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Alternatives & Strategic Asset Allocation
Creating a robust framework for private investors

Creating a robust framework for private investors

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Alternative investments are an increasingly important asset class. In this report we look at the reasons for this, discuss the types of alternative investments available and try to disentangle perceptions around alternatives from the reality – for example, with regards to return expectations.

The world of alternatives is, by its nature, broad and diverse. However, in this report we focus on alternative investments via private markets and the specific issue of how an effective asset allocation process can make the most of their inclusion in an investment portfolio.

Investors have traditionally looked to alternative investments for many things – income, capital growth, inflation protection, support against market stress, or simply exposure to long-term secular themes. All these are valid objectives, although it is important to be clear what is realistically possible. It is also important to understand the different types of risk involved in alternative investments.

Alternative investments are often considered on their individual merits. But, to us, the benefits of alternatives may be most evident in a portfolio context. As we explain, alternative investments may offer new ways to better diversify portfolios, in a way that investing only in public markets can find difficult.

Understanding of how an investor can successfully embed alternatives in a portfolio managed on the basis of an effective strategic asset allocation (the key to investment success) must however go well beyond a simple attempt at asset diversification. There are many other ways it can be used to change a portfolio's risk/return characteristics. We therefore conclude the report with a more conceptual discussion of the need to balance portfolio robustness with efficiency, to what extent including alternatives can help us do this, and the key issues around investment time horizon and assumptions.

This promises to be a very exciting few years for alternative investments. This space has been adjusting, generally successfully, to the likelihood of "higher for longer" interest rates. A renewed political will to increase infrastructure investment will also create interesting new opportunities in many private markets.

But making the most of these developments will involve effective integration of alternative investments into investor portfolios. We hope that you find the ideas in this report on how to do this interesting.

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Summary

Alternative investments, having enjoyed two decades of robust growth, are now an institutional-sized market. The increased maturity of alternative asset classes, an improving regulatory framework and the ongoing data revolution – all with significant transparency improvements – have led to a broadening investor base, with private clients taking a particular interest.

The dynamic evolution of alternatives is remarkable and involves a complex set of both opportunities and challenges. Most recently, the term “private markets” has started to dominate the alternative space with private equity and private credit taking centre-stage in the financial world. But many of the long-standing "traditional alternatives" like commodities and hedge funds still have an important role in global portfolios.

We see clear benefit in investing in mostly illiquid alternative assets along with liquid traditional asset classes. There are a number of reasons for this. While we would caution against over-reliance on the apparent past outperformance of certain alternative segments as way of gauging future performance, we find other compelling future potential investment opportunities. Our main goal is to increase portfolio diversification via building risk factors (such as sectors and styles) into liquid-only portfolios which, at present, we do not believe are fully capturing their diversification potential (which is arguably the only “free lunch” in the capital markets world). For example, U.S. equities are currently characterised by high market concentration around mega caps and a sector mix that is dominated by IT and communication services. Targeted alternative investments may fill that gap, helping to diversify the portfolio into other sectors, and thus improve portfolio efficiency.

Moreover, integrating alternative investments into a portfolio’s strategic (i.e. long-term) asset allocation has the beauty of offering a way to manage the degree of market risk and return (the beta component) vs. active returns (the alpha component) according to the long-term outlook for stocks and bonds and the respective beta components of alternative asset classes.

In this paper we outline our approach for integrating alternative investments into the strategic asset allocation for private clients. We rely on the analysis of market risks involved in both alternative and traditional asset classes, then applying Deutsche Bank's proprietary robust asset allocation framework to marry risk assessments and long-term return prospects.

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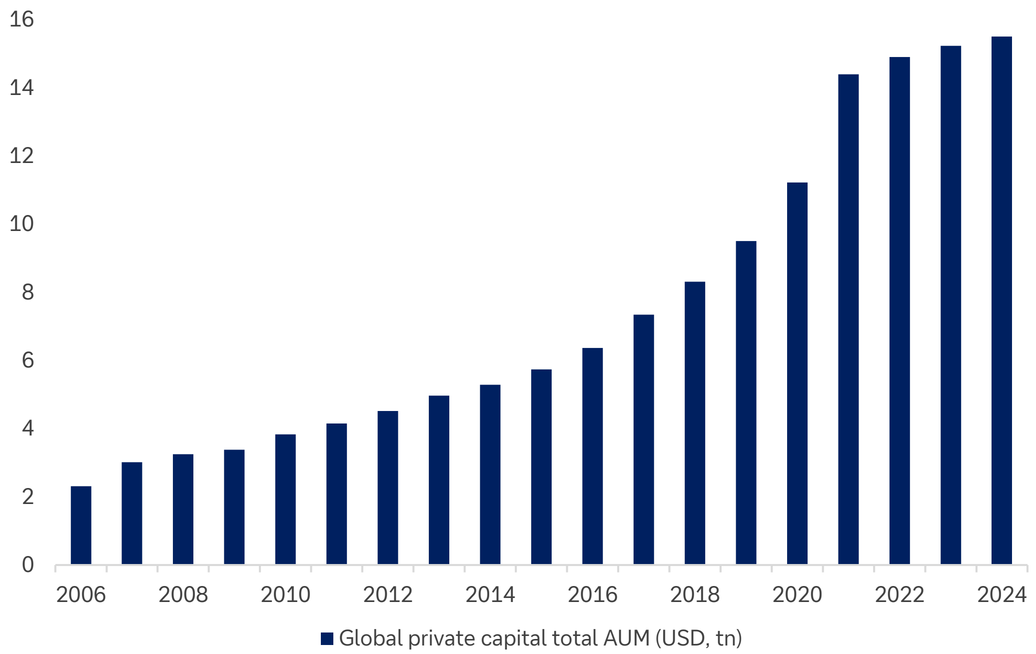
Why alternatives?

Development of private markets

The private markets industry has undergone remarkable growth and transformation over the past few decades, cementing not only its important role in financing the real economy but also offering investors robust risk-adjusted returns. Private markets assets under management (AuM) have tripled in size every decade since 2000, rising above USD 15 trillion in 2024 (Figure 1).

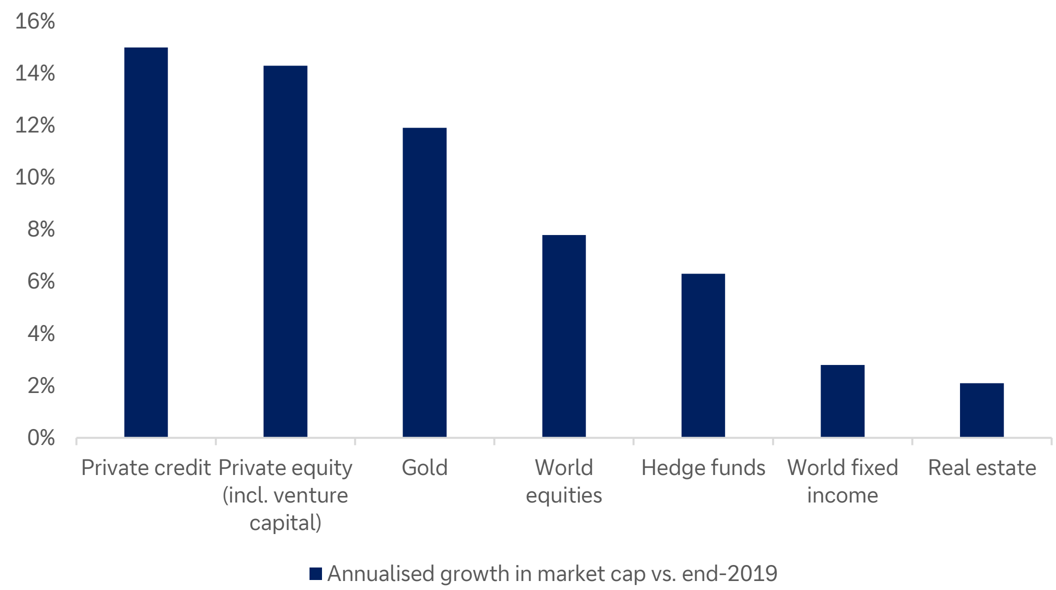
In terms of **market capitalization**, over the 5-year period to 2024, traditional assets including global liquid fixed income and stock markets grew at a compound annual growth rate of almost 5.5%. Capitalization of broader alternative assets has however increased by a compound annual rate of around 10% (Figure 2).

Figure 1: Private markets – robust growth in global AuM*



*Refers to private capital funds including private equity, venture capital, real estate, real assets, private debt, secondaries and funds of funds. 2024 represents expected figures.
Source: Pitchbook, Deutsche Bank AG. Data as of June 30, 2024.

Figure 2: Alternative investments – home to some of the highest growth areas

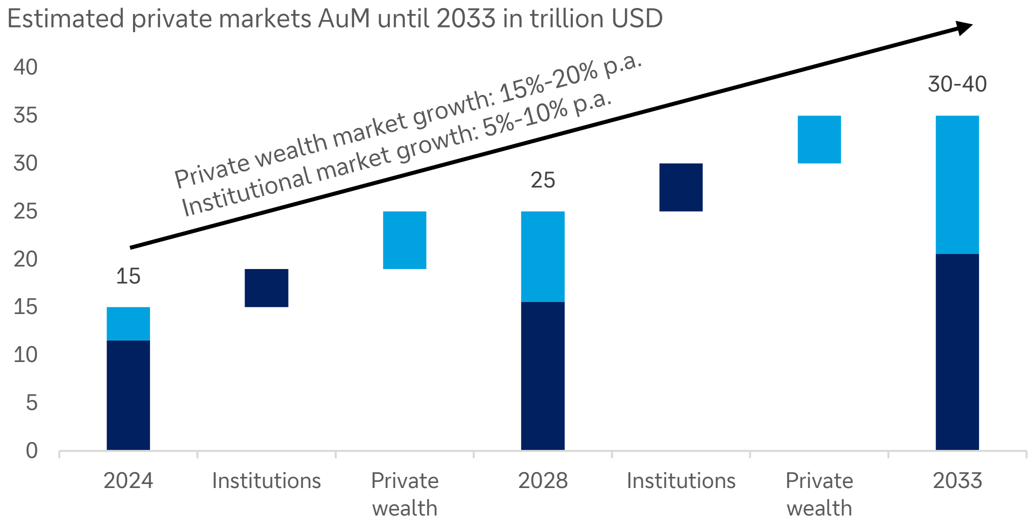


Source: LSEG Datastream, LSEG Workspace, Bloomberg L.P., Barclays, Preqin, MSCI, HFR, J.P. Morgan, Deutsche Bank AG. Data as of February 2, 2025.

The evolution of this asset class has gone through two phases so far. First, **initiation (2001-2008)**, when private markets emerged as a niche investment area, attracting early adopters. Second, **institutionalization (2009-2023)**, during which institutional capital saw rapid expansion and increasing sophistication of the asset class.

Starting in 2024, we are now at the threshold of the next phase, which can be called **democratization and consolidation** (Figure 3).

Figure 3: Democratization – institutions form the core, private wealth provides the growth



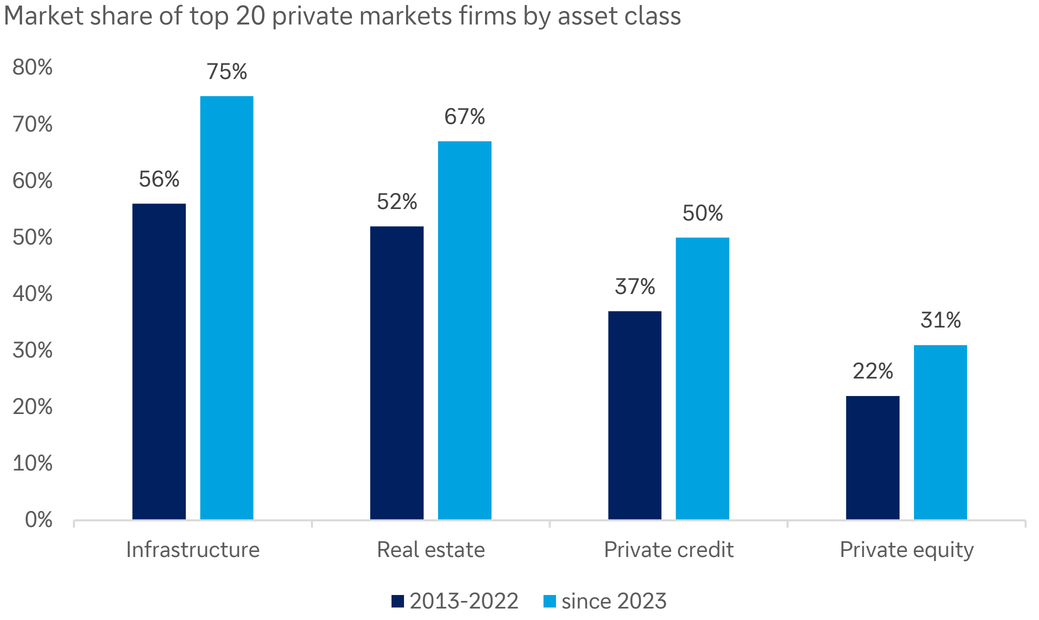
Source: Partners Group, Deutsche Bank AG. Data as of December 31, 2024.

By **democratization**, we mean that expansion is now expected to be fuelled largely by "non-traditional" programmes (e.g. evergreen and tailored structures) and investor groups that historically have had limited exposure to private markets. The increased accessibility of the asset class due to lower minimum investment requirements and supportive regulatory frameworks such as the ELTIF 2.0 (European Long-term Investment Fund) has attracted the attention of wealthy investors in addition to the already-important institutional investors.

As private markets enter the mainstream of investment management, the competitive landscape is also experiencing **consolidation**, as evidenced by the growing concentration of fundraising among top managers and the numerous mergers between managers announced in recent years (Figure 4).

The fundamental drivers propelling private markets forward remain robust. A persistent search for yield and the growing need for patient capital to fund innovation and long-term infrastructure projects continue to direct capital to the asset class. These drivers, combined with the industry's demonstrated adaptability, support our optimistic outlook for this asset class.

Figure 4: Consolidation in progress – top performers dominating



Source: Partners Group, Deutsche Bank AG. Data as of December 9, 2024.

What exactly is an alternative asset?

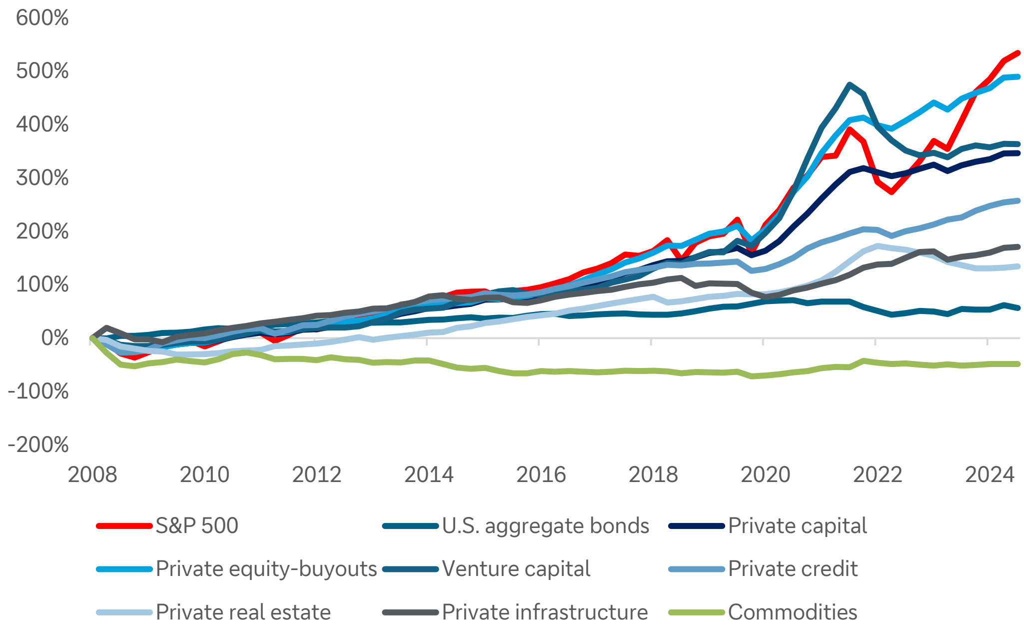
One approach is to define alternative assets as those that are not publicly traded: this is partially true but note the publicly-traded nature of some alternative assets like commodities and hedge funds. Another approach is to define alternative assets as those which are illiquid. But, as pointed out by Fraser-Sampson (2010), this definition assumes that all listed bonds and equities are liquid at any given point of time i.e. even in times of extreme market stress, something that is not always true – as recent events have demonstrated.

For us, assets beyond the traditional realm of exchange-traded equities, bonds, derivatives, REITS and cash fall into the category of alternative assets. Broadly speaking, our focus on alternatives therefore include private equity, venture capital, private credit, real estate, infrastructure, commodities and hedge funds. On this definition, private markets can be classified as a subsection of alternative investments.

Performance measurement approaches vary for alternative assets and include multiple indices that have their proprietary pricing methodology. Some may give rise to the perception that alternative assets have outperformed their traditional counterparts; others can suggest the reverse (Figure 5). As a result, we would not rely only on the assumption of outperformance to justify alternative investments.

One possible reason for investing in the alternatives space is that, even after recent sell-off, valuations for both, public equities and public fixed income are not exactly cheap, and the probability of them continuing to deliver superior returns into the foreseeable future has come down. For us, alternatives are therefore really about increasing **risk factor diversification** while maintaining relatively high return potential. In short, alternatives open up a much larger investment universe.

Figure 5: S&P 500 – past outperformance is no guarantee for future results



*based on Bloomberg private market indices with quarterly data until Q4 2024. Private capital represents a mix of strategies.
Source: Bloomberg L.P., Deutsche Bank AG. Data as of April 29, 2025.

Investment horizons and liquidity

Many alternative investments require the investors to have a long investment horizon which will vary depending on the investment strategy – in some cases, from a couple of years to more than a decade. As a result, investors may face lengthy lock-up periods during which their investments cannot be, fully or partially, accessed.

Alternatives investors can face a “J-curve” effect, where returns dip before they get better. Investors in a closed-end alternative investment fund, for example, may experience negative returns as the funds makes investments into underlying assets. Over time the investments start to grow in value and returns turn positive.

Investors should have the capacity to tolerate these long investment horizons during which their liquidity is locked up. This constraint may be compensated by an extra premium on returns. Franzoni et al. (2012) estimated this **“illiquidity” premium** to be around 3% using a factor model on private equity returns. Other, estimates put this in the range of 2%-5% depending on the investment strategy. However, the existence of such premium is subject to academic debate that we will revisit later when discussing return smoothing below.

Efforts to get around this illiquidity problem, for example using “evergreen” structures, cannot provide a complete solution. Open-ended evergreen funds are in reality semi-liquid rather than fully liquid with caps on the maximum proportion of the fund assets (typically 5%) that can be redeemed in total during a given period. The need to maintain liquidity to meet potential redemptions may also constrain an “evergreen” fund’s ability to fully invest its capital in illiquid alternative assets.

What are the benefits of alternative investments?

Potential benefits vary with the type of underlying investment. Some alternative asset classes can provide **income** streams. Private credit can provide a regular source of income. It generally has higher yield spreads above benchmarks compared to listed counterparts due to direct financing and tailor-made capital provisions along with potentially some compensation for illiquidity. Real estate can provide a steady rental yield while infrastructure investments can also provide regular and largely predictable cashflows agreed in the contracts.

Equity-related alternative investments such as private equity and venture capital can provide access to exciting **growth opportunities**. Broadly speaking the target with these investments is to create shareholder value rather than earn a continuous income stream. To some extent, hedge funds (depending on the underlying strategy) can also help in this value creation by exploiting opportunities outside long-only public markets approaches.

Real assets such as private infrastructure and real estate can mitigate the effects of **inflation** , which is likely to remain an important topic. A sizeable number of infrastructure contracts, for example, have an inflation adjustment to the revenue streams. Private credit, given its floating rate structure, can mitigate the inflationary impact as well. The broad commodities space can be an effective inflation hedge during negative commodities supply shocks, or when inflation is accompanied by strong growth.

Gold already has the long-standing reputation as a haven during times of **market stress**. Some hedge fund strategies can also be useful here: take for example, equity long-short strategies which can potentially, but not necessarily, outperform during periods of markets stress given their ability reduce their net exposure to even negative levels at these times.

Alternative assets can also provide direct exposure to the **secular trends** dominating the current debate such as electrification, digitization, security, and healthcare. In many cases, public markets provide only limited opportunities when it comes to nascent or untested technologies and innovations. Private markets can significantly broaden an investor's scope in this regard.

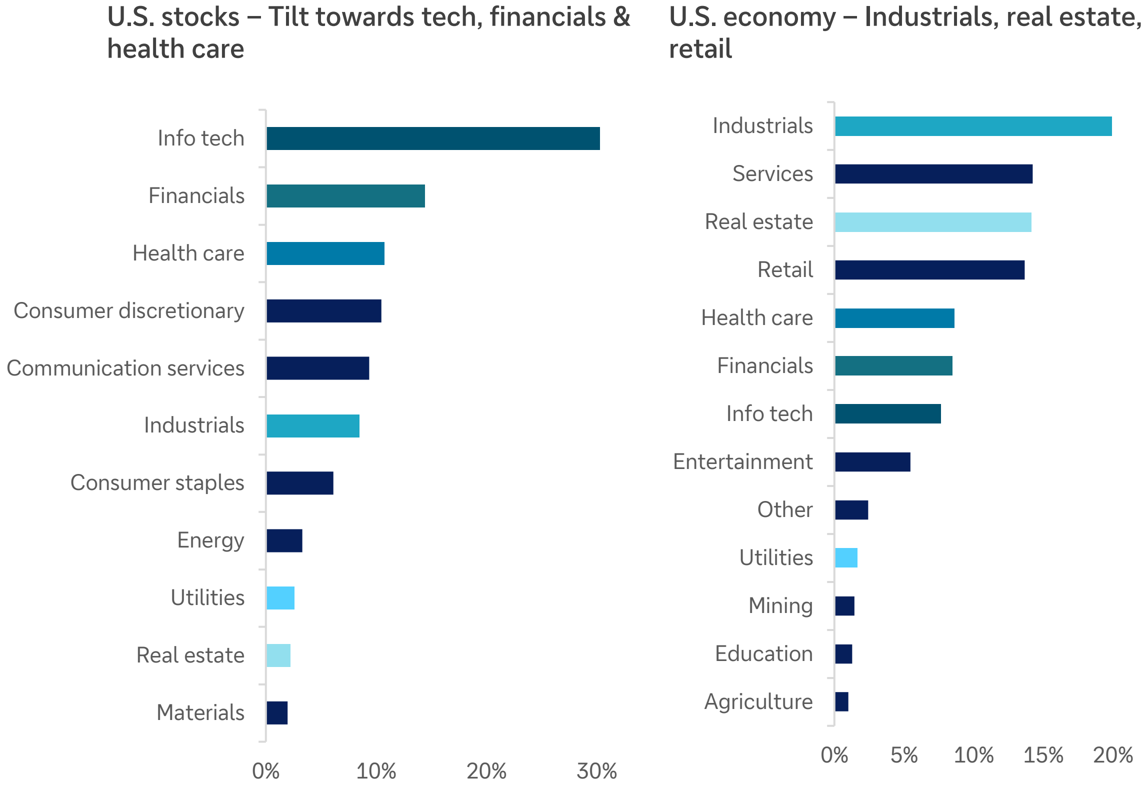
The diversification debate

Alternative investments are often proposed as a way of diversifying the investment exposure within a portfolio. There are many contributions in the literature that back this assertion such as Jackwerth and Slavutskaya (2016) and Nguyen et al (2020). At the same time studies such as Platanakis et al. (2019) and Welch and Stubben (2018) express doubt on the diversification benefits. Outcomes from these studies are made ambiguous by the choice and number of alternative asset classes considered in them, along with factors such as the choice of weights assigned to these asset classes.

Some point to the imperfect correlations of these asset classes with traditional assets as reason to expect diversification benefits in the context of Markowitz optimization. Even in this case, while some alternative asset classes have limited correlation with traditional assets, others still show meaningful correlation.

From our point of view the real value of alternatives is the access this segment provides to a **broader investment universe**, in which benchmarks are not dictating the factor exposure. Take for instance, the S&P 500, dominated by some sectors and not reflective of the sector exposure of the real U.S. economy (Figure 6). In this case (and elsewhere), a broad benchmark provides exposure to different companies in different sectors but represents only partial diversification since it is overweighting certain factors such as large caps, growth etc., and may also pose significant concentration risks. Alternatives potentially provide us with a significantly wider universe representative of the real investment opportunity set, diluting the factor biases of traditional asset classes. **Hence, a portfolio with a mix of traditional and alternatives will have the beta opportunity of the full risk factor universe.**

Figure 6: Public & private mixology – diversify away from blue-chips

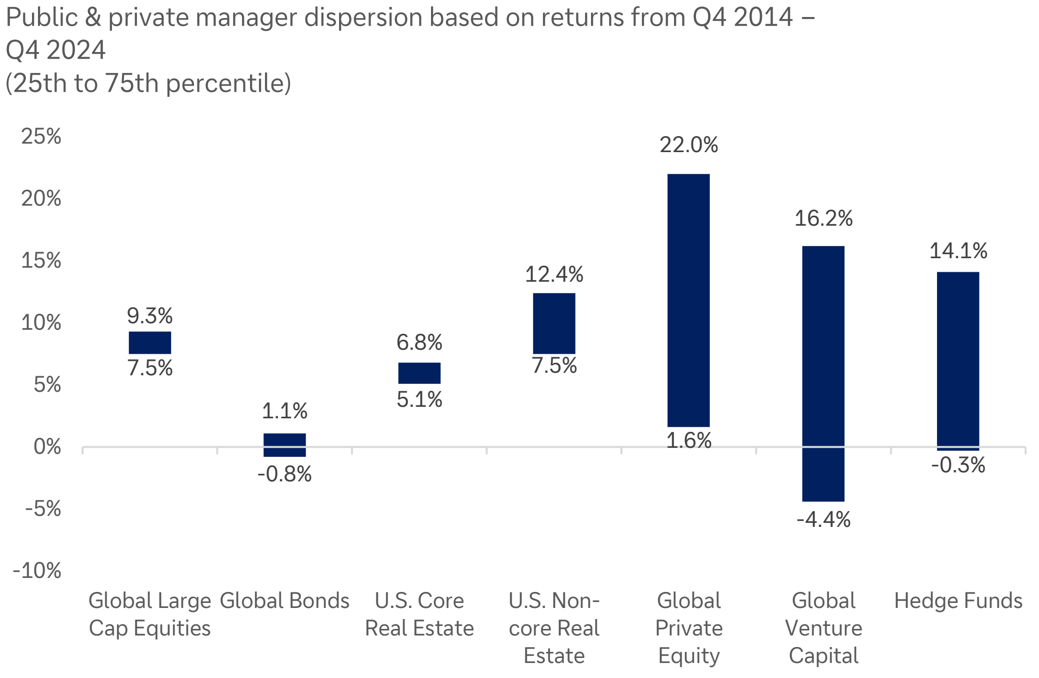


Source: LSEG Datastream, Bureau of Economic Analysis, Deutsche Bank AG. Data as of March 27, 2025.

As we noted above, some investors invest in alternatives in the belief that through this they can generate excess returns over a benchmark. But we do not see alternatives as a guaranteed route to generate such **alpha**. Outperforming the market is not an intrinsic ability of alternatives: rather, it is an outcome of asset manager performance, sometimes difficult to predict. Private market **manager selection** issues include the choice of passive vs active management. In public markets, passive investing typically refers to buy-and-hold strategies linked to market indices, while active investing involves stock-picking and attempts to outperform the market. In private markets, the distinction between active and passive approaches is more complex. Passive investors in private markets often have an asset allocation mindset, buying into businesses or sectors based on their allocation targets. On the other hand, truly active investors in private markets go beyond selection of investment transactions: they deploy substantial in-house and external resources to support management teams, aiming for stronger public market outperformance.

As Soni (2020) shows, alternative assets show a **return dispersion** between managers much greater than the traditional investment classes. Whilst the performance difference between managers at the upper end of the performance charts and those at the lower end hovers around 1-2ppts annually over the medium to long term for traditional stock and bond markets, this spread increases meaningfully for different alternative investments, rising in some cases to as much as 20ppts. To repeat, any alpha generated is not a given outcome for an alternative investment. Rather, it is a product of a manager's skill.

Figure 7: Alternative investments – the case for manager selection



Source: J.P. Morgan, Deutsche Bank AG. Data as of February 28, 2025.

When selecting managers, investors should consider their own investment goals and risk tolerance as well as evaluating a manager's sector expertise, operational capabilities, and alignment of interests. Active managers should demonstrate a deep understanding of their target sectors and a proven ability to drive operational improvements. A focus solely on past performance should be avoided, as past performance does not guarantee future returns.

Embedding alternatives in discretionary long-term views

Alternatives should not be considered as a tactical play within portfolios, but rather as an option for portfolios with a strategic view that embeds long-term capital market views into allocation decisions.

In our case, our discretionary portfolio management includes a long-term capital market view which quantifies future return assumptions. The basic idea is to have these long-term views embedded into a robust asset allocation process, with a core of traditional assets complemented by alternatives as satellites, so maximizing the beta available to be captured. If investors want to increase long-term return expectations, they can choose to increase their alpha opportunity by taking more alternative investments exposure.

Implications of #higherforlonger

We (and many others) expect a higher yield environment to continue for the foreseeable future. This, ceteris paribus, creates challenges for alternative asset classes like private equity, venture capital, real estate and infrastructure. High rates present a valuation risk but also affect managers who use significant amounts of leverage to add value. However, the industry has had a couple of years to adjust to this environment of higher for longer rates. Some valuation impacts have already materialized, opening investment entry points, for example in certain real estate segments. High rates have also not stopped a political drive to reinvest in infrastructure, with

Germany as prominent example, creating major opportunities in this space. For equity related investments, we think conservative managers may be best placed: relying less on leverage and more one achieving operational improvements, improving earnings quality and boosting growth potential.

Alternatives investment risks

These include liquidity risk (sometimes referred to as **illiquidity risk**). This is defined as the risk that investors will not be able to easily or quickly sell their investments to obtain liquidity. As discussed above, most alternative asset classes have a certain lockup period. Even with evergreen structures, investors may only attain partial liquidity. And, even if investors are allowed to sell their holding to other investors in certain cases, there is still a risk of not finding buyers ready to meet the valuations demanded or buyers at all. The implication is that investors may incur losses if they unwind the positions in case of sudden liquidity needs.

An additional concern is **pricing risk** or **return smoothing**. Unlike traditional assets which are priced regularly, some of the alternative asset classes are only “marked to market” on a periodic basis. Moreover, valuations are sometimes appraisal-based or self-reported. As noted by Ilmanen et al (2020) this tends to result in smoother returns, underrepresenting the true volatility and beta. These authors along with Welch and Stubben (2018), Stafford (2015) and Phalippou (2020) point to the possibility of a hidden preference for these smoothed returns by some institutional investors given the illusion they present of lower volatility. Therefore, research remains inconclusive on the existence of a liquidity premium.

Alternative investments, especially in private markets, suffer from a lack of disclosure and publicly available information. **Transparency/data risk** is a concern for regulatory bodies as well. Asset pricing is one example of this opaqueness. Even where transaction-based performance data is available, lack of information regarding aggregation methodology may hamper investors from making valid inferences. This problem is compounded by the so-called survivorship bias where failed assets or funds may drop out of the reported data, hence overstating their overall performance. Underperformers may also simply choose to not report performance. Investors are constrained by a lack of insight on reporting, meaning they may find it difficult to fully understand the risks and make informed investment decisions.

Other risks include **manager risk** – as we discussed earlier, alternative investments managers have significantly higher return divergence than public markets. As more capital flows into private markets, there is potential for **overcrowding risk** in certain sectors or transaction types, driving up asset prices and potentially reducing returns.

03 Asset classes overview

In this section we give a brief overview of the individual alternative investments we focus on.

Private equity

The largest asset class within private markets, this involves investments in privately-held companies, with managers typically taking controlling stakes and working directly with management to transform businesses over 3-5-year periods. Value creation in private equity stems from strategic repositioning, management enhancement, and operational improvements at the company level, generating returns through both earnings' growth and the expansion of valuation multiples at exit. The private equity spectrum includes several segments, with buyouts being the largest of them. While carrying higher risk due to issues around equity ownership and leverage, this asset class has the potential to outperform public equities, offering reduced volatility and low correlation with public markets during downturns.

Venture capital

A special type of private equity that provides young or small companies with access to funding before they earn revenues – perhaps even before they start operations. These are usually companies with a high-growth potential often in the technology sector or emerging industries. As the focus is on early-stage investments, there is an inherent risk that the operating model or product fails while an investor should also expect a long investment horizon. Investors earn a return when the company is subject to an Initial Public Offering (IPO), merger or acquisition and exits the funds. Usually, the funds invest into a wide range of ventures expecting that a least one will grow to such an extent that this will result in a large payout for the funds.

Private infrastructure

Private infrastructure represents investments in physical assets providing services critical to the economy and society. These can include transportation networks, energy generation and transmission, communication systems, water utilities, and social infrastructure like hospitals and schools, among others. These assets typically operate under long-term contracts or regulatory frameworks, generating stable, predictable cash flows. Additionally, infrastructure investments enjoy high barriers to entry and frequently feature inflation protection mechanisms. In portfolios, private infrastructure delivers diversification, low volatility and stable cashflows, via long-term contracts linked to essential services.

Private credit

Private credit is a form of lending in which specialized asset managers provide loans directly to companies without the intermediation of traditional banks. These loans primarily fund business growth and acquisitions. Investors in private credit can access instruments across the risk-return spectrum by gaining exposure to different parts of a borrower's capital structure. Within a diversified investment portfolio, private credit can serve as a yield enhancer, delivering an attractive income potential compared to traditional fixed income investments. The floating rate structure of many private credit instruments provides a hedge against inflation and rising interest rates.

Real estate

Private real estate encompasses investments in commercial, income-generating properties such as warehouses, multifamily housing, offices, hotels, and retail spaces. Key characteristics include reliable income generation through multi-year lease agreements, lower volatility than public REITs or equities, and competitive returns. Investment strategies cover a wide risk-return spectrum, including conservative core investments (high-quality properties with minimal leverage) and value-added approaches (properties requiring improvements with higher leverage). Within a portfolio, private real estate may provide diversification through its only moderate correlation with stocks and bonds, serve as an inflation hedge through adjustable rental income.

Hedge funds

Hedge funds follow a wide range of complex investment strategies in public markets and illiquid assets. **Equity long-short** strategies usually have a net-long equity exposure, whereas **market neutral** strategies usually have a balanced long-short exposure. **Event-driven** strategies invest focusing on a one-time event that is expected to have a significant impact on a company or an asset class. **Relative-value strategies** look into market data trying to identify inconsistencies and errors with regards to pricing individual securities. **Global macro strategies** aim to predict how forces ranging from economics, politics, warfare, weather, etc. might affect global markets. If any strategy is based primarily on quantitative analysis like finding and understanding patterns in large data sets using statistical and mathematical models it may be referred to as **quantitative strategy**. A **multi-strategy** can be based on a combination of the strategies mentioned above.

Commodities

Commodity investing usually involves buying physical assets like precious or industrial metals, bulk commodities, oil or agricultural products, although this implies storage necessities. Another way is to invest in commodities via derivatives like futures or derivatives-based structures like ETCs and certificates.

04

Strategic Asset Allocation (SAA)

Traditional SAA foundations

For the last six decades or so, asset allocation has had the idea of the efficient frontier as its historical starting point – the set of portfolios that is expected to offer the highest average return for a given level of risk. But as expected returns are not easy to forecast in reality, this approach was subsequently linked to the concept of a **global market portfolio**, weighted according to the total global capitalization of its individual asset classes. By construction, the global market portfolio takes a backward-looking perspective, as it makes the simplified assumption of stable historic asset returns; it is therefore complemented by individual investors' forward-looking views.

But, despite the longevity and apparent simplicity of these concepts, the global market portfolio is not completely straightforward to define. In reality, investors have to decide which asset classes they actually can and want to allocate into. The relative size of asset classes changes over time as their importance grows or fades. Real investors also face individual investment constraints and preferences that will make investing in a global market portfolio sub-optimal or even impossible.

While taking into account these caveats, the concept of an efficient frontier can nevertheless be used as a starting point in the search for an adequate strategic asset allocation, reflecting our objectives and limitations. However, the key challenge to address remains: How do we deal with the uncertainty of our assumptions? How do we build a portfolio that provides us with a good positioning in the trade-off between the two fundamental objectives of every investor: **robustness** on the one hand, and **efficiency** on the other?

- What we mean here by robustness is: we want to be resilient in the face of adversity. If our assumptions turn out to be wrong in an unwelcome way, we want to be able to "stay the course" and not be forced to undertake heavy market timing actions on our portfolio.
- And what we mean by efficiency is: we want to participate in favourable market conditions, which confirm our assumptions, as strongly as possible.

In any investment decision, we try to **balance our choices**. How confident are we in the validity of our assumptions, aiming to maximize return expectations in case they are precisely correct? And, conversely, how much skepticism do we want to build into the translation of assumptions into allocations, to provide resilience in case of negative surprises? Both confidence and skepticism come with benefits and disadvantages, which are complementary – but, interestingly, their trade-off is not symmetrical. Indeed, it is possible to design portfolios which show a significantly higher degree of robustness than the most efficient portfolio, which fully assumes its assumptions to be spot-on, while being only slightly less efficient. Robust investing – as we understand it – doesn't simply aim to maximize robustness, but to provide clarity on the tradeoff between robustness and efficiency, and to consistently support informed choices, which enable us to have almost the same benefit as the efficient portfolio when markets behave in line with our expectations, and strongly increased resilience when they don't.

Assumptions and uncertainty

In order to pursue a robust investment approach, we therefore need to complement our capital market assumptions with a deeper assessment of the nature and extent of their uncertainty. We cannot avoid this if we don't want to fall back on modelling approaches which are too simplistic in the face of real-world challenges. In our decision-making process for strategic asset allocation, we explicitly and quantitatively take into account the degree of reliability of all our assumptions – this is our key tool to build allocations which provide solid relative market participation in all circumstances, while avoiding strong bets on weak assumptions.

Including alternative investments in the SAA

As outlined above, the seemingly simplest, most fundamental investment objective – the construction of a well-diversified portfolio – is far from trivial. Because most alternative/private market investments include not only liquidity risk but also market risk, they may improve the potential degree of diversification and contribute to the robustness of the overall portfolio. They however also present the fundamental challenge of a portfolio allocation which a priori is difficult to assess with the quantitative analytical tools used for liquid portfolio components. Both for the construction of a robust portfolio allocation, and for the quantification of portfolio downside risk, quantitative portfolio analysis is however essential.

In order to overcome this challenge, certain simplifying assumptions have to be made when including alternative/private market assets in the strategic asset allocation. Firstly, in the assessment of risks and opportunities of this asset class in the portfolio context, we only consider their **market risk** contribution. Other material risks of the alternative/private market asset class – most notably, its liquidity risks – are not covered due to missing data, as the impact of such risks is highly dependent on the specific circumstances in which they become apparent. We assume that the market risk of alternative/private market investments is similar to public market investments of the same asset class. Therefore, we make an informed choice on how to reflect such portfolio components via liquid proxy positions, which are assumed to have similar systematic market risk exposure.

Considering the correlations between the individual assets in the portfolio construction is a strong advantage for the investor. But correlations work only in case of liquid markets on the level of market risk. Liquidity risk reflects the limited likelihood to sell an asset short term at a comparable market price.

Secondly, an important simplifying assumption is made on the topic of **investment time horizon**. The key characteristics of a strategic asset allocation – expected return, downside risk, volatility – are all usually formulated in terms of annual figures. When including liquid proxies to mirror the portfolio behaviour of alternative/private market assets, we assume that the investor has a long-term time horizon (typically around ten years) during which the assets will not need to be liquidated. If alternative/private market investments would have to be sold prior to their planned redemption, it's difficult to estimate to which degree transactions are possible and at which price. This is the case even in favourable market conditions, but much more so in unfavourable ones.

Liquidity risk dominates in the short term, market risk more relevant over the longer term

Public market investors knows how challenging it is to remain invested under all circumstances, resisting the pitfalls of eroding confidence amid heavily volatile markets, and to continuously follow the mantra "it's not about timing the market, it's about time in the market". Here, the alternative/private market investors actually have a structural advantage: The cost to divest their holdings in the short term can be prohibitive, or they might not be able to sell at all within the intended time horizon. And so, it is more obviously sensible – and therefore easier – for them to simply remain invested in these positions, no matter what. On the other hand, a significant market downturn may trigger undesired disinvestments of some part of liquid assets. Overall, if the alternative/private market investors has to sell part of their assets at a specific point in time, they will be negatively affected by the effects of illiquidity. In such a scenario, any potential diversification benefit modelled in the overall portfolio context must assumed to be close to zero and exceeded by liquidity risk.

Market risk might dominate over the longer term. On a longer time horizon, we can expect to see more transactions of private market investments. The liquidity increases to a level where we can consider these investments as liquid. If a transaction is not enforced by the seller or buyer but is in line with a broader “supply and demand”, it remains impacted by market risk. On this level diversification works and should be reflected in the asset allocation.

Dealing with infrequent pricing & appraisal values

One of the key challenges to alternative/private market asset investments is their inherent lack of transparency on pricing of past transactions. This issue is twofold: As private market asset trades don’t take place on public trading platforms, but between direct counterparts, published past transaction values are by nature less reliable. But another matter has even more impact on transparency: trading volumes in private market assets naturally run dry in adverse markets, due to the cost of liquidity in such circumstances (as outlined above). Therefore, if we rely only on the published data of past transactions, we obtain a skewed picture of the valuation behavior of such assets. It is quite a common belief that alternative/private market assets show more resilience in the context of heavy downturns than publicly traded assets – this could be a misconception owed to the fact that they are very rarely traded in dire circumstances, leading to a lack of pricing information in market crises.

Therefore, in order to approximate the valuation behavior of private market assets as realistically as possible in the portfolio context, we resort to using **liquid public market proxies**, as described above. This necessary simplifying assumption is of particular importance for the estimation of downside portfolio risks in extreme markets, which are crucial for investors to assess whether they can realistically hold on to their strategic portfolio allocations during an extreme downturn, or if they might find themselves in the very unwelcome situation where losses exceeding their risk tolerance might lead them to sell risky assets amid market turmoil.

Focus on robustness

Robust investing is a fundamental objective for every investor – whether we focus on liquid or illiquid assets. We want to follow our convictions, but we also want to stay in the game if our expectations turn out to be wrong. If those objectives are so widely accepted, what makes robust investing so challenging? In principle, most investors are fully aware that they are facing uncertainty when taking investment decisions, but very often this understanding is blurred by an over-reliance on past performance. Psychologically, it is quite tricky to not be too convinced by our own convictions.

This is why we follow a quantitatively supported robust investment process. This stands in contrast to many competitors, who tend to adhere to more common approaches which address the challenge of uncertainty through heuristics and qualitative assessments, while lacking the analytic transparency provided by an explicit, quantitative differentiation between the reliability of different forecasts. By including uncertainty assumptions into our investment process, we can make more informed and consistent judgements on investors’ key trade-off: The balance between the pursuit of investment efficiency (achieving maximum expected return for a given, acceptable estimated risk – assuming our capital market assumptions are exactly right) and the desire for robustness (achieving minimum negative impact on the future returns of portfolios which – a priori – have similar estimated risk, in case – a posteriori – our capital market assumptions turn out to be wrong).

In relation to alternative/private market assets, the aspect of uncertainty becomes even more relevant: On the one hand because the scarcity of historic performance and correlation data makes any forward-looking assumption even more unreliable; and on the other hand, because we need to apply our assumptions to the extended time horizons typically required for the ownership of such assets. The farther away we attempt to look through clouded glasses, the more difficult it becomes to distinguish the direction of the path ahead. So, taking into account the degree of uncertainty on our assumptions for private market assets is crucial to deal with the basic human propensity to over-bet on our own convictions – which, quite astonishingly, often show a tendency to become stronger, the less we actually know. Hence, the process becomes even more important.

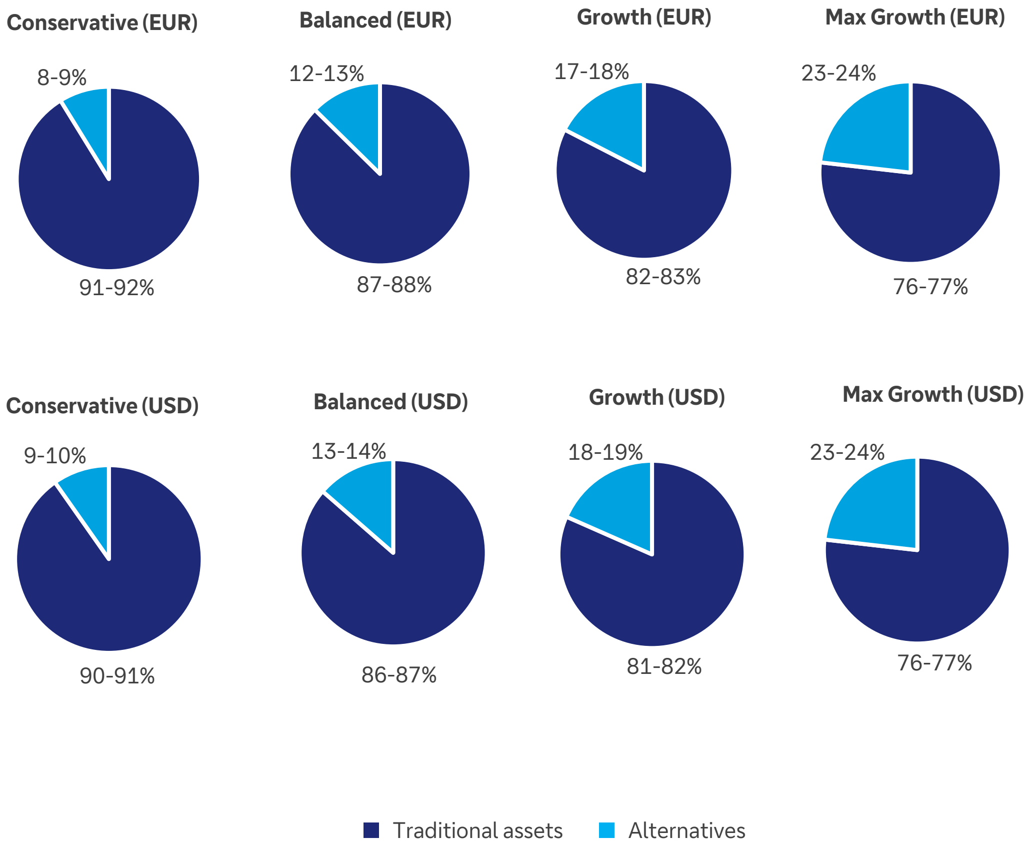
Robust portfolio construction

Building a portfolio requires us to deal with the uncertainty of our assumptions and, to some extent, trading off robustness for efficiency. As with any investment decision, we need to balance our choices and complement our capital markets by an assessment of their uncertainty. Constructing a well-diversified portfolio is a complex business, but alternative/private market investments may improve the potential degree of diversification and contribute to portfolio robustness. We follow a quantitatively supported robust investment process which includes uncertainty assumptions to make informed and consistent judgements on key investor trade-offs. The issue of uncertainty is very important for both traditional and alternative asset classes but can be managed with strong processes and guidance.

Specific use of Alternative investments in the Strategic Asset Allocation

Bringing it all together, alternative investments play a prominent role in DB's strategic asset allocation (see Figure 8). Alternative allocations range from 8% to 24% for various risk profiles as a result of quantitative guidance from our proprietary approach to robust asset allocation (described in this chapter) along with extensive strategy insights into the alternative investment space based on academic research and market expertise. Overall, we believe alternative investments deserve a significant allocation by investors who understand the complexities of the respective sub asset classes and are willing to tolerate illiquidity.

Figure 8: Alternative investments in the Strategic Asset Allocation by risk profile



Source: Deutsche Bank AG. Data as of May 14, 2025.

05 Concluding remarks

The dynamic evolution of alternatives is remarkable and involves a compelling set of opportunities along with challenges. As outlined, we see clear benefits in investing in alternative assets along with liquid traditional asset classes. Our main goal is to increase portfolio diversification via building additional risk factors and sources of return into liquid-only portfolios. Moreover, integrating alternative investments into the strategic asset allocation has the beauty of managing the degree of passive market risk and return vs. active returns according to the long-term outlook for the main asset classes. Our robust strategic asset allocation approach based on strictly forward-looking return features and market risk analysis provides a sound foundation for our conviction in alternative investments.

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Glossary

Alpha describes the extra return of an investment compared to the corresponding broad market index.

Diversification refers to the dispersal of investments across asset types, geographies and so on with the aim of reducing risk or increasing risk.-adjusted returns.

The **efficient frontier** is determined by the set of portfolios that offer the highest level of expected return for a given level of risk or the lowest level of risk for a given level of expected return.

Equity long/short strategies take long positions in securities that are expected to strengthen, and short positions in those that are expected to weaken.

Exchange Traded Commodities (ETC) are derivative instruments which do not require direct trading in the underlying physical commodities or futures markets.

Evergreen funds are open-ended funds with no fixed-end date. Unlike traditional alternative investment funds which lock-up capital for a number of years, evergreen structures allow periodic investment/redemption of capital and generally have a lower minimum investment requirement. They are semi-liquid in nature given the caps on redemptions.

Hedge funds are alternative investment vehicles using pooled funds that may use a number of different strategies in order to earn active return for their investors.

The **illiquidity premium** is the excess return on an illiquid investment, to compensate for illiquidity.

Private equity refers to funds and individuals investing directly in private, non-listed companies.

Private infrastructure provides assets and services needed by an economy (e.g. energy, transport, water, social, digital) through private capital rather than government-linked organisations.

A **Real Estate Investment Trust (REIT)** is a company that owns, and in most cases operates income-producing real estate. REITs trade like a stock on the major exchanges and invest in real estate directly, either through properties or mortgages.

The **S&P 500 Index** includes 500 leading U.S. companies capturing approximately 80% coverage of available U.S. market capitalization.

A **spread** is the difference in the quoted return on two investments, most commonly used in comparing bond yields.

A **strategic asset allocation (SAA)** process involves setting preferred allocations for asset classes on a medium to long-term time horizon.

USD is the currency code for the U.S. Dollar.

Valuation attempts to quantify the attractiveness of an asset, for example through looking at a firm's stock price in relation to its earnings.

Venture capital (VC) is a type of private equity financing, typically to small, early-stage, emerging firms.

Volatility is the degree of variation of a trading-price series over time.

Appendix

Historical performance

Performance	21.5.2020 - 21.5.2021	21.5.2021 - 21.5.2022	21.5.2022 - 21.5.2023	21.5.2023 - 21.5.2024	21.5.2024 - 21.5.2025
S&P 500	40.9%	-6.1%	7.4%	26.9%	9.8%
Bloomberg Private Capital Index	30.5%	25.6%	-0.3%	3.2%	3.8%
Bloomberg Buyout Private Equity Index	42.4%	27.4%	1.9%	6.9%	5.4%
Bloomberg Venture Capital Index	60.1%	27.7%	-20.6%	4.2%	0.5%
Bloomberg Debt Private Equity Index	18.7%	13.2%	0.6%	10.8%	5.5%
Bloomberg Real Estate Private Equity Index	9.0%	32.4%	-1.0%	-11.2%	1.5%
Bloomberg Real Assets Private Equity Index	4.9%	19.2%	12.6%	-2.2%	6.1%
Bloomberg U.S. Aggregate Index	-0.5%	-8.2%	-2.4%	2.2%	3.8%
Bloomberg Commodity Index	44.4%	43.9%	-19.6%	11.7%	0.5%

Source: Deutsche Bank AG, Bloomberg Finance L.P., LSEG Datastream; Data as of May 21, 2025.

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