Vanguard

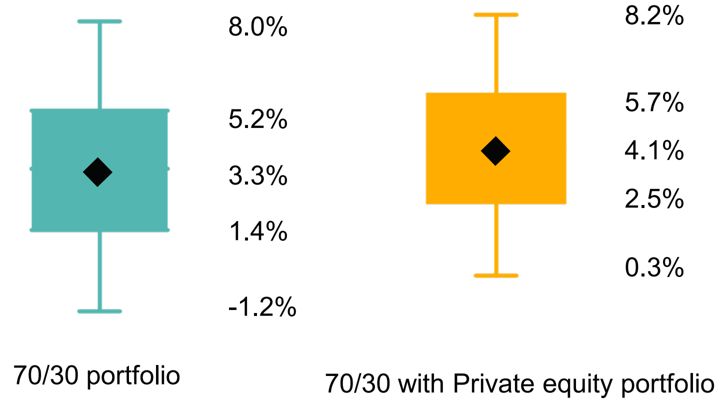
Private equity
A diversifying asset class for patient investors

Reasons for considering private equity (PE)

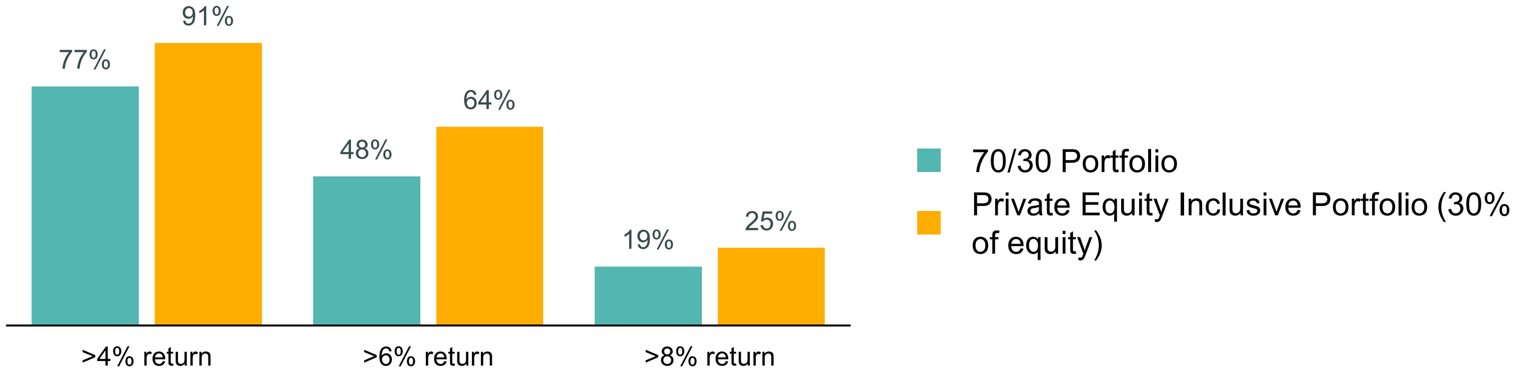
Diversification with potential for higher returns

Median VCMM 10-year risk and return projections	**70/30 portfolio**	**Private equity portfolio (30% of equity)**	**Difference (with/without)**	**Percent change (with/without)**
Nominal return	5.9%	6.7%	+82 bps	+14%
Real return	3.3%	4.1%	+79 bps	+24%
Volatility	11.4%	12.6%	+119 bps	+10%
Sharpe ratio	0.19	0.25	+0.06	+32%

Distribution of projected 10-year real returns



Probability of meeting nominal annualized return objective over 10 years



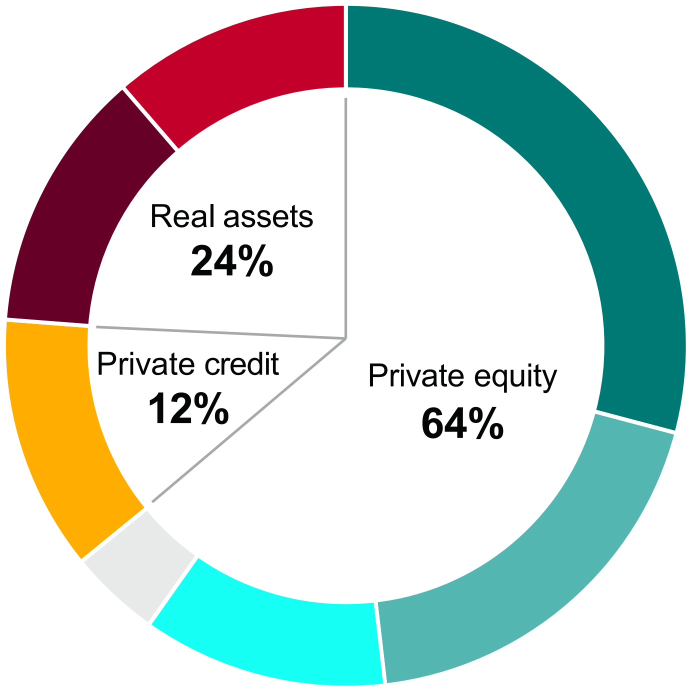
IMPORTANT: The projections or other information generated by the Vanguard Capital Markets Model® (VCMM) regarding the likelihood of various investment outcomes are hypothetical in nature, do not reflect actual investment results, and are not guarantees of future results. Distribution of return outcomes from VCMM are derived from 10,000 simulations for each modeled asset class. Results from the model may vary with each use and over time. For more information on VCMM, see the Important Information slide.

Note: Vanguard analysis based on 30-year VCMM projections that integrate certain third-party data and assumptions. Baseline 70/30 portfolio consists of: 42% U.S. equity, 28% non-U.S. equity, 21% U.S. fixed income, and 9% USD hedged international fixed income. Private equity portfolio consists of: 29% U.S. equity, 20% non-U.S. equity, 21% private equity, 21% U.S. fixed income, and 9% USD hedged international fixed income. The Private Equity forecast seeks to outperform Global equities by approximately 350 basis points of net premium over a 10-year horizon. The desmoothed Private Equity return volatility is expected to be greater than the Global equities represented by the MSCI ACWI Index.

Defining private equity

- Investments in equity of companies not listed on public exchanges
- Requires long-term investment of 7 to 15 years, usually through a limited partnership
- Approximately two-thirds of all private investment AUM in PE (buyout, venture capital, growth equity and other)

Private investment AUM



●	29%	$3.9T	Buyout
●	19%	$2.6T	Venture capital
●	12%	$1.6T	Growth equity
●	4%	$0.6T	Other private equity
●	12%	$1.6T	Private credit
●	12%	$1.7T	Real estate
●	11%	$1.5T	Infrastructure and natural resources

Venture capital

Minority stakes in young companies. Potential for rapid growth and outsized returns with higher risk.

Examples: Facebook, Lyft, Pets.com

Growth equity

Minority stakes in established companies requiring capital for expansion.

Examples: Kind, Ducati

Buyout

Majority stakes in mature companies with potential for selling at a premium after improving operations or governance.

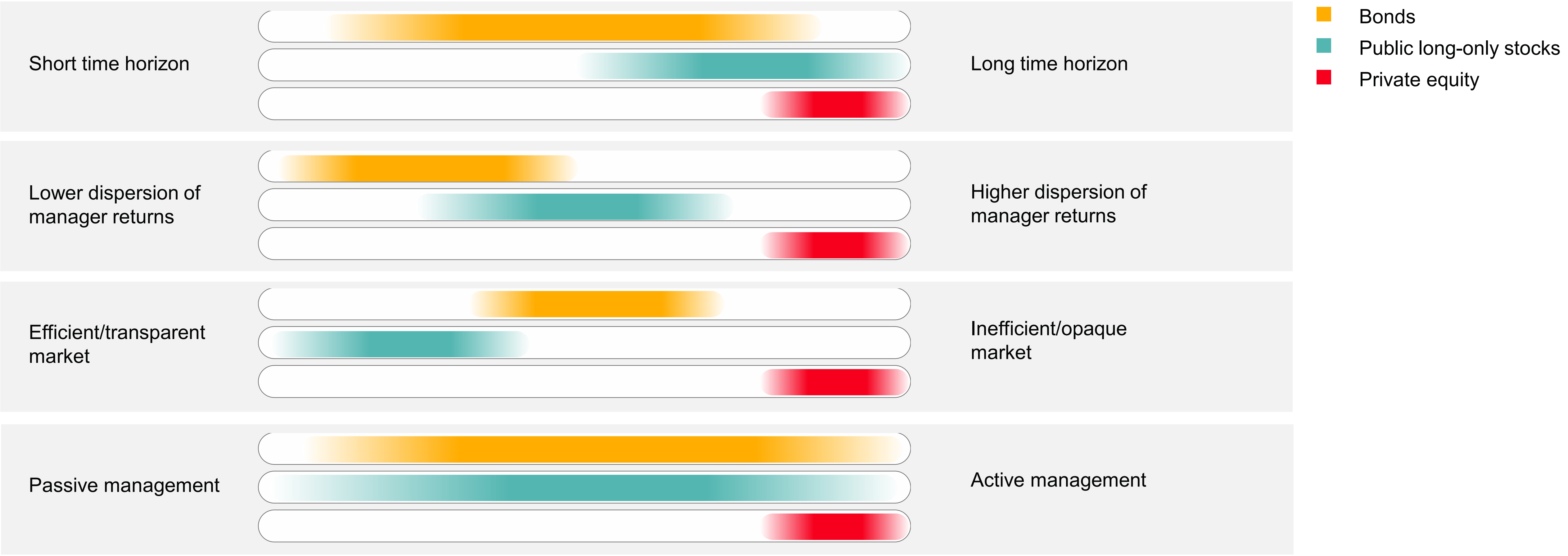
Examples: Staples, Dell, Thomson Reuters

Sources: Vanguard calculations using data from Preqin as of September 30, 2023.
Examples are of companies in that phase of PE development in the recent past, although some have since become public or a subsidiary of a public company.

Comparison with more traditional markets

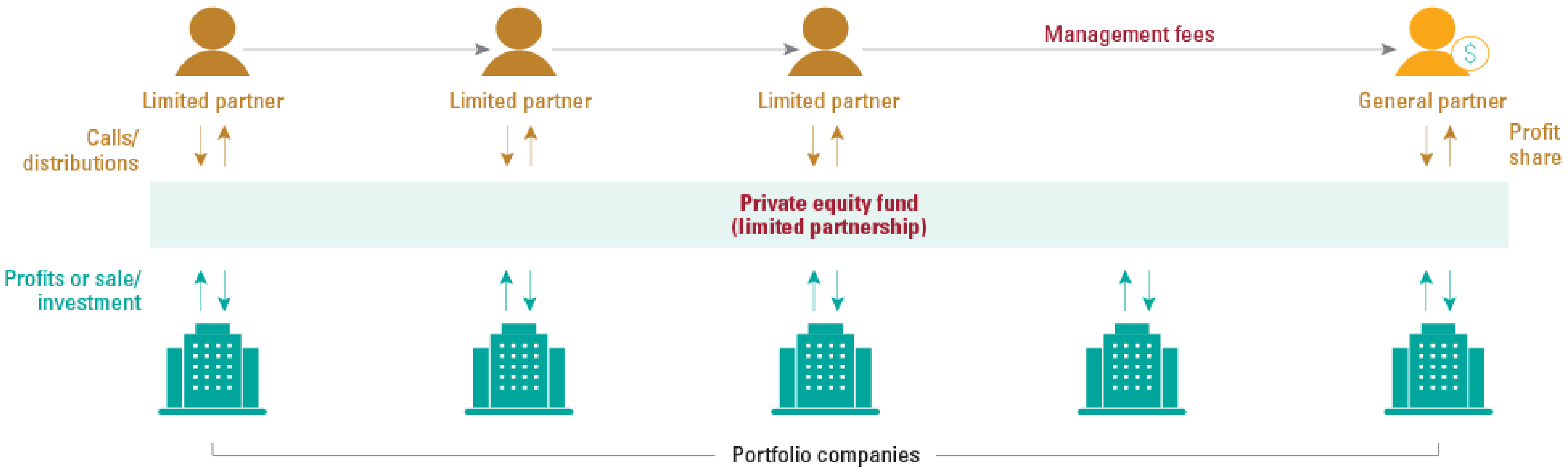
PE is less liquid and less transparent than public markets for stocks or bonds.

For the potential of outsized returns, you need **patient capital.**



The illustration is hypothetical only, to show relative positioning and range of these metrics between asset classes. It does not represent actual or exact numbers or scale.

Limited partnership structure is typical in private equity



Limited partner (LP): The investor who provides capital but is not involved in day-to-day management.

General partner (GP): The manager of the fund who may appoint advisors to assist with fund management.

Capital calls: Requests from GP for portion of capital committed by LP.

Distributions: Cash or stock returned to fund or LPs.

Source: Vanguard.

Channels of access for private equity

There are multiple ways to access PE, each with its own pros and cons.

Primary partnerships

Direct investment in new GP-led PE funds

Access to leading managers (sometimes), but longest time and capital commitment

Secondary investments

Purchase of existing LP PE fund interests

Diversification across vintage years, J-curve mitigation, earlier liquidity, but limited capacity and inability to target top GPs

Direct coinvestment

Direct investment in private companies alongside GPs

Lowest fees, greater control, but less diversification

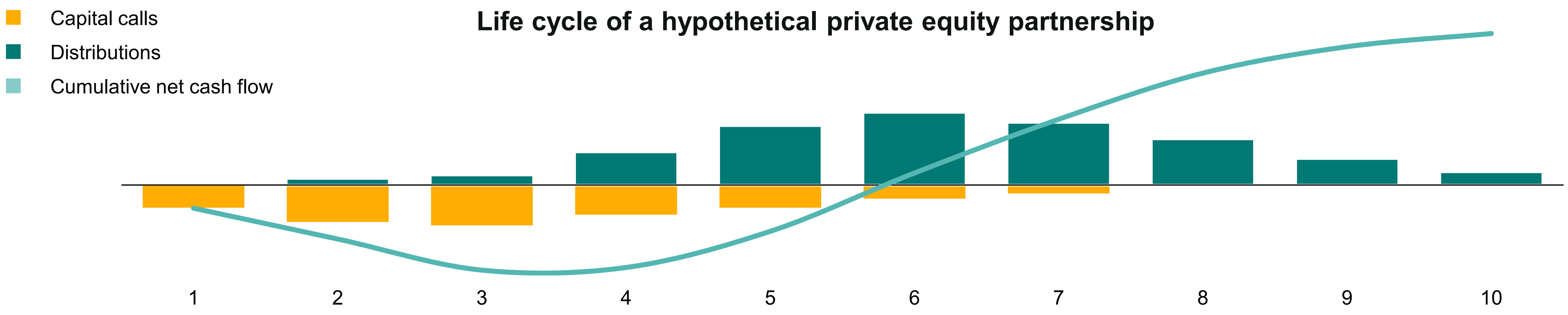
Comprehensive Solution

Combines primary, secondary and coinvestment opportunities

Easiest access, diversification, lowest asset threshold for entry, but a different fee structure

The J-curve: Cumulative net cash flow over the life span of a hypothetical private equity partnership

Be prepared for negative cash flow in the early years as you, the limited partner (LP), make periodic investments (capital calls) before you see distributions or gains when companies are sold.



Investment stage (years 1–5)

Capital from LPs called to fund investments. Underperforming companies can contribute further to negative return.

Development stage (years 3–8)

Capital calls continue. Initial investments start to mature; some exited. Cash distributions to LPs.

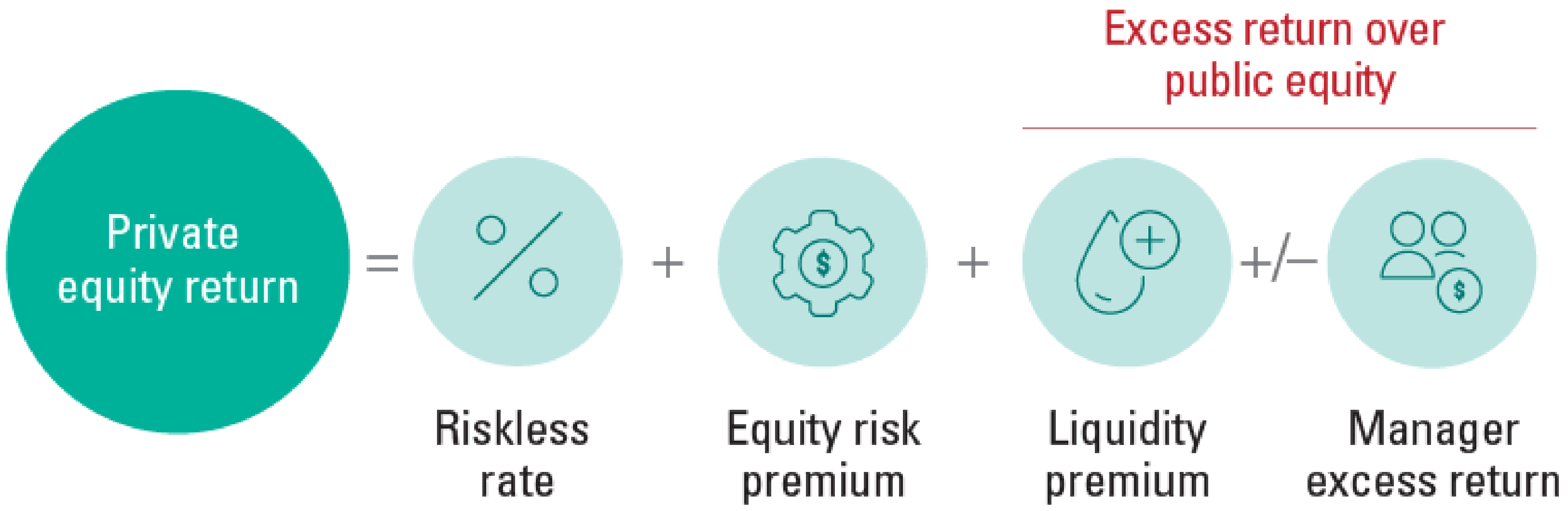
Liquidation stage (years 8–10)

Investments exited or close to it. Distributions to LPs. Provisions to extend in one- or two-year increments up to a maximum of four years.

Source: Vanguard.

Compensation for the added risk of private equity

- PE requires patient capital, given long holding period
- Wide range of potential returns from general partners (GPs)
- Opportunities for GP to add value by improving company operations, governance, and financial structure
- Access to top GPs needed for strong performance



Notes: For illustration purposes, we present the equation as the simple sum of each component. More robust mathematic approximations would include private equity's sensitivity (beta) to each. The equation above would be a correct representation only if private equity's beta to the equity risk premium and liquidity risk premium were exactly 1.0 and there were no other systematic risk exposures present in private equity returns. Given that size, style, industry, region, and capitalization structures of underlying portfolio company investments do not perfectly match global public equity markets, it is unlikely that private equity's true beta to the equity risk premium is exactly 1.0.
Source: Vanguard.

Private equity investor considerations

PE investors should have the following:

- Long-term wealth planning goals
- Sufficient liquidity to meet the initial investment and subsequent capital calls
- No need for that committed capital in the early years
- The resources, patience, long-term perspective, and risk tolerance for PE

Source: Vanguard. This is a hypothetical illustration only.

Indexes for VCMM simulations

The long-term returns used in the VCMM simulations are based on data for the appropriate market indexes through December 31, 2022. We chose these benchmarks to provide the most complete history possible, and we apportioned the global allocations to align with Vanguard's guidance in constructing diversified portfolios. Asset classes and their representative forecast indexes are as follows:

U.S. equities: MSCI U.S. Broad Market Index.

Global ex-U.S. equities: MSCI All Country World ex U.S.A Index.

Private Equity: MSCI ACWI + 350 bps

U.S. REITs: FTSE/NAREIT U.S. Real Estate Index.

U.S. cash: U.S. 3-Month Treasury—constant maturity.

U.S. Treasury bonds: Bloomberg U.S. Treasury Index.

U.S. short-term Treasury bonds: Bloomberg U.S. 1–5 Year Treasury Bond Index.

U.S. long-term Treasury bonds: Bloomberg U.S. Long Treasury Bond Index.

U.S. credit bonds: Bloomberg Barclays U.S. Credit Bond Index.

U.S. short-term credit bonds: Bloomberg U.S. 1–3 Year Credit Bond Index.

U.S. high-yield corporate bonds: Bloomberg U.S. High Yield Corporate Bond Index.

U.S. bonds: Bloomberg U.S. Aggregate Bond Index.

Global ex-U.S. bonds: Bloomberg Global Aggregate ex-U.S.D Index.

U.S. TIPS: Bloomberg U.S. Treasury Inflation Protected Securities Index.

U.S. short-term TIPS: Bloomberg U.S. 1–5 Year Treasury Inflation Protected Securities Index.

Extended Duration: Bloomberg U.S. Treasury STRIPS 25+ Years.

Commodities: Bloomberg Commodity Index.

Inflation: Consumer Price Index – All Urban Consumers.

Duration neutral total credit: Proprietary weighting of ST, IT, LT credit to target VIAS duration.

Emerging Market Gov't Bonds: Bloomberg EM U.S.D Sovereign – 10% Country Capped.

U.S. Mortgage Backed Securities: Bloomberg Barclays U.S. Mortgage Backed Securities.

Important information

The communication is for informational purposes only and does not constitute an offer or solicitation to purchase any investments solutions or a recommendation to buy or sell a security nor is it to be construed as legal, tax or investment advice. Private investments involve a high degree of risk, and therefore, should be undertaken only by prospective investors capable of evaluating and bearing the risks such an investment represents. Investors in private equity generally must meet certain minimum financial qualifications that may make it unsuitable for specific market participants.

All investing is subject to risk, including the possible loss of the money you invest. Diversification does not ensure a profit or protect against a loss. There is no guarantee that any particular asset allocation or mix of funds will meet your investment objectives or provide you with a given level of income.

With private equity (PE) investments, there are five primary risk considerations: market, asset liquidity, funding liquidity, valuation, and selection. Certain risks are believed to be compensated risks in the form of higher long-term expected returns, with the possible exceptions being valuation risk and selection risk. For selection risk, excess returns would be the potential compensation, however, limited partners (LPs) must perform robust diligence to identify and gain access to managers with the skill to outperform. PE investments are speculative in nature and may lose value.

Market risk: Private equity, as a form of equity capital, shares similar economic exposures as public equities. As such, investments in each can be expected to earn the equity risk premium, or compensation for assuming the nondiversifiable portion of equity risk. However, unlike public equity, private equity's sensitivity to public markets is likely greatest during the late stages of the fund's life because the level of equity markets around the time of portfolio company exits can negatively affect PE realizations. Though PE managers have the flexibility to potentially time portfolio company exits to complete transactions in more favorable market environments, there's still the risk of capital loss from adverse financial conditions.

Asset liquidity risk: Various attributes can influence a security's liquidity; specifically, the ability to buy and sell a security in a timely manner and at a fair price. Transaction costs, complexity, and the number of willing buyers and sellers are only a few examples of the factors that can affect liquidity. In the case of private equity, while secondary markets for PE fund interests exist and have matured, liquidity remains extremely limited and highly correlated with business conditions. LPs hoping to dispose of their fund interests early—especially during periods of market stress—are likely to do so at a discount.

Funding liquidity risk: The uncertainty of PE fund cash flows and the contractual obligation LPs have to meet their respective capital commitments—regardless of the market environment—make funding risk (also known as commitment risk) a key risk LPs must manage appropriately. LPs must be diligent about maintaining ample liquidity in other areas of the portfolio, or external sources, to meet capital calls upon request from the General Partners (GPs).

Valuation risk: Relative to public equity, where company share prices are published throughout the day and are determined by market transactions, private equity NAVs are reported quarterly, or less frequently, and reflect GP and/or third-party valuation provider estimates of portfolio fair value. Though the private equity industry has improved its practices for estimating the current value of portfolio holdings, reported NAVs likely differ from what would be the current "market price," if holdings were transacted.

Important information

Selection risk: Whether making direct investments in private companies, PE funds, or outsourcing PE fund selection and portfolio construction to a third party, investors assume selection risk. This is because private equity doesn't have an investable index, or rather a passive implementation option for investors to select as a means to gain broad private equity exposure. While there are measures an investor can take to limit risk, such as broad diversification and robust manager diligence, this idiosyncratic risk can't be removed entirely or separated from other systematic drivers of return. Thus, in the absence of a passive alternative and significant performance dispersion, consistent access to top managers is essential for PE program success.

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The VCMM projections are based on a statistical analysis of historical data. Future returns may behave differently from the historical patterns captured in the VCMM. More important, the VCMM may be underestimating extreme negative scenarios unobserved in the historical period on which the model estimation is based.

The Vanguard Capital Markets Model is a proprietary financial simulation tool developed and maintained by Vanguard's primary investment research and advice teams. The model forecasts distributions of future returns for a wide array of broad asset classes. Those asset classes include U.S. and international equity markets, several maturities of the U.S. Treasury and corporate fixed income markets, international fixed income markets, U.S. money markets, commodities, and certain alternative investment strategies. The theoretical and empirical foundation for the Vanguard Capital Markets Model is that the returns of various asset classes reflect the compensation investors require for bearing different types of systematic risk (beta). At the core of the model are estimates of the dynamic statistical relationship between risk factors and asset returns, obtained from statistical analysis based on available monthly financial and economic data from as early as 1960. Using a system of estimated equations, the model then applies a Monte Carlo simulation method to project the estimated interrelationships among risk factors and asset classes as well as uncertainty and randomness over time. The model generates a large set of simulated outcomes for each asset class over several time horizons. Forecasts are obtained by computing measures of central tendency in these simulations. Results produced by the tool will vary with each use and over time