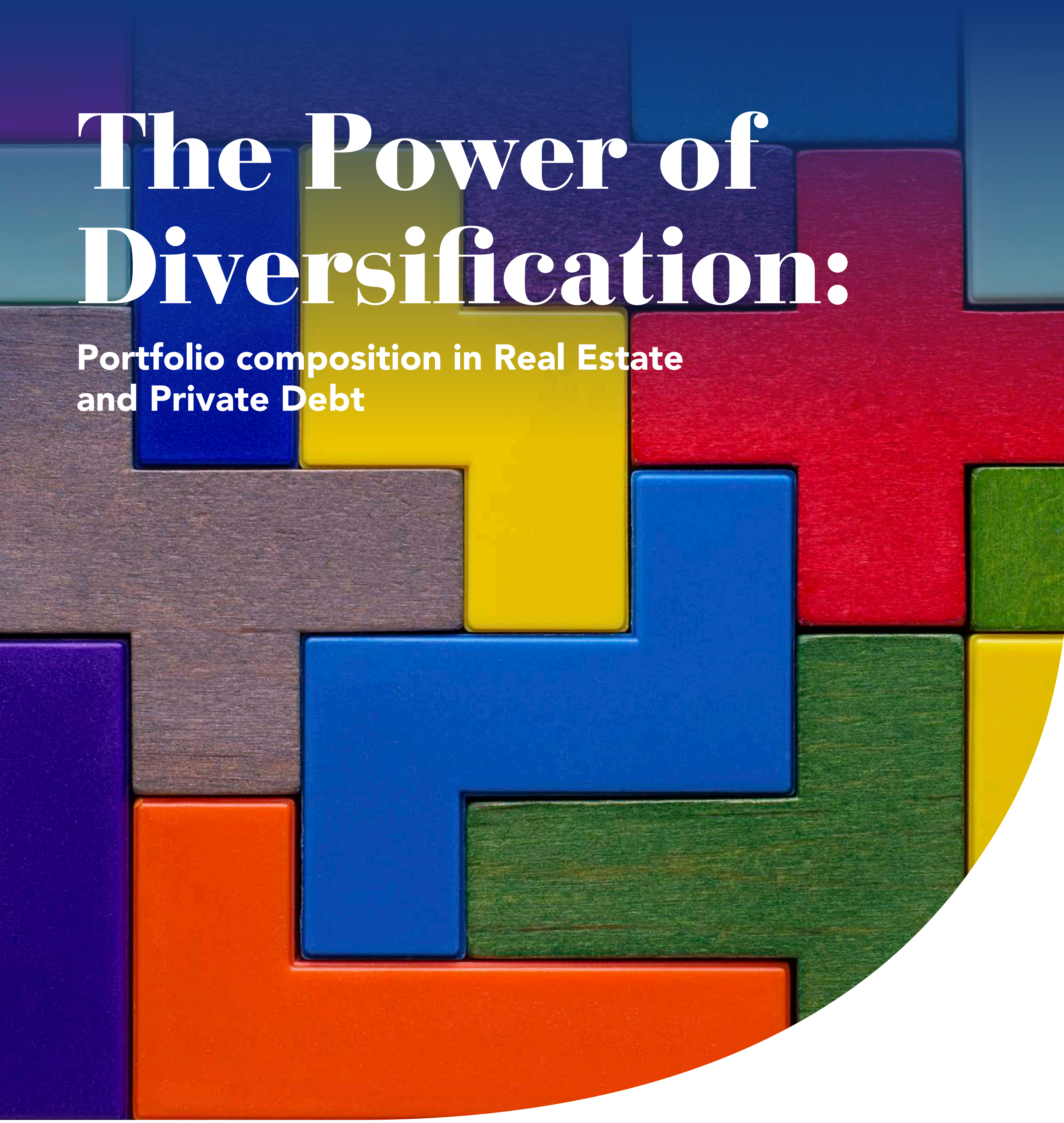

The Power of Diversification:

Portfolio composition in Real Estate and Private Debt

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Economist Harry Markowitz's seminal 1952 essay on modern portfolio theory argues that through careful diversification, a portfolio can reduce the 'specific risk' associated with individual holdings, and more effectively track wider market performance. In this paper, however, we outline why Markowitz's theory has limited practical application in private markets, and instead lay out an alternative approach to diversification that we feel is better suited to real estate and private credit.

- **For real estate debt investors tracking the market is as good as impossible – because there is no benchmark. Loans are not valued (marked-to-market) either so there is no measurable volatility in investment values over time. The lack of liquidity for loans means that they are held on the books at par, unless impaired.**
- **Where there is no observable market return there is no way to determine whether diversification has been achieved. The objective of diversification for private credit portfolios is therefore focused on reducing 'specific risk', without aiming to track an elusive market return.**
- **But the principle that diversification reduces the impact of 'specific risk' still holds. All your eggs should not be put in the same basket. But how many baskets you choose to use depends on a trade-off between costs and benefits. The higher the 'specific risk' of an investment, the greater the risk that the investment's performance may deviate from its anticipated path, but also the greater the potential benefit from diversifying a portfolio of such investments.**

Real estate debt can act as a significant diversifier in institutional investment portfolios. It can be viewed as a defensive real estate play, as well as an illiquid form of credit. Furthermore, the relative lack of correlation between senior real estate debt and other asset classes has great potential to reduce overall portfolio volatility.

The performance of real estate debt over the last couple of years, particularly when compared to real estate equity, has shown how the uncorrelated nature of the returns available in the asset class can be of enormous value to investors. But the question remains: how important is diversification within the real estate and real estate debt portfolios themselves?

When real estate investors are faced with significant market corrections – such as the 2008-09 global financial crisis, the Covid-19 pandemic, or the recent surge in interest rates – investment returns can be similarly hit across all sectors. Under such market conditions the casual observer may struggle to see the benefit of owning a diversified pool of assets. After all, if all assets are affected, might an investor not be better off sticking with a more concentrated portfolio?

To answer this question, we take a closer look at the theory and practice of portfolio construction for real assets.

The foundations of modern portfolio theory were established by economist Harry Markowitz in his seminal 1952 essay on the subject. According to Markowitz, the level of risk in any investment can be defined by the volatility of the returns it delivers. By combining investments in different but uncorrelated asset classes, he argues, the behaviour of the overall portfolio becomes less volatile – and, as a result, can better achieve a given target return.

When applied to public markets, Markowitz's theory makes it clear that through careful diversification, an investment portfolio can reduce the 'specific risk' associated with individual holdings, and more effectively track wider market performance.

In this paper, however, we will outline why Markowitz's mathematical approach has limited practical application in private markets, and will instead lay out an alternative approach to diversification that we feel is better suited to real estate and private credit.

Getting a measure of risk

The lasting popularity of Markowitz's theory lies in the simplicity of his definition of risk. However, practical application of the theory assumes a stable and efficient market of daily traded instruments (which represent a share of the underlying company) to make accurate measurements of return volatility.

The real estate market, in contrast, is:

- Inefficient;
- subject to significant periodic instabilities; and
- confined to unique single ownership of real estate assets that change hands only every few years or so.

Any research into real estate diversification uses volatility in asset valuations as a proxy for risk. Most institutionally-held property is subject to quarterly valuations made through desktop analyses – not trading data. By definition, you cannot have trading data on the assets that make up a private portfolio because – unlike listed stocks – no two investors hold the *same* real asset (generally, no two investors can own the *same* building). Therefore, any trading data related to real estate typically pertains to assets owned by third parties.

Private real estate valuation data is therefore influenced by the limited trading information available to the valuer relating to similar assets. It is quite possible that two buildings on the same street with superficially similar characteristics, could sell for wildly different prices, even on the same day. Valuations differ from actual selling prices regularly, though this difference is larger in some parts of the cycle than others.

It is also important to remember that real estate cannot be sold on the date of a particular valuation – it often takes many months to sell assets, particularly large assets. It therefore soon becomes apparent why investors do not rely on the volatility of historic valuations to gauge risk in real estate transactions.

Scenario-based risk assessment

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Real estate is a depreciating asset – it requires capital expenditure or it will lose value. Remaining lease terms get shorter, and the physical fabric of the building deteriorates over time. It means that every piece of real estate has a level of 'specific risk' that is unique to each asset. It also means that what might be classified as a core[1] asset today could find itself viewed as a core plus[2] or value-add[3] property in the future.

[1] **Core** real estate investments are high-quality, low-risk assets that offer the most stable and consistent cash flow. These properties are typically fully leased buildings in high-quality locations.

[2] **Core plus** properties are not as stable a proposition as core real estate, but they are also not in need of a total overhaul. They generally have a greater amount of untapped potential. For example, owners can often increase cash flow through light renovations, improving management efficiencies and managing quality of tenants.

[3] **Value-add** opportunistic properties are typically in need of greater overhaul through renovations, rebranding and other operational efficiencies to increase an asset's cash flow.

Investment risk can be broken down into two principal categories:

- **Market risk** – affecting the performance of the entire market simultaneously.
- **Specific risk** – relating to the performance of a particular asset.

It's worth adding that 'specific risk' in real estate investment is not just limited to the physical property itself. It goes without saying that different owners will choose to make different management decisions with regard to their assets. Some owners will look to maintain a property to the highest standard and seek premium rents. Others may choose to invest less, and target the mid-market segment. Such decisions will affect the overall value of a property and the return an investor can expect over the hold-period of the investment. It underscores why many lenders place great value on a particular owner's track record and business plan.

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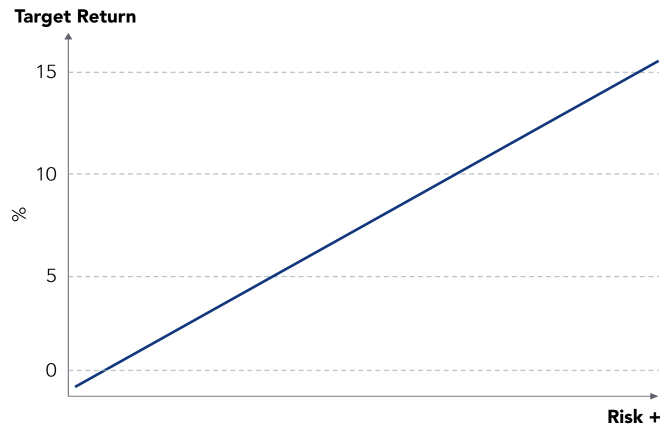
In real estate, much of the 'specific risk' is driven by events – such as if a particular tenant renews their lease or not. Such concerns are forward looking, and solutions cannot be found by looking at historic valuations of the asset. Our approach to specific risk *ex-ante*[4] is, therefore, underpinned by scenario-based forward-looking risk assessment.

Loan underwriters seek to weigh up all possible outcomes for a particular asset – taking into account depreciation, planned capital expenditure, event risks and so on. Credit rating models then attempt to quantify these risks as they apply to the loans. The rating is in effect a judgement on both the likelihood of the risk materialising and the impact it would have on future returns. Both analyses are difficult to conduct accurately, but once the loan is rated, investments in a portfolio can then be charted along the horizontal axis of the risk-return chart. As Figure 1 illustrates, the greater the risk taken, the higher the required return.

Figure 1: The greater the risk taken, the higher the 'required' return.

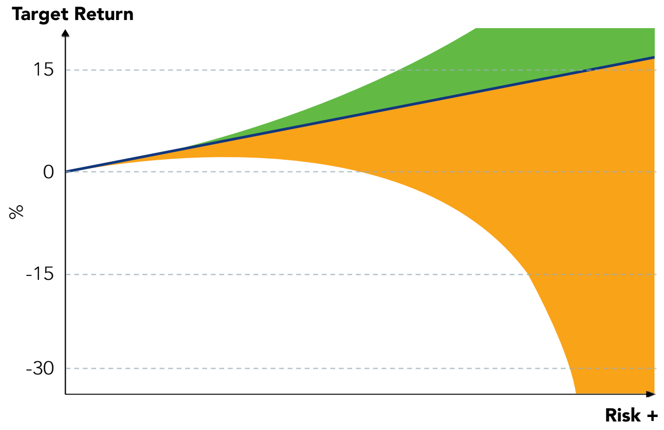


Source: Federated Hermes. For illustrative purposes only.

However, 'actual' return outcomes can sometimes be very different from the 'required' return.

The graph below is, therefore, potentially a better conceptual representation of the variation of possible outcomes, including profit as well as loss. Actual returns can fall anywhere in the shaded area – as we can see, some will outperform the required return (shaded green), while others will underperform (shaded yellow).

Figure 2: Possible outcomes vary more widely the higher the risk



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On the basis that property is typically held for several years, where the actual returns end up – according to the range of outcomes in Figure 2 – depends on both market risks and specific risks.

The specific risks can be many or few – whether or not an investor obtains planning permission, for example, can have a significant impact on returns.

The challenge with this approach is that it does not lend itself easily to quantification. But what is clear is that the higher the risk of an investment, the higher the possibility that it might not achieve the required return.

Correlation between assets

In line with Harry Markowitz's portfolio theory, for diversification to effectively reduce 'specific risk' in any given portfolio the different assets in the portfolio should have a limited covariance.[5]

It could feasibly be the case in more specialised strategies – for example, London offices, or in highly-rated senior loans – that the correlation between the different assets is actually quite high.

[4] Translated from Latin, **ex ante** means 'before the event'. It refers to future events that are based on forecasts or predictions rather than concrete results. Ex-ante can be used to describe the potential returns of a particular asset.

[5] Covariance is a measure of the relationship between two random variables and to what extent, they change together.

Strategies that focus on certain sub-sectors carry as 'market risks' the risks that a broader strategy might be able to reduce through diversification.

The challenges that face the office real estate sector – following the Covid-19 pandemic and the shift to home working – could be viewed as a 'specific risk' for an investment in an office building which was part of a wider portfolio that also included logistics and residential assets.

However, if the aforementioned office building was part of an investment strategy focused solely on office space, then amid the challenges facing the office sector, it could be viewed as a 'market risk'. Any attempt to diversify this office-focused portfolio across various office assets would not reduce this risk in any material way.

Research suggests that real estate equity strategies can best achieve returns throughout the cycle by seeking to find an effective mix of property assets with a wide array of heterogeneous attributes.[6]

Such conclusions support the view that real estate is not a commodity: an individual property is unique in comparison with another when all factors – such as location, age and size of property, tenant concentration, quality of fit-out, energy efficiency and so on – are taken into account.

While big market corrections can sometimes impact all properties negatively, this research highlights that:

- Real estate is not a commoditised market.
- Achieving throughout-the-cycle returns depends on the right mix of assets.

Furthermore, the more 'asset management intensive' a property is, the more likely that the investment outcome is driven by risks specific to that asset . It potentially suggests a lower correlation between 'asset management intensive' assets that each carry their own specific set of risks. It is this heterogeneity that makes diversification valuable, even in specialised property portfolios.

Senior loans, meanwhile, benefit from a material equity buffer in the capital structure, protecting against all but the worst value movements in the underlying real estate. It implies significantly higher levels of correlation between different loans – although the loans do retain some exposure to specific risks. If a property's only tenant moves out, for example, the senior lender also suffers a disruption in income, even if the loan is ultimately fully recovered by a sale of the asset.

Therefore, it would appear that the lower the leverage and the higher the interest cover, all else being equal, the lower the 'specific risk' in a senior loan and, as a result, the less potential benefit can be achieved from diversification.

The benchmark problem

Diversification can be regarded as successful when the portfolio tracks the market performance (regardless of whether it requires five or 50 assets to achieve this). If the purpose of diversification is to build a portfolio that is primarily exposed to 'market risk' – with limited exposure to the 'specific risk' inherent in its underlying investments – it is important to understand what market (or benchmark) is being used to compare performance.

In equities, there is a clearly defined universe of publicly-listed stocks. All investors can own the same stocks and the number of shares held can be increased or decreased.

In real estate, the market is less well defined, but is typically still represented by a benchmark. However, investors cannot own the assets in the benchmark. If a particular building is owned by one investor, that asset is excluded from the investable universe of all other investors.

Furthermore, real estate 'ticket size' – the size of an individual investment – depends on the actual size and value of the building in question. An investor may want to have a certain level of exposure to a particular building, but real estate investors can only ever own the entirety of the building or none of it (joint ventures are possible but still leave an investor a long way from being able to fine-tune a holding size).

Real estate benchmarks are therefore made up of assets owned by other investors and cannot be replicated. The investable universe is by definition distinct from the benchmark. At best the benchmark is therefore a portfolio of comparable assets: it is not 'the market'. Tracking the market return is thus difficult for real estate investors.

> **For real estate debt investors tracking the market is as good as impossible – because there is no benchmark at all.**

For real estate debt investors tracking the market is as good as impossible – because there is no benchmark at all. Loans are not valued (marked-to-market) either so there is no measurable volatility in investment values over time. The lack of liquidity for loans means that they are held on the books at par, unless impaired.

Where there is no observable market return there is no way to determine whether diversification has been achieved. The objective of diversification for private credit portfolios is therefore focused on reducing 'specific risk', without aiming to track an elusive market return.

[6] See Reid B. (2019), 'Risk Reduction and Tracking Error in Small Commercial Real Estate Portfolios', the *Journal of Portfolio Management, Real Estate Special Issue.*

[7] Assets with a lot of asset management requirements, have a lot of potential outcomes, and therefore carry more risks than those associated with just property. As a result, portfolios of such assets would likely benefit from higher granularity (i.e. more diversification).

How to diversify a real estate debt portfolio?

Taking all of the above into account, we can streamline our aim with regard to real estate debt: how can we practically reduce the impact of 'specific risk' on portfolio performance?

To answer this question we need to know how many assets are required to materially reduce this 'specific risk'.

In a market characterised by the heterogenous nature of the investment, diversification benefits could be had even from spreading investments over as little of five properties.[8] More specific risk is diversified away when holding over 200 assets, but managing a portfolio of such a size presents enormous complexity.

It raises the important question of how much risk is imported into any portfolio by complicating portfolio management. Holding very granular portfolios of physical assets requires larger management teams. When portfolios are hit by market risks, it is important that the fund manager can manage its positions, which would become increasingly difficult in a highly granular portfolio.

The revised risk and return chart above (Figure 2) highlights the fact that the further we move right on the chart, the higher the variation of possible outcomes on each investment.

If this variation is driven by 'specific risk', the benefit of diversification will be higher. Losses on one asset could be largely offset by profits from other uncorrelated assets. The reverse also holds; safer investments with lower 'specific risk', have less need for diversification.

If we focus on senior real estate loans – where the returns typically stray from expectations only if the underlying property significantly underperforms its underwriting – there may be good reason to believe that correlation between loans is high, and the level of 'specific risk' is low.

Therefore, we can draw the conclusion that for defensive senior loans a highly granular portfolio (as opposed to a portfolio composed of around 10 investments) may fail to reduce 'specific risks' by much while it may add significant management risk. If macroeconomic shocks hit the portfolio, the fund manager of the highly granular portfolio has a whole raft of investments to take into account.

In a more concentrated portfolio, the value at risk may be similar, but it would be much easier to manage. Much more benefit would be derived from diversifying lower-rated credits, particularly when their lower rating is driven by 'specific risks'.

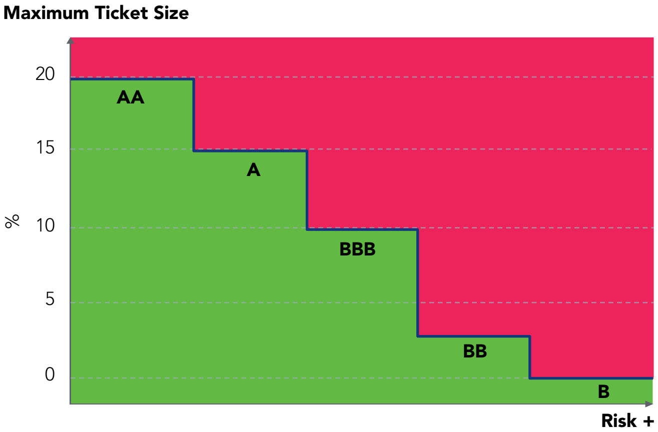
The implications for portfolio construction are as follows: managers should limit the size of loans (or the proportion of the portfolio AUM that they represent) based on their risk (or credit rating).

In certain rating bands, we may be happy with a loan constituting 20% of the total portfolio. In other rating bands we may want to limit exposure for a single loan to 15%, 10% or even as little as 5% or 2%. In senior loan portfolios the largest two loans may represent as much as 30% of the total pool, even if we end up with 20 positions or more in the overall portfolio. However, provided that these two loans are the strongest credits in the portfolio, this level of portfolio skew can be acceptable.

The concept is shown in Figure 3 below, where the line represents the maximum allowable ticket size (expressed as a percentage of total portfolio size) at any given risk level, and individual loans can be plotted into the chart.

All investments that end up in the portfolio should ideally fall into the green shaded area of the chart. An investor with a higher risk tolerance may move the line up in any ratings band or may construct more of their portfolio towards the right end of the green shaded area of the chart.

Figure 3: Portfolio skew in an ideal world
The higher the credit rating, the higher the allowable ticket size per investment



Source: Federated Hermes. As at 31 March 2024. For illustrative purposes only.

Please note, target returns are different from actual returns.

The chart illustrates how a loan that sees its credit rating deteriorate over time may become a problem in the portfolio. The loan size may not have changed, but at the lower rating the appetite to hold that risk at size has reduced (independent from what the loan may pay in interest or fees). If our lower-rated loans have higher interest rates than our higher-rated loans, it also means that our largest positions earn us the lowest return, but their lower risk is why we are happy to hold them in larger tickets.

[8] See Reid B. (2019), 'Risk Reduction and Tracking Error in Small Commercial Real Estate Portfolios', the *Journal of Portfolio Management, Real Estate Special Issue.*

Conclusion

We still favour diversification in our portfolio, but it feels like we are a long way from Markowitz's mathematical approach.

Real estate uses valuations, not trading data, to measure volatility, whereas private loans are not marked-to-market at all. Therefore, there is no observable volatility to indicate risk levels for loans.

The depreciation of real estate assets combined with the significant corrections in the real estate market that periodically arise can also make it difficult to judge risk going forward based on the valuation trajectory of investments in the recent past.

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The private nature of the assets makes them generally mutually exclusive. It means the market return is not observable. Therefore, we cannot ascertain whether diversification has been achieved. Given this, a forward-looking scenario-based risk analysis is our main approach to judging risk.

But the principle that diversification reduces the impact of 'specific risk' still holds. All your eggs should not be put in the same basket. But how many baskets you choose to use depends on a trade-off between costs and benefits.

The higher the 'specific risk' of an investment, the greater the risk that the investment's performance may deviate from its anticipated path, but also the greater the potential benefit from diversifying a portfolio of such investments.

In a portfolio of illiquid private assets, such as bilateral senior real estate loans, the highest risk loans (the lowest-rated loans) should be taken on in smaller ticket sizes than the more highly-rated loans. Linking credit ratings and ticket size (as a proportion of the total portfolio size), gives investors a practical approach to portfolio construction for private asset classes that Markowitz's theory cannot provide.

Figure 4: How many baskets do your eggs require?

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