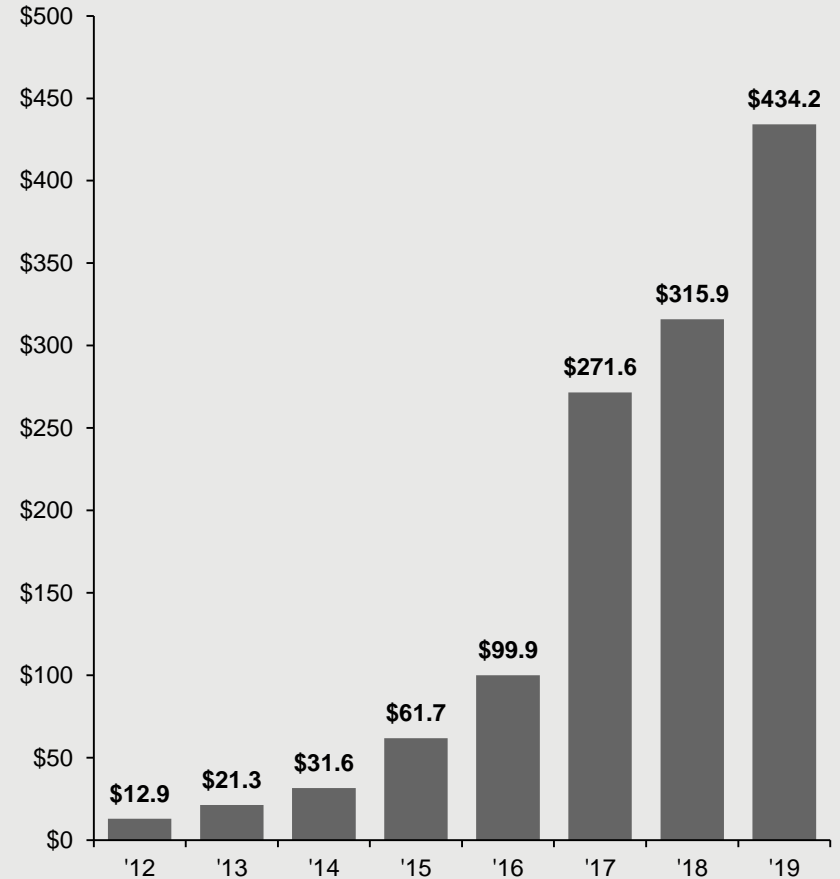
Private equity IRRs

By size bucket and vintage



Private equity dry powder

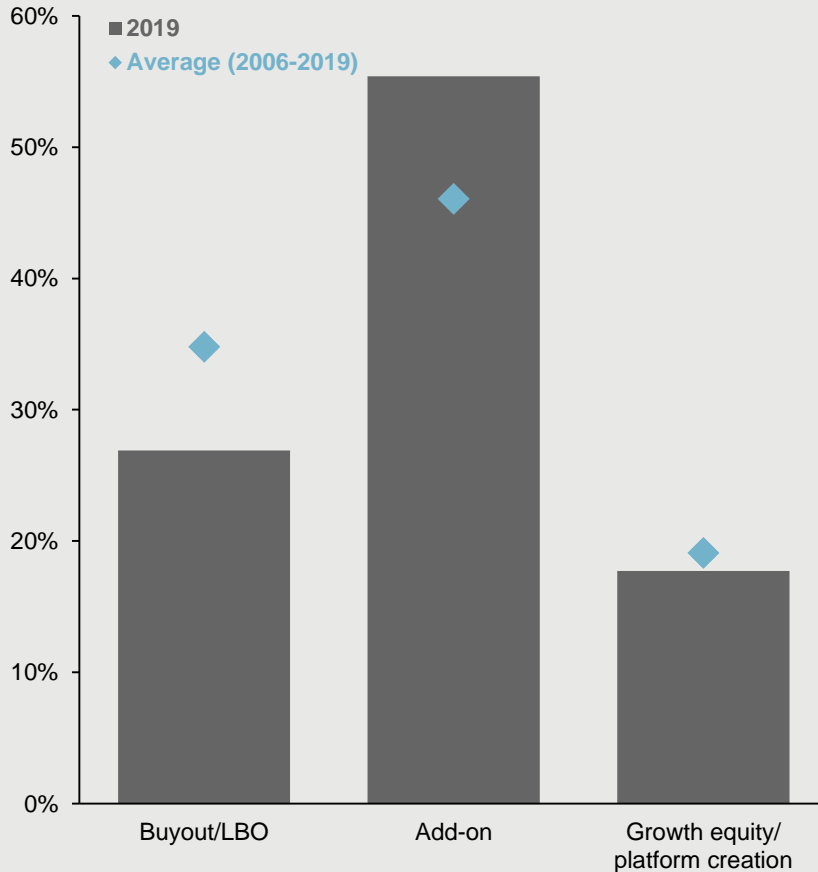
Billions USD, by vintage year



Source: Pitchbook, J.P. Morgan Asset Management.
Data is based on availability as of February 29, 2020.

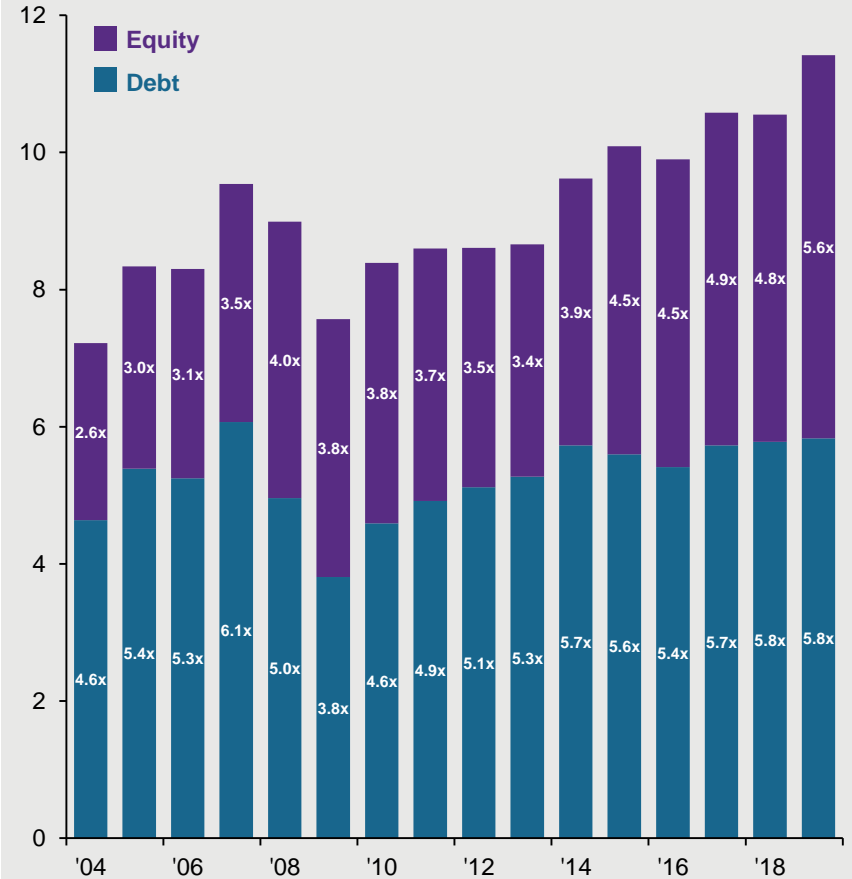
Global private equity deals

Share of total



U.S. LBOs: purchase price multiples

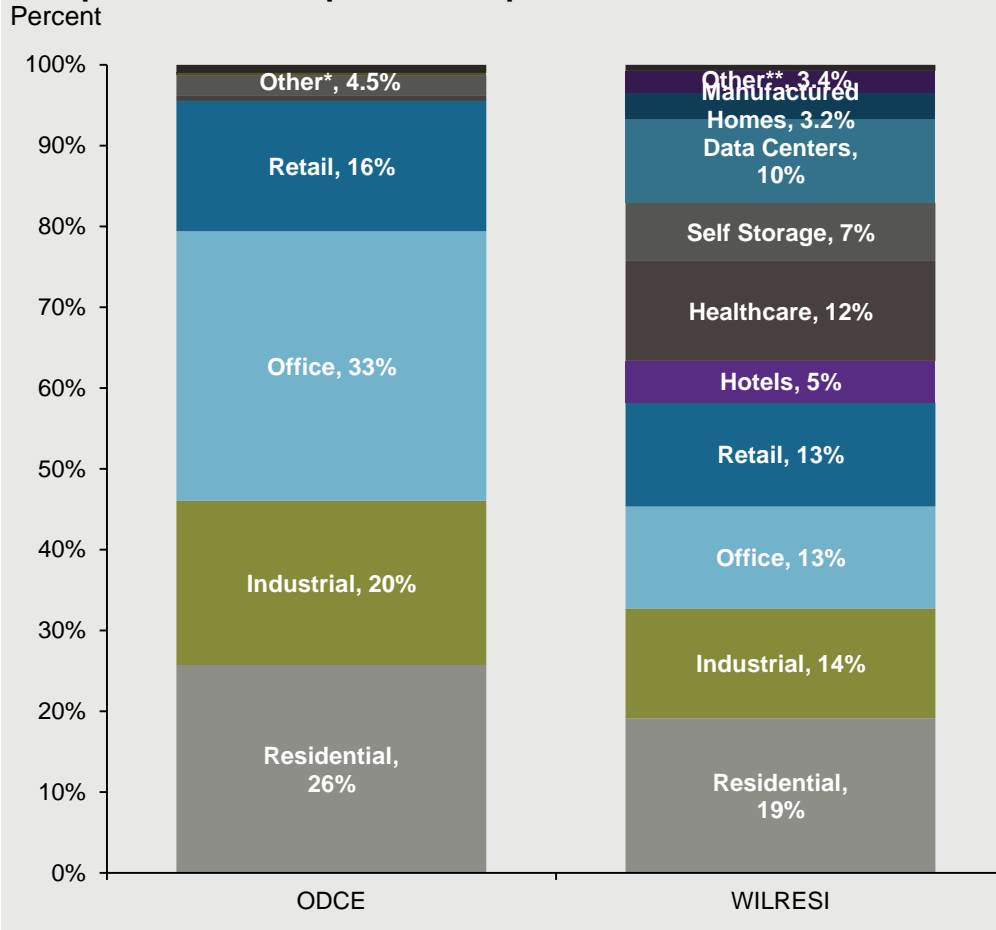
Equity and debt over trailing EBITDA



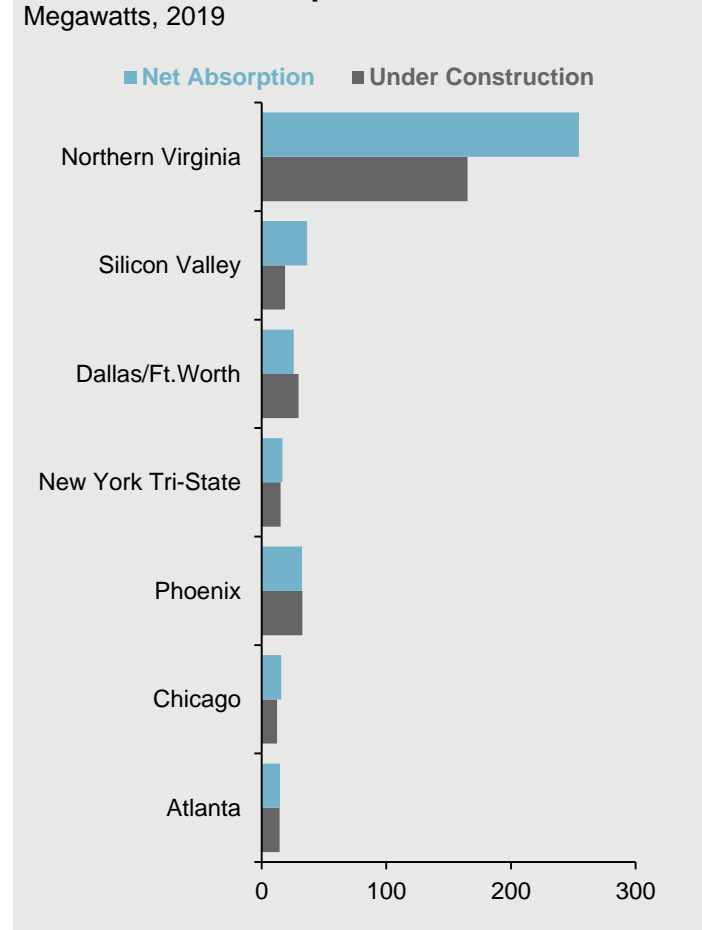
Source: Pitchbook, S&P LCD, J.P. Morgan Asset Management.
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Composition of U.S. private and public real estate indices



Data centers absorption and construction



Source: NCREIF, Wilshire, CISCO, J.P. Morgan Asset Management.

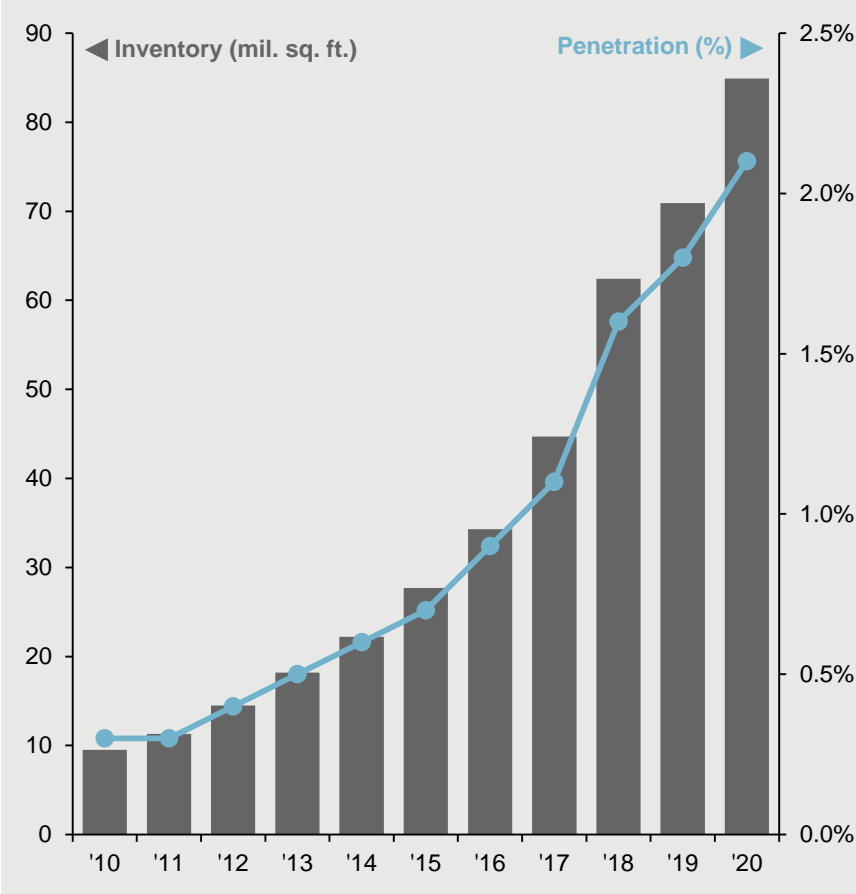
ODCE is the NCREIF Fund Index – Open End Diversified Core Equity, which is a benchmark for U.S. core real estate. WILRESI is Wilshire US Real Estate Securities Index, which is a benchmark for U.S. REITs. *Other in ODCE consists of hotels, healthcare, self-storage and land. **Other in WILRESI consists of single-family homes among additional property types.

Megawatts indicates data center energy capacity.

Data is based on availability as of February 29, 2020.

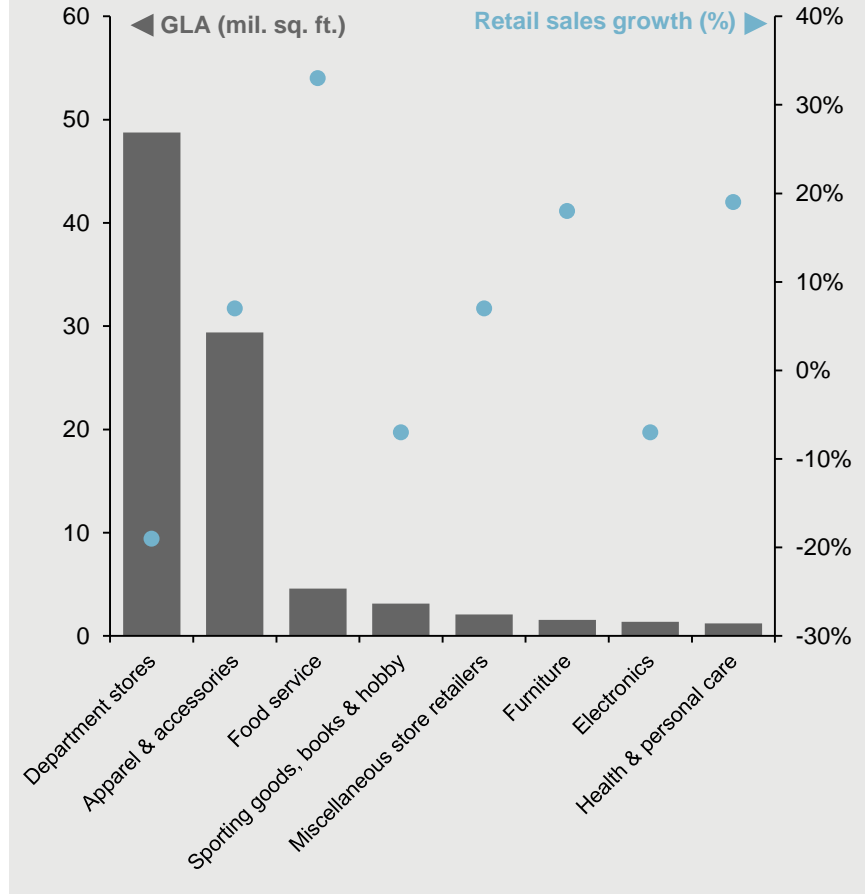
Flexible office space: Inventory and penetration

Millions of square feet, % penetration



Mall leasing and retail sales growth

Gross leasable area, 2014-2019 retail sales growth

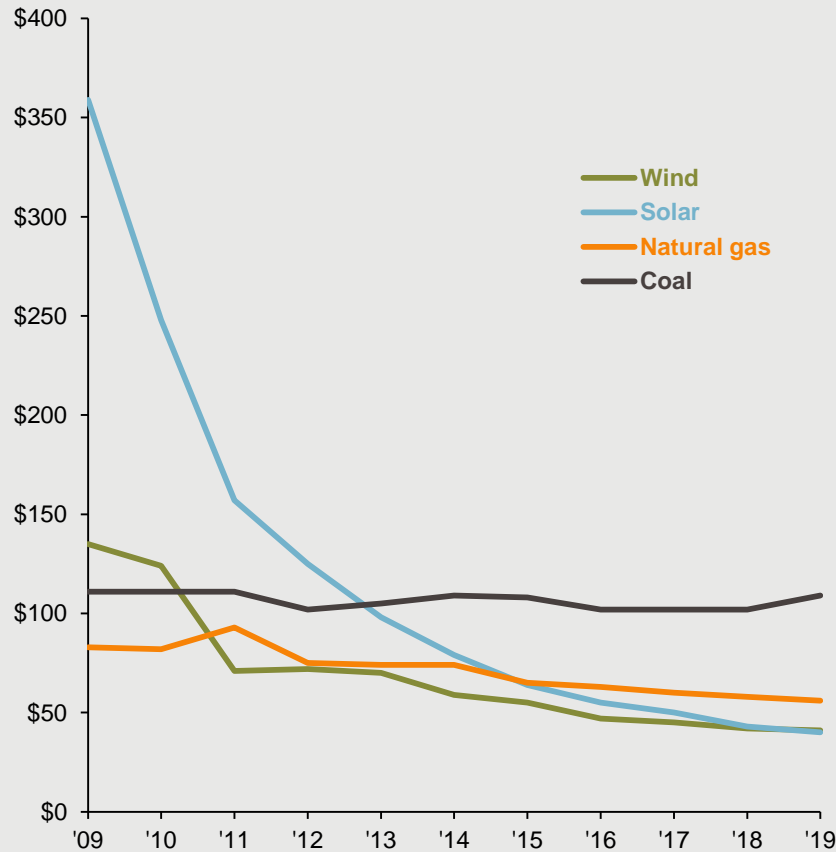


Sources: CBRE, Census Bureau, J.P. Morgan Asset Management.
 2020 data on inventory and penetration is an estimate. Gross leasable area (GLA) data is as of 2017.
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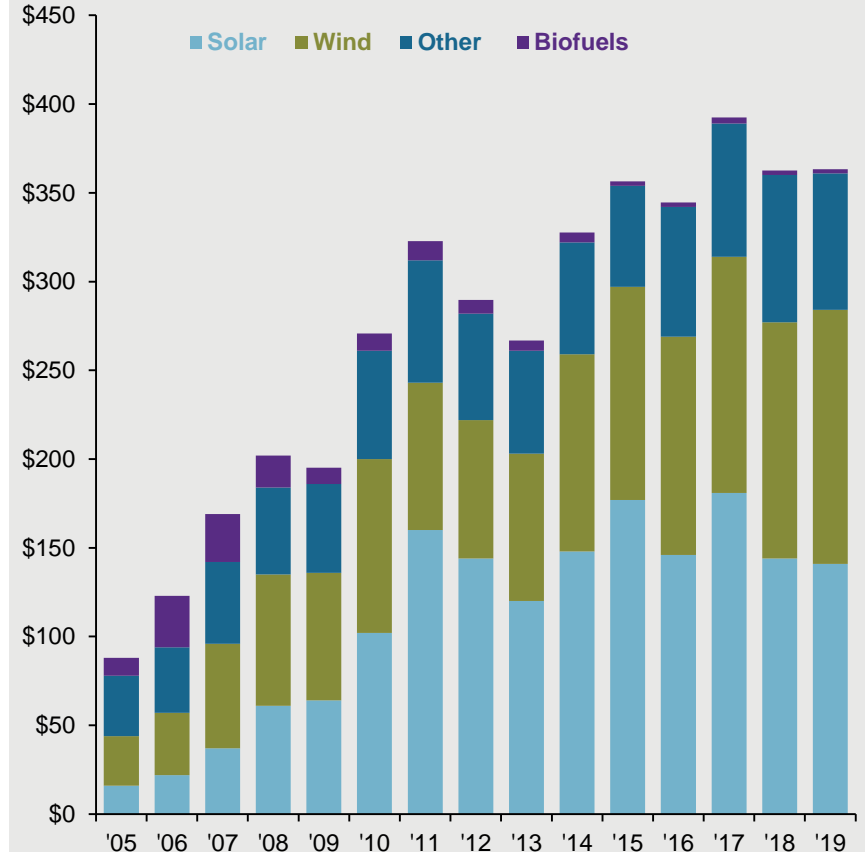
Cost of wind, solar, natural gas and coal

Mean LCOE*, dollar per megawatt hour



Global new investment in clean energy

Billions USD

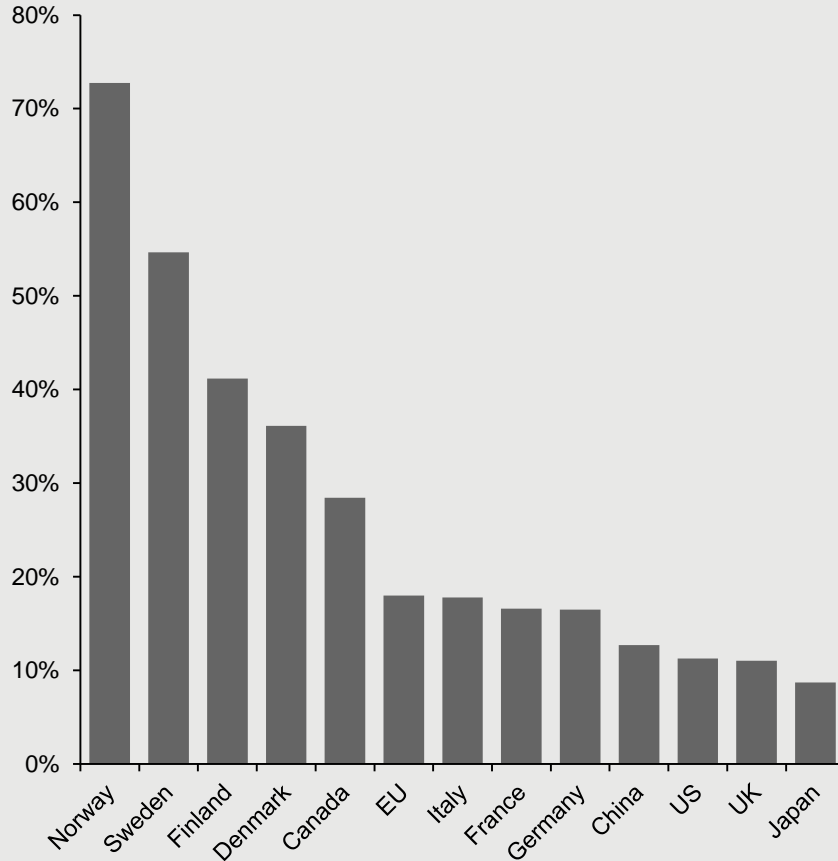


Source: Lazard, Bloomberg, J.P. Morgan Asset Management.

*LCOE is levelized cost of energy, the net present value of the unit-cost of electricity over the lifetime of a generating asset. It is often taken as a proxy for the average price that the generating asset must receive in a market to break even over its lifetime.

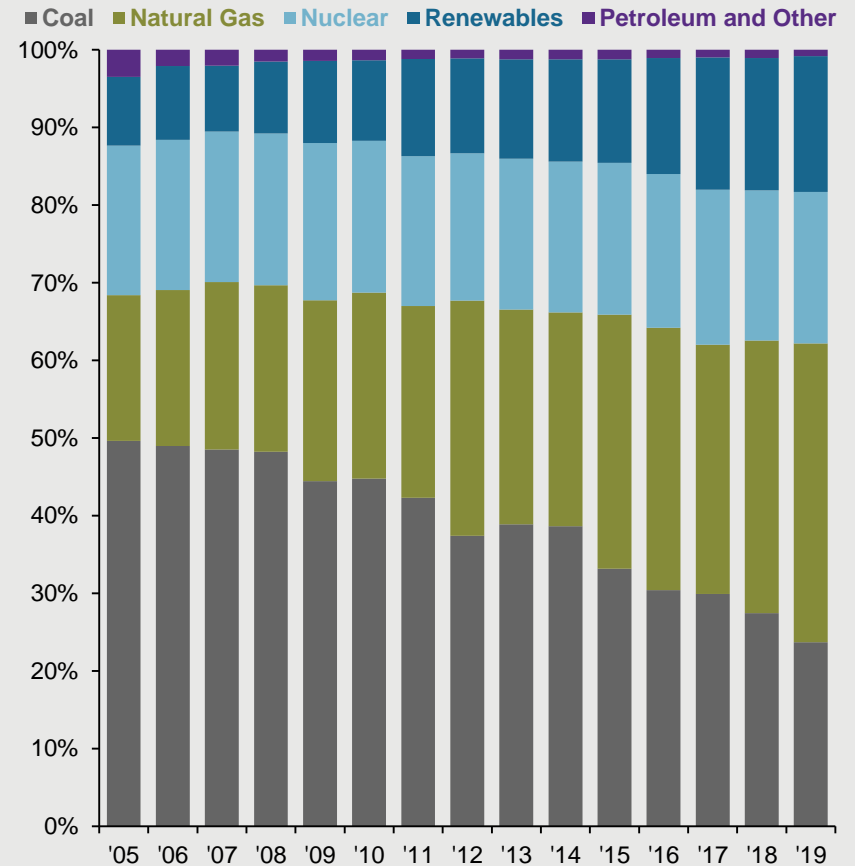
Data is based on availability as of February 29, 2020.

Share of energy from renewable sources
% of total energy, 2018



Source: Eurostat, METI, BP Statistical, EIA, J.P. Morgan Asset Management.
Renewables consists of wind, hydropower, solar, biomass and geothermal.
Data is based on availability as of February 29, 2020.

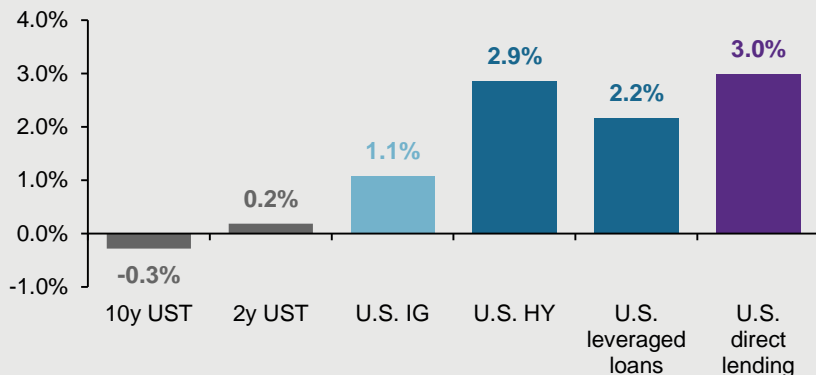
U.S. electricity generation by major source
Percent



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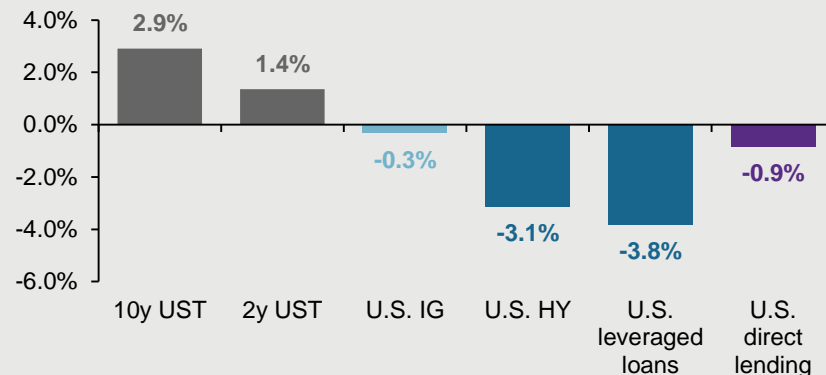
Expansion

Manufacturing ISM > 50 and rising



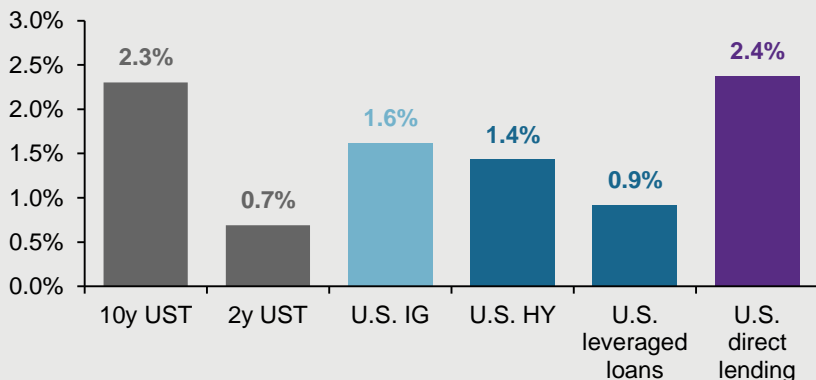
Recession

Manufacturing ISM < 50 and falling



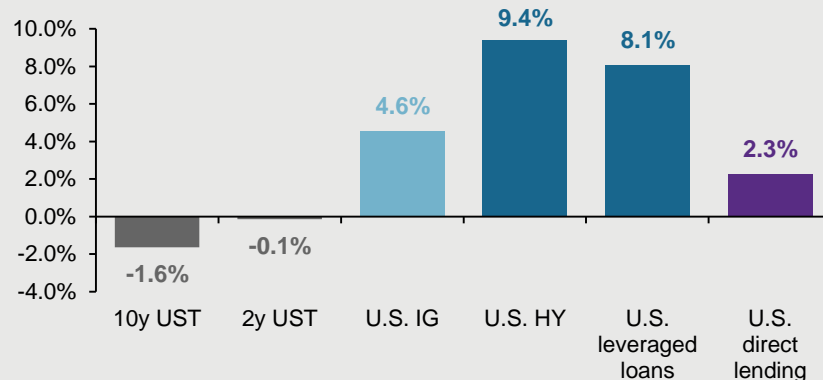
Late cycle cooling

Manufacturing ISM > 50 and falling



Turnaround

Manufacturing ISM < 50 and rising



Source: Institute for Supply Management, Bloomberg, Barclays, 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 Barclays U.S. Treasury Bellwethers (10y), 2y UST: Bloomberg Barclays U.S. Treasury Bellwethers (2y), U.S. IG: Bloomberg Barclays U.S. Aggregate Corporate Investment Grade, U.S. HY: Bloomberg Barclays U.S. Aggregate Corporate High Yield, U.S. leveraged loans: Credit Suisse Leveraged Loan Index, U.S. direct lending: Cliffwater Direct Lending Index. All returns are from 12/31/2004 through 12/31/2019, except for U.S. direct lending which is through 9/30/2019.

Data is based on availability as of February 29, 2020.

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.

Open-ended fund – As it relates to private alternatives (not mutual fund structure), an open-ended fund is a fund that has no stated term or maturity and allows clients to invest and redeem on an ongoing basis. The frequency of investments (aka subscriptions) and / or redemptions may vary. Redemptions from open-ended private alternative funds generally require advance notice in writing.

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

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

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

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

Preferred return – Also known as Hurdle Rate.

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

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

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

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

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

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

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

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

Tax documents – See K-1.

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

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

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

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

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

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