

An introduction to private markets

Private markets education

Authors: Daniel J. Scansaroli, Head of Portfolio Strategy & UBS Wealth Way Solutions, CIO Americas, UBS Financial Services Inc. (UBS FS); Jennifer Liu, Private Markets Strategist, UBS Financial Services Inc. (UBS FS); Karim Cherif, Head Alternative Investments, UBS Switzerland AG; Antoinette Zuidweg, Alternative Investments Strategist, UBS Switzerland AG

- Private markets offer a combination of potentially better risk-adjusted returns over public markets, a long-term focus, and access to innovative and fast-growing businesses. They can provide differentiated investment opportunities when combined with a traditional public markets portfolio.
- Private markets are traditionally less impacted by perceived volatility, news flows and inefficiencies, enabling companies to focus on long-term value creation. This sets them apart from public market companies.
- Private markets require long-term commitments. Investors should be able to tolerate illiquidity for multiple years.



Source: UBS

This report is part of a series of short educational primers introducing private markets concepts, which we intend to update regularly. This version replaces the edition published on September 19, 2022. You can find more information on the client portal or contact your advisor for assistance.

Summary

- Private markets are a broad term for assets not traded on public exchanges. Private market investments can include equity ownership in privately owned firms across all stages of development, private lending, real estate, infrastructure and other real assets.
- Investing in private markets can help diversify portfolios as they offer an alternative source of return not available on public markets.
- There are various private market strategies investors can choose from, ranging from private equity, private debt, to private real estate and infrastructure.
- Investors need to be able to lock away cash for longer to access private markets and accept illiquidity. Depending on the type of private investments, Private investments are typically committed for 7-10 years or longer. Some strategies may require shorter investment periods.
- However, historically investors have been rewarded for their patience with higher returns compared to investments on public exchanges, as global private

equity has provided annual returns of 13.1% between 2001-2022 compared to 5.8% returns in publicly traded global equities for the same period.

- Besides differentiated strategies, investors can also choose from various approaches to include private markets in their portfolios, depending on their desired level of involvement and responsibility.
- Investors can make direct investments in companies if they have the capacity to do so, co-invest alongside a fund manager, or choose from different fund management styles and strategies to meet their needs.
- To maximize chances of success, investors should invest across geographies, managers, strategies and vintage years. This reduces dependence on any single factor or strategy exposure and improves the potential for higher and stable returns.
- Manager selection is crucial, as there is high dispersion of returns between private market funds and management styles.

This report has been prepared by UBS Financial Services Inc. (UBS FS) and UBS Switzerland AG. Please see important disclaimers and disclosures at the end of the document.

What are private markets?

Private markets are a broad term for assets not traded on public exchanges. Private market investments can include equity ownership in privately owned firms across all stages of development, private lending, real estate, infrastructure and other real assets.

Private markets can employ different strategies to add value. Private equity managers can focus on buying stakes in companies ranging from early stage, expansion or the turn around of mature businesses. Private debt managers, on the other hand, specialize in everything from underwriting loans to small, mid or large cap companies to restructuring default debt. Meanwhile, private real estate fund managers can focus on the acquisition of high-quality assets, property refurbishment or repositioning, as well as new development projects, to generate returns.

The individual manager(s) of a fund is referred to as the General Partner (GP), while Limited Partners (LP) are the investors in the fund. When Limited Partners commit to a fund, they are not immediately invested. The General Partner will "call" capital (request investors send a portion of their total commitment) as it invests out the fund over time. Investment periods typically range from 3 – 6 years. When the portfolio companies are sold, the General Partner will distribute capital back to the Limited Partners.

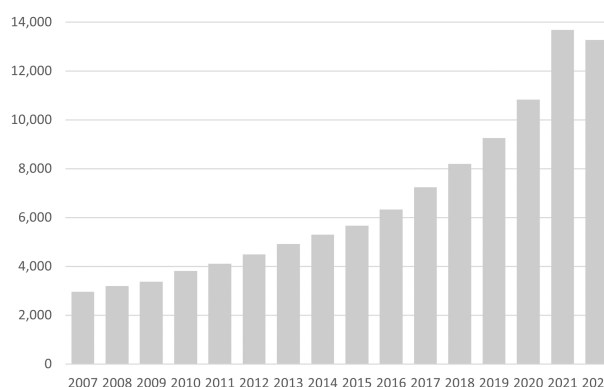
The GP then creates a portfolio and works directly with the companies and projects to increase their chance of success with a particular strategic focus or asset class. GPs require a management fee to cover for operating costs and an incentive fee that is paid to the manager in case the fund performs above a specific hurdle rate of return. This fee is known as carried interest.

Other investors may prefer a direct approach, buying stakes in a range of private companies without the help of a fund manager. This however requires a higher level of expertise and a larger minimum investment.

Access to information in private markets is more challenging than in public markets. GPs often rely on their own resources and network to find attractive investment opportunities. The better the ability a manager has to gather information and formulate an investment thesis, the better chance they have to spot rewarding investment opportunities. There is also no continuous market or valuation for these assets and the transactions require time to negotiate and execute. The potential for mispricing exists because many investors do not have the necessary knowledge, patience or information to evaluate, invest, and help realize the intrinsic value of these assets.

In all cases, investing in private markets requires time. In public markets, investors often can easily access their investments and realize returns by month, quarter or year. Because private market funds aim to transform companies or projects over the course of years, investors need to be willing to lock up their capital for longer. For private equity funds, for instance, this could be for 10-years or more.

Fig. 1: Private market assets under management (AUM) have grown rapidly



Source: Pitchbook, UBS, October 2023. Includes private equity, private debt, real estate, infrastructure/natural resources.

Key private markets strategies

Private markets can be broken down into four different strategies: private equity, private debt, private real estate and infrastructure. These styles pursue different investment approaches, asset classes, exposure levels, time horizons and risk-adjusted returns.

- **Private equity (PE)** represents the lion's share of private markets, with well over 60% of total private assets under management. Private equity strategies refer to equity investments made into companies that are not publicly traded, thus providing investors with equity-like ownership interest and returns. PE can be further divided into sub strategies, depending on the stage in the life cycle of the target company:

1. Venture capital seek to acquire minority stakes in startups in the earlier or later stages of their development.
2. Growth equity makes minority investments into fast growing companies that need additional funding to expand.
3. Buyout funds target control positions in mature, cash-generating companies with the aim of growing earnings through value-add initiatives.

- **Private debt (PD)** strategies focus on non-traded debt instruments issued to private companies. PD managers typically source, negotiate and originate debt instruments with borrowers, providing investors with a credit-type risk. The main PD sub-strategies can be split into:

1. Direct lending, which originates senior secured debt financing for middle-market, below-investment-grade companies,
2. Mezzanine financing, which focuses on subordinated debt with equity like participation; and
3. Distressed debt, which seeks to monetize debt investments (with potentially equity like participation) through normalizing firm profitability, restructuring, or asset liquidation.

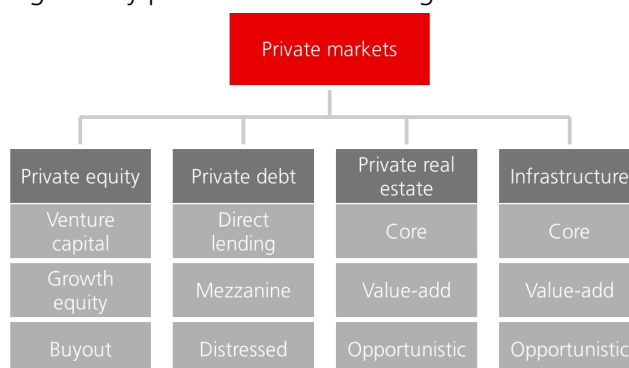
- **Private real estate (PRE)** strategies focus on acquiring real estate and related assets, particularly in the value-add and opportunistic segments, where active management can drive substantial value creation. PRE offers potential for inflation protection, income and potentially lower correlations to traditional assets. Sub-strategies include:

1. Core real estate targeting established, quality and fully leased assets;
2. Value-add RE strategies targeting assets with some lease-up or refurbishment risk; and
3. Opportunistic RE targeting development projects and assets that require significant repositioning.

- **Private infrastructure** strategies focus on acquiring infrastructure assets which often exhibit the following common characteristics- high barriers to entry, low price elasticity of demand, stable and inflation linked cash flows. Similar to real estate, private infrastructure strategies, dependent on type, offer potential for inflation protection and lower correlations to traditional assets.

1. The core strategy targets investment in existing assets (brownfield) with minimal capex requirements, low operational complexity, and predictable contracted revenues.
2. Value-add managers target more complex assets with some development risk; and
3. Opportunistic funds target greenfield project or assets that require substantial capital expenditure. Dependent on the strategy, infrastructure investors can generate a mix of both income and capital gains.

Fig. 2: Key private markets strategies



Source: UBS

Why include private markets in a portfolio?

Private markets can significantly expand the universe of instruments and exposures beyond liquid, publicly traded securities. In particular, private markets enable investors to capture additional potential sources of return including an illiquidity premium and manager skill or alpha. Listed below are key reasons for incorporating private markets into portfolios.

- **Expanded universe.** Many attractive companies and assets are not necessarily publicly listed. Private markets offer exposure to these investments. Investors willing to trade off liquidity can access otherwise unavailable assets and themes, and thus diversify portfolio sources of return.
- **Inefficiencies create opportunity.** Asymmetry of information and the complexity of transacting in private companies and assets offer attractive opportunities for long-term investors who can find, evaluate and purchase opportunities at a significant discount to their assessment of intrinsic value.
- **Diversify with liquidity and other premia.** Private markets offer investors the potential to capture an illiquidity and complexity premium stemming from managers' active ownership and management approach focused on long term value creation. Some strategies exhibit low to no correlation to traditional markets.
- **Attractive risk-adjusted returns.** Historical private markets returns show a significant premium to traditional asset returns over the long term. (see Fig. 3).
- **Behavioral advantage.** The illiquidity of private markets helps prevent investors from making emotional decisions to redeem during market dislocations. In fact, private markets vehicles raised and/or investing during such periods can often capitalize on a more attractive valuation environment on behalf of their investors.

- **Income potential.** Some strategies like private credit can improve the income potential of a portfolio through additional sources of yield, with lower correlation to traditional fixed income markets.
- **Inflation mitigation.** Strategies like real estate and infrastructure could provide investors with an additional source of income while also potentially helping mitigate the effects of inflation in case asset yields are linked to inflation.

Returns and performance

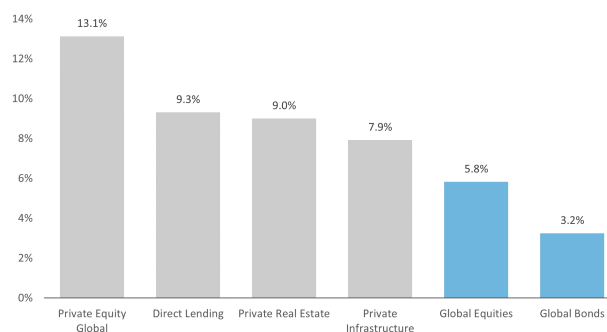
Investors must take a long-term view on private markets returns, as investment vehicles are typically locked up for years and performance can only really be assessed once the majority of investments have been exited and returns realized, which can take some time. But in exchange, investors have the potential to generate attractive risk adjusted returns. Over the most recent decades, investments in private market strategies have outperformed listed bond and equity investments by a significant margin (see Fig. 3 and 4). On a time-weighted return basis, global private equity provided annual average returns of 13.1% between 2001 and 2022, significantly above the 5.8% returns achieved by publicly traded global stocks. Direct lending returned 9.3% against 3.2% for global bonds, while private real estate and private infrastructure delivered average returns of 9% and 7.9% respectively.

To measure performance in private markets, however, investors typically look at different metrics including internal rate of return (IRR) and return multiples. IRR assesses timing and size of cash flows to factor in the time value of money. Looking from a different angle, multiples can provide an absolute measure of how much return is created over a time period. Two key multiples include the distributed to paid-in ratio (DPI), which measures distributions against invested capital, and the total value paid-in ratio (TVPI), which measures the value of all realized and unrealized investments against invested capital.

To compare IRRs to public index returns, one needs to account for timing of cash flows. This requires a return calculation referred to as public market equivalent (PME) measuring the value-add of the manager and allowing for performance to be evaluated against liquid asset classes. This is accomplished by comparing the difference between the cashflows of the private market funds and those of a series of cash flows that buy and sell a relevant public equity index, thereby measuring relative performance.

Fig. 3: Private versus public market returns

Average annual time weighted returns between January 2001 and December 2022 (for real estate and direct lending from 2005 to 2022)



Source: CAPE Global Private Equity Index, Cliffwater Direct Lending Index, Cambridge Real Estate Index, MSCI All Country World Index, Barclays Global Aggregate, UBS. Data as of October 2023.

Fig. 4: Private equity pooled IRR vs. MSCI ACWI mPME



Source: Cambridge Associates, UBS. Data as of October 2023

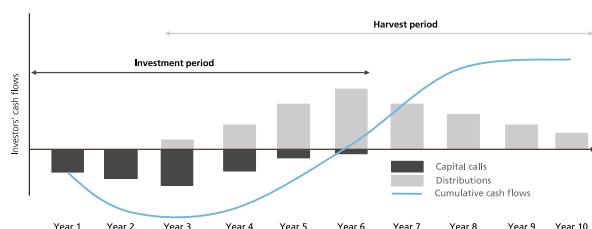
Dynamics of investing in a private markets fund

Private markets funds have distinctive characteristics that investors must consider carefully.

- Private market funds traditionally have a **closed-ended** structure, meaning that funds are offered to investors only during a specified fundraising period. Once fundraising is completed, funds are closed and illiquid for a specified term, typically ranging from 7 to 12 or more years depending on strategy. The term may be extended by the GP, sometimes with LP approval.
- Private market funds typically have a **commitment/drawdown** structure. During the fundraising period, each LP makes an irrevocable upfront capital commitment of a specific amount to the fund. None of this capital is immediately invested; instead, LPs will fund future investment acquisition upon request by the GP, referred to as a "capital call."
- Funds can only make investments during a specified **investment period**. This is usually during the first three to six years of a fund.

- Limited partners cannot influence the **timing and magnitude of cash flows** in and out of a fund, as these are determined by the fund manager and the pace they invest. Cash distributions tend to come in the middle to later years of a fund. By then the general partner has had time to work with the investments and add value.
- The features above describe the **J-curve effect**, illustrating how in early years limited partners experience net cash outflows during capital calls. Inflows are limited or not yet available until the middle years of the fund when distributions start outweighing capital calls. Net cash outflows start to decrease and then turn positive (see fig. 5).
- LPs typically **will not achieve a 100% investment exposure** of their commitment to a private market fund. The net invested capital level can fall below target, because distributions may begin while committed capital is still being invested. Historically net effective investment levels vary from 60-80%. To achieve fully invested effective exposure levels, limited partners can either overcommit to a single fund, or pursue ongoing commitments to multiple funds.

Fig. 5: Illustrative lifecycle of a private equity fund



Source: UBS, October 2023.

Key principles to include private markets in a portfolio

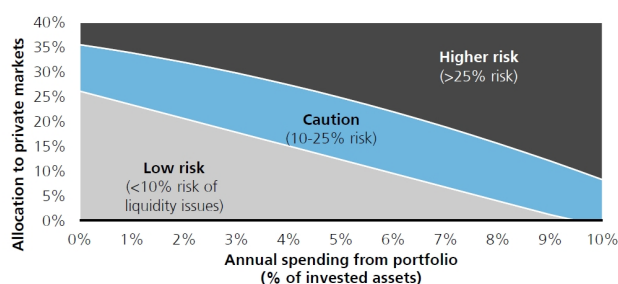
Before considering an allocation to private markets, investors need to take into account:

- **Tolerance for illiquidity** over long time horizon. With fund terms lasting 10 years or more, investors should be comfortable having a portion of their portfolio inaccessible during this period.
- **Personal goals, objectives, and risk tolerance.** Investors should ensure personal goals and objectives are in line with the duration of private investments, even considering a potential change in personal circumstances. Additionally, an allocation to alternatives shouldn't meaningfully alter the risk profile of an investor's overall portfolio.
- **Spending requirements.** Investors with higher spending requirements to meet expenses or higher

allocations to private investments to meet capital calls should ensure sufficient liquidity is available, particularly when planning for potential market drawdown periods.

- **Sizing an allocation.** The above considerations should help size an allocation to private assets tailored to an investor's needs. As a general rule, an allocation of up to 20% to such less liquid assets should enable most investors to avoid liquidity issues even during market downturns (see Fig. 6). An allocation of up to 40% would be acceptable from a liquidity perspective if cash flows needs are moderate and/or mitigated if external liquidity is available.

Fig. 6: Probability of running into liquidity issues in severe market stress



Note: UBS. Investing in private markets with the UBS Wealth Way. Note: The PE portfolio is considered mature with yearly contributions depending on the PE target. Monte Carlo simulations of the liquid portfolio values reflect severe bear market performance lasting three years. All cash flow needs are taken on an annual basis. We assume no slowdown in capital calls and assume no distributions. For more information, refer to "Investing in private markets with UBS Wealth Way" published on 5 May 2021. Source: Bloomberg, UBS.

- **Funding an allocation.** When allocating to private assets in a multi-asset class portfolio, investors should seek to preserve the overall risk characteristics of a portfolio. As such, investors should:

1. Fund higher-risk private markets such as private equity, opportunistic real estate/ infrastructure equity out of higher-risk liquid assets such as public equity.
2. Fund income-focused private markets such as core real estate/infrastructure or high-quality private debt out of fixed income and credit assets.

To avoid a cash drag on returns, investors may want to maintain capital earmarked for private market capital calls invested until needed.

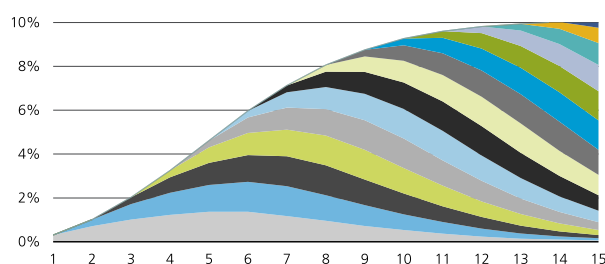
- **Diversification is critical.** Diversification of private markets exposure is important from a portfolio perspective, and should be achieved by allocating to a number of private markets funds across geographies, managers, strategies and vintage years (starting year of the fund). Achieving diversification is not easy as it depends on timing of when funds of various types are raising capital, as well as the quality of

the investor's relationships with managers. Institutional private market portfolios typically contain 15-25 funds, which allows for strong diversification along the dimensions below without diluting returns and creating portfolio monitoring challenges:

1. Strategy diversification reduces dependence on any single factor or strategy exposure.
2. Geographic diversification limits dependence on a single economy or region.
3. Manager diversification reduces risk of over-exposure to the biases of any single fund manager.
4. Vintage year diversification ensures investors are exposed to the opportunity set and market conditions across time, to mitigate performance variance between funds launched in different years (Fig. 7).

Fig. 7: Importance of a diversified and consistent capital deployment plan

Illustrative example of building a private equity exposure, in % of overall portfolio



Source: UBS, Pitchbook. Colored areas represent NAV development of individual PE fund for different vintages. Commitment assumption of one fund per year. For more details, refer to "allocating to private equity in a multi-asset portfolio" published on 20 July 2020.

- **Building private markets exposure is a long process.** Most funds focused on public markets are open-ended, meaning anyone has the ability to invest at any time, making it easier to achieve fully invested portfolios almost immediately. However, it typically takes years to build up well-diversified private markets exposure. After setting a target allocation, an investor must then source funds for investment, however managers for their preferred strategies and geographies may not be raising capital on the same schedule. Diversifying across vintage years further extends this process. Even after investors select and commit capital to funds, managers will only gradually deploy that capital over multi-year investment periods. The time and effort required to build these allocations properly means that investors must be committed to private market allocations over the long-term. We note that investors have ways to speed up this process through secondaries and/or semi-liquid structures.

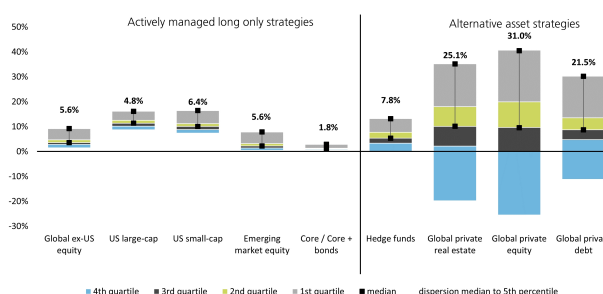
- **Maintaining sufficient exposure is challenging.**

Given the unpredictability of private markets fund cash flows, managing a pro forma private markets portfolio to ensure consistent and sufficiently invested exposure can be challenging. In order to maintain private market allocation levels near target, investors need to continually redeploy distributions into existing or new private markets funds, which requires strong manager relationships and ongoing monitoring of the fundraising schedules of top tier managers.

- **Manager selection matters.** Manager selection has a significant impact on performance in private markets evidenced by the large gap between the top and bottom quartile private markets funds. Each fund has a distinct portfolio and holdings are rarely shared with other managers. This reinforces the importance of manager selection. Figure 8 shows that the spread between top and bottom quartile private markets funds is generally higher than for public equity and fixed income funds. Returns also diverge significantly between funds from different vintage years.

- **Access to top managers is limited.** Private markets funds run by top performing managers tend to limit capacity (fund size), have high minimum investment levels and net worth requirements and are often oversubscribed, meaning fund managers can be highly selective about who can invest. Capacity in these funds is often limited or even unavailable for anyone except long-term recurring limited partners. Therefore, strong relationships with this tier of managers, or similar access via an intermediary, is important for investors to position for the historically attractive returns from a private markets allocation.

Fig. 8: Public vs. private manager fund returns dispersion



Source: Cambridge Associates, Morningstar Direct, UBS. Data covers period from 1 Jul 2008 through 30 Sept 2022.

Ways to invest in private markets

Investors have a range of different options for incorporating private markets into their portfolios. Each investor needs to decide individually what approach is right based on size,

level of expertise, preference for control, and desired degree of time and involvement.

- Investors can make **direct investments** in companies and assets. However, this requires a high level of expertise to evaluate merits and risks of companies across various sectors. This also requires greater scale and can be onerous when seeking to achieve diversification.
- Investors can **co-invest** with the general partner who has management responsibility. This means that investors get the chance to invest into companies alongside specific private fund managers.
- Investors can become limited partners in **primary private markets funds**. The fund manager will take care of sourcing and executing investments, portfolio diversification and active risk and portfolio management. Private market funds usually require a high minimum investment, meaning investors need to secure access to a strong network of fund managers.
- Smaller investors could invest in **feeder funds**, open to a much larger investment base. Investors benefit from an institutional approach, as the funds are often used by private banks to aggregate investor interests into a single larger investment in a private market fund. This requires additional fees from investors.
- **Fund-of-funds** pool investor capital to create a diversified portfolio of private market funds and can be attractive to first-time investors. Investors give up control to professionals with institutional expertise who can provide exposure to hard-to-access top-tier managers.
- **Secondary investments** take place when a buyer purchases existing private assets. The secondary market allows limited partners to make an early exit and incoming investors to buy private assets often at a discount and further ahead in their performance cycle, mitigating the J-curve effect.
- **Semi-liquid funds** are open-ended structures that offer investors the option to subscribe and redeem private equity shares on a regular basis. Buyers would invest in an existing portfolio of assets immediately generating revenues. Unlike closed-end funds, there is no J-curve effect. Initial lock up periods, commitment amounts and investor or fund level gate restrictions may still apply.

Risks of investing in private markets funds

Investors in private market funds must consider the following risks. Many of these factors can actually work in investors' favor as long as expectations of investors and managers are set properly in advance.

- **Illiquidity.** When investing in a private markets fund, investors must be prepared to accept significant illiquidity. This illiquidity is what allows access to more inefficient markets. On the other hand, investors cannot expect to access their capital or receive distributions with any regularity. Their only potential option for liquidity is to try to sell their stakes in the secondary market, where there may be no bid at all, or they may have to sell at a significant discount to fair value, if the fund manager even permits.
- **Uncertain cash flows.** Amount and timing of the cash flow is at the manager's discretion. LPs need to fund a "capital call" within a certain time frame. Unpredictable cash flows apply to early stage capital calls as well as to distributions to investors at later stages.
- **Fees.** Private markets fund managers charge both management fees (typically in the 1.5-2.0% range) and incentive fees (typically in the 15-20% range). These levels are high compared to traditional asset funds, but the incentive fee helps to align objectives as the manager only gets paid if the investor achieves attractive returns. Most funds specify a hurdle or preferred return below which the manager does not receive incentive pay.
- **Lack of control:** Investors in private market funds cede control over investment decisions, pace of investments and exits, strategic and operational matters, and other significant decisions to the third party fund manager. While this eliminates investors' ability to "vote with their feet" to express displeasure with the manager, ceding control gives the manager the necessary tools to seek outperformance for investors.
- **Blind pool risk.** Investors must make long-term commitments to private markets funds in advance, without knowing what the underlying investments will be. This is known as blind pool risk. This dynamic can be mitigated through familiarity with the general partner and its track record as well as proper due diligence.
- **Limited disclosure.** Disclosure on performance of underlying investments is periodic and can be more limited given that managers need time and flexibility to work with underlying companies and are focused on long-term value creation. Also, valuation of private assets involves subjectivity and assumptions, and as such may not necessarily be indicative of long-term performance or potential.
- **Use of leverage.** This is not a blanket risk. Certain private markets strategies such as buyout use significant leverage which poses potential default risk if the company encounters stress, but many PM strategies do not involve any leverage. Prudent leverage in the right

situation has historically shown to help enhance returns without significant incremental risk.

Appendix

Selected definitions

- **Correlation:** the degree to which the fluctuations of one variable are similar to those of another.
- **Leverage:** the use of borrowed capital or instruments to increase the potential return (but also potential losses) of an investment, a simple example is a mortgage used in real estate transactions.
- **Leveraged buyout funds:** a private equity strategy using borrowed capital to gain control of a company.
- **Illiquidity premia:** the premium that an investor can demand depending on how difficult it is to convert the underlying security can be converted to cash.
- **Multiples:** a term that measures some aspect of a company's financial well-being, determined by dividing one metric by another metric. The metric in the numerator is typically larger than the one in the denominator, because the top metric is usually supposed to be many times larger than the bottom metric.
- **Multiple expansion:** describes the way a particular valuation metric increases to reflect a higher value assigned to an underlying investment.
- **Value add:** describes the operational, business, or structural improvements private market managers seek through underlying portfolio investments.
- **Cash flows:** cash flow is the net amount of cash and cash-equivalents being transferred into and out of a fund.
- **Public Market Equivalent (PME):** a method that converts public market returns to a benchmark that can be compared to private market returns.
- **IRR:** a return method used to evaluate private market investments and reflects the discount rate at which the present value of an investment's future cash flow equals the cost of the investment.
- **Pooled returns:** a return method that represents the net return calculated on the aggregate of all cash flows and market values as reported by individual fund managers in their quarterly and annual reports, net of management fees, expenses and performance fees.
- **TVPI (Total Value to Paid In):** a return metric that describes the total capital distributed back to the investor + residual value left in the fund divided by invested capital.
- **Exit:** the time period in which an investor can convert holdings into cash to be liquidated over a designated period of time.
- **IPO:** the first sale of stock by a private company to the public. Also referred to as an "initial public offering."
- **Standard deviation:** a measure of the degree to which individual values vary from the distribution mean. The higher the number, the greater the risk.
- **Dry powder:** refers to cash reserves kept on hand by a private markets firm to cover future obligations, purchase assets or make acquisitions.
- **J-curve:** illustrates a period of initial negative cash flows (contributions) towards positive cash flows (distributions back to the investor) over a period of time.
- **Sponsor:** the general partner in a limited partnership who organizes and signs up investors.
- **Secondary buyout:** describes a sale between private market firms
- **Trade sale/strategic sale:** describes a sale of a business to another business operating in a similar industry.

- **Senior debt:** loans or debt securities that have claim prior to junior obligations and equity on a corporation's assets in the event of liquidation.
- **Junior debt:** loan or security that ranks below other loans or securities with regard to claims on assets or earnings. In the case of borrower default, creditors who own subordinated debt won't be paid out until after senior debt holders are paid in full.
- **Vintage year:** is the year in which the first influx of investment capital is delivered to a project or company. This marks when capital is contributed by venture capital, a private equity fund or a partnership drawing down from its investors.
- **M&A:** mergers and acquisitions is a general term that refers to the consolidation of companies or assets through various types of financial transactions. M&A can include a number of different transactions, such as mergers, acquisitions, consolidations, tender offers, purchase of assets and management acquisitions.
- **Blind pool:** money collected from several people which is put into a fund and invested for their profit. It is left unspecified which properties are to be acquired.
- **Unit economics:** a measure of direct revenues and costs on a unit basis for a particular business model.
- **Minority stake:** reflects a non-controlling interest that is less than 50% of a particular entity.
- **Spin off:** describes the separation of an independent company from a larger parent.
- **Control provisions:** designed to provide a level of influence over significant operational and business matters.
- **Redemption rights:** gives investors the right to force a company to repurchase their shares after a period of time.
- **Idiosyncratic risk:** risk associated with a narrow set of factors pertaining to a particular company. Risk that has little association with overall market risk.
- **Tag-along provisions:** provides a minority shareholder the right to join in on a sale of a company that is initiated by a majority shareholder.

UBS Chief Investment Office's ("CIO") investment views are prepared and published by the Global Wealth Management business of UBS Switzerland AG (regulated by FINMA in Switzerland) or its affiliates ("UBS"), part of UBS Group AG ("UBS Group"). UBS Group includes Credit Suisse AG, its subsidiaries, branches and affiliates. Additional disclaimer relevant to Credit Suisse Wealth Management follows at the end of this section.

The investment views have been prepared in accordance with legal requirements designed to promote the **independence of investment research**.

Generic investment research – Risk information:

This publication is **for your information only** and is not intended as an offer, or a solicitation of an offer, to buy or sell any investment or other specific product. The analysis contained herein does not constitute a personal recommendation or take into account the particular investment objectives, investment strategies, financial situation and needs of any specific recipient. It is based on numerous assumptions. Different assumptions could result in materially different results. Certain services and products are subject to legal restrictions and cannot be offered worldwide on an unrestricted basis and/or may not be eligible for sale to all investors. All information and opinions expressed in this document were obtained from sources believed to be reliable and in good faith, but no representation or warranty, express or implied, is made as to its accuracy or completeness (other than disclosures relating to UBS). All information and opinions as well as any forecasts, estimates and market prices indicated are current as of the date of this report, and are subject to change without notice. Opinions expressed herein may differ or be contrary to those expressed by other business areas or divisions of UBS as a result of using different assumptions and/or criteria.

In no circumstances may this document or any of the information (including any forecast, value, index or other calculated amount ("Values")) be used for any of the following purposes (i) valuation or accounting purposes; (ii) to determine the amounts due or payable, the price or the value of any financial instrument or financial contract; or (iii) to measure the performance of any financial instrument including, without limitation, for the purpose of tracking the return or performance of any Value or of defining the asset allocation of portfolio or of computing performance fees. By receiving this document and the information you will be deemed to represent and warrant to UBS that you will not use this document or otherwise rely on any of the information for any of the above purposes. UBS and any of its directors or employees may be entitled at any time to hold long or short positions in investment instruments referred to herein, carry out transactions involving relevant investment instruments in the capacity of principal or agent, or provide any other services or have officers, who serve as directors, either to/for the issuer, the investment instrument itself or to/for any company commercially or financially affiliated to such issuers. At any time, investment decisions (including whether to buy, sell or hold securities) made by UBS and its employees may differ from or be contrary to the opinions expressed in UBS research publications. Some investments may not be readily realizable since the market in the securities is illiquid and therefore valuing the investment and identifying the risk to which you are exposed may be difficult to quantify. UBS relies on information barriers to control the flow of information contained in one or more areas within UBS, into other areas, units, divisions or affiliates of UBS. Futures and options trading is not suitable for every investor as there is a substantial risk of loss, and losses in excess of an initial investment may occur. Past performance of an investment is no guarantee for its future performance. Additional information will be made available upon request. Some investments may be subject to sudden and large falls in value and on realization you may receive back less than you invested or may be required to pay more. Changes in foreign exchange rates may have an adverse effect on the price, value or income of an investment. The analyst(s) responsible for the preparation of this report may interact with trading desk personnel, sales personnel and other constituencies for the purpose of gathering, synthesizing and interpreting market information.

Different areas, groups, and personnel within UBS Group may produce and distribute separate research products **independently of each other**. For example, research publications from **CIO** are produced by UBS Global Wealth Management. **UBS Global Research** is produced by UBS Investment Bank. **Credit Suisse Global CIO Office Research** is produced by Credit Suisse Wealth Management. **Credit Suisse Securities Research** is produced by Credit Suisse operating under its Securities Research function within the Investment Banking Division. **Research methodologies and rating systems of each separate research organization may differ**, for example, in terms of investment recommendations, investment horizon, model assumptions, and valuation methods. As a consequence, except for certain economic forecasts (for which UBS CIO and UBS Global Research may collaborate), investment recommendations, ratings, price targets, and valuations provided by each of the separate research organizations may be different, or inconsistent. You should refer to each relevant research product for the details as to their methodologies and rating system. Not all clients may have access to all products from every organization. Each research product is subject to the policies and procedures of the organization that produces it.

The compensation of the analyst(s) who prepared this report is determined exclusively by research management and senior management (not including investment banking). Analyst compensation is not based on investment banking, sales and trading or principal trading revenues, however, compensation may relate to the revenues of UBS Group as a whole, of which investment banking, sales and trading and principal trading are a part. Tax treatment depends on the individual circumstances and may be subject to change in the future. UBS does not provide legal or tax advice and makes no representations as to the tax treatment of assets or the investment returns thereon both in general or with reference to specific client's circumstances and needs. We are of necessity unable to take into account the particular investment objectives, financial situation and needs of our individual clients and we would recommend that you take financial and/or tax advice as to the implications (including tax) of investing in any of the products mentioned herein.

This material may not be reproduced or copies circulated without prior authority of UBS. Unless otherwise agreed in writing UBS expressly prohibits the distribution and transfer of this material to third parties for any reason. UBS accepts no liability whatsoever for any claims or lawsuits from any third parties arising from the use or distribution of this material. This report is for distribution only under such circumstances as may be permitted by applicable law. For information on the ways in which CIO manages conflicts and maintains independence of its investment views and publication offering, and research and rating methodologies, please visit www.ubs.com/research-methodology. Additional information on the relevant authors of this publication and other CIO publication(s) referenced in this report; and copies of any past reports on this topic; are available upon request from your client advisor.

Important Information About Sustainable Investing Strategies: Sustainable investing strategies aim to consider and incorporate environmental, social and governance (ESG) factors into investment process and portfolio construction. Strategies across geographies approach ESG analysis and incorporate the findings in a variety of ways. Incorporating ESG factors or Sustainable Investing considerations may inhibit UBS's ability to participate in or to advise on certain investment opportunities that otherwise would be consistent with the Client's investment objectives. The returns on a portfolio incorporating ESG factors or Sustainable Investing considerations may be lower or higher than portfolios where ESG factors, exclusions, or other sustainability issues are not considered by UBS, and the investment opportunities available to such portfolios may differ.

External Asset Managers / External Financial Consultants: In case this research or publication is provided to an External Asset Manager or an External Financial Consultant, UBS expressly prohibits that it is redistributed by the External Asset Manager or the External Financial Consultant and is made available to their clients and/or third parties.

USA: Distributed to US persons only by UBS Financial Services Inc. or UBS Securities LLC, subsidiaries of UBS AG. UBS Switzerland AG, UBS Europe SE, UBS Bank, S.A., UBS Brasil Administradora de Valores Mobiliarios Ltda, UBS Asesores Mexico, S.A. de C.V., UBS SuMi TRUST Wealth Management Co., Ltd., UBS Wealth Management Israel Ltd and UBS Menkul Degerler AS are affiliates of UBS AG. **UBS Financial Services Inc. accepts responsibility for the content of a report prepared by a non-US affiliate when it distributes reports to US persons. All transactions by a US person in the securities mentioned in this report should be effected through a US-registered broker dealer affiliated with UBS, and not through a non-US affiliate. The contents of this report have not been and will not be approved by any securities or investment authority in the United States or elsewhere. UBS Financial Services Inc. is not acting as a municipal advisor to any municipal entity or obligated person within the meaning of Section 15B of the Securities Exchange Act (the "Municipal Advisor Rule") and the opinions or views contained herein are not intended to be, and do not constitute, advice within the meaning of the Municipal Advisor Rule**

For country information, please visit ubs.com/cio-country-disclaimer-gr or ask your client advisor for the full disclaimer.

Additional Disclaimer relevant to Credit Suisse Wealth Management

You receive this document in your capacity as a client of Credit Suisse Wealth Management. Your personal data will be processed in accordance with the Credit Suisse privacy statement accessible at your domicile through the official Credit Suisse website <https://www.credit-suisse.com>. In order to provide you with marketing materials concerning our products and services, UBS Group AG and its subsidiaries may process your basic personal data (i.e. contact details such as name, e-mail address) until you notify us that you no longer wish to receive them. You can optout from receiving these materials at any time by informing your Relationship Manager.

Except as otherwise specified herein and/or depending on the local Credit Suisse entity from which you are receiving this report, this report is distributed by Credit Suisse AG, authorised and regulated by the Swiss Financial Market Supervisory Authority (FINMA). Credit Suisse AG is a UBS Group company.

Version C/2023. CIO82652744

© UBS 2023. The key symbol and UBS are among the registered and unregistered trademarks of UBS. All rights reserved.