

The Journal of

PRIVATE MARKETS

Investing

Special Section
Private Credit



PORTFOLIO
MANAGEMENT
RESEARCH

with. Intelligence

Fall

2025

Volume

24

Number

1

pm-research.com



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Public versus Private Real Estate: Portfolio Construction Considerations

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KEY FINDINGS

- Listed and direct real estate offer diversification benefits relative to both equities and each other. As a result, instead of thinking of public and private real estate as substitutes, asset allocators need to consider broader portfolio considerations in order to determine the appropriate allocations to direct and listed real estate.
- Listed real estate offers liquidity, whereas owning direct real estate assets offers control. Asset allocation decisions need to consider the liquidity needs of the underlying portfolio in determining the appropriate allocations.
- The diversification benefits of different types of real estate diminish during periods of financial market stress. As such, investors need to consider both longer-term gains while also ensuring that portfolios can withstand any shorter-term declines.

ABSTRACT

The authors examine the relationship between the returns of different types of public and private real estate investments and the extent to which they should be considered substitutes in a multi-asset portfolio context. The authors then use principal component analysis to gain insights on the distinct drivers of return across private real estate, listed real estate, and equities. They examine the commonality of return drivers over the longer term, but also at points of market stress, and demonstrate that the investment returns of public and private real estate exhibit material deviations over shorter time periods. They conclude that instead of thinking of public and private real estate as substitutes, asset allocators need to consider broader portfolio considerations, including the size of the allocation, the objective of the investment, and potential liquidity needs.

The importance of a private markets allocation within a diversified portfolio is now fairly well understood. Within the real estate allocation, however, we find there exists a lack of understanding of the relative characteristics of listed and direct real estate, leading some investors to hold the erroneous belief that listed and direct real estate exposures provide similar diversification benefits. The purpose of this article is to help investors better understand the portfolio considerations around different types of real estate investment exposures.

In the first part of this article, we seek to provide a practical understanding of the different types of real estate investments available to investors, looking at not only how returns are derived but also the differences in risk characteristics—both of which are important considerations in portfolio construction.

In the second part of this article, we build on the practical distinctions by providing a statistical analysis of the returns provided by different types of real estate investments, examining the extent to which listed and unlisted real estate investment vehicles can be considered substitutes. We use principal component analysis to examine the statistical relationship between the returns of public and private real estate investments, and to assess the diversification benefits that these different real estate exposures offer relative to equities. In so doing, we provide empirical evidence of the extent to which listed and direct real estate can be considered substitutes in a multi-asset portfolio context. We examine the commonality of return drivers over the longer term, but also at points of market stress, and demonstrate that the investment returns of public and private real estate exhibit material deviations over shorter time periods.

Having established the quantitative differences between public and private real estate returns, we then look at the explanatory factors that drive these differences to provide intuition for investment considerations.

We conclude by offering investment considerations for allocating across the different types of real estate in a multi-asset portfolio context. A key finding is that instead of thinking of public and private real estate as substitutes, asset allocators need to consider broader portfolio considerations, including the size of the allocation, the objective of the investment, and potential liquidity needs, in order to determine the appropriate allocations to both direct and listed real estate.

THE GLOBAL MARKET FOR REAL ESTATE INVESTMENT

Before discussing how to consider investing in real estate, it is useful to first provide context as it relates to some of the complexities of real estate as an asset class, generally. The global institutional market for real estate investment covers a variety of property sectors across a number of countries, and different measures of the global real estate market present different pictures depending on the source:

- Jones Lang LaSalle's (JLL) Global Real Estate Transparency Index (2024) assesses 89 countries and 151 global cities on six criteria.
- MSCI's Global Property Index represents the key institutional real estate exposures held by managers of direct real estate and direct real estate funds. This index covers 27 of the countries covered by JLL (primarily the most transparent).
- In listed real estate, the FTSE EPRA Nareit Developed Index covers 22 countries, whereas the full FTSE EPRA Nareit Global Index covers 39 countries.

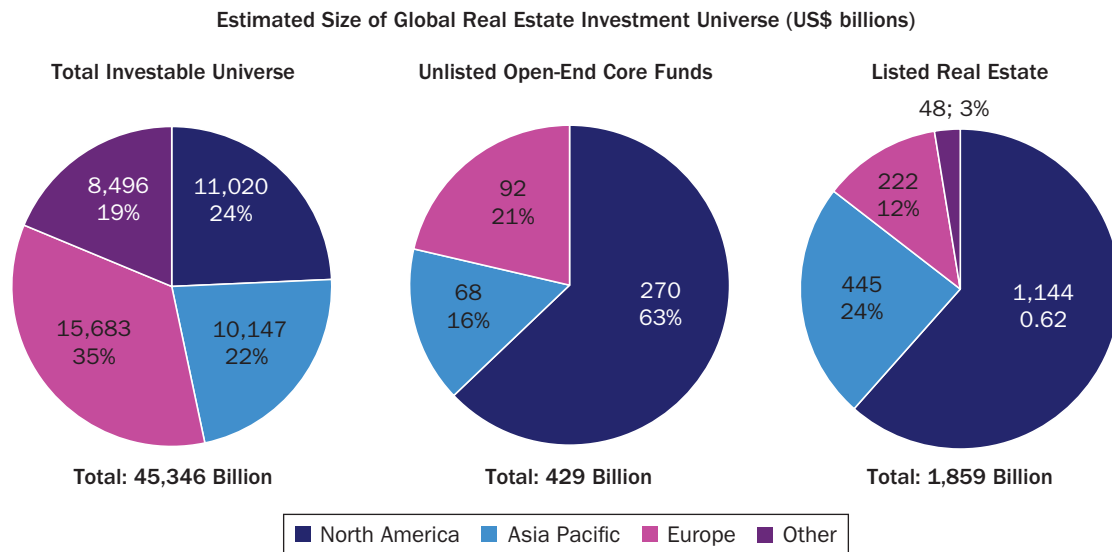
Within each of these real estate markets, definitions of the underlying sectors and subsectors of real estate are also inconsistent.

- The National Council of Real Estate Investment Fiduciaries (NCREIF) breaks down the NCREIF Property Index (NPI) into 35 subsectors.
- The Urban Land Institute (ULI) breaks down the real estate market into 27 subsectors in North America (PwC 2025b), or 28 subsectors in EMEA (PwC 2025a).

Although real estate is a global asset class, the analysis in this study relies exclusively on US listed and unlisted real estate market data. This is because of: (1) the availability of historical real estate data, and (2) the depth of both the listed and direct real estate markets. Both factors allow for the greatest comparability across the two distinct types of real estate. Exhibit 1 shows that the US (North America) also represents a majority

EXHIBIT 1

Different Measures of the Global Real Estate Universe



NOTES: Total investable universe market size is estimated based on each region’s investable stock as defined by the latest PricewaterhouseCoopers (PwC) real estate report as of year-end 2020. Regional compositions of the MSCI Global Quarterly Property Fund Index are estimated based on fund-level net asset value (NAV) as of Q2 2024. The sum of parts may not add to the total because of rounding. Regional market capitalization of the FTSE EPRA Nareit Global Real Estate Index is estimated based on the free float method as of June 2024.

SOURCES: Invesco Real Estate based on data from MSCI market size report, MSCI Global Quarterly Property Fund Index, and FTSE EPRA Nareit Global Real Estate Index.

of the unlisted and listed global real estate investment opportunity set. Insights gained from our analyses should be generally applicable to real estate in other regions.

REAL ESTATE INVESTMENTS IN MULTI-ASSET PORTFOLIOS

The growing role of private markets allocations in broader investment portfolios is well established in financial market commentary (e.g., “Global Private Markets Report” by McKinsey & Company 2025; Hodes Weill & Associates 2024). Research continues to demonstrate the role that private markets investments play in optimizing portfolio return and risk (e.g., Brown, Hu, and Kuhn 2021), which also makes the important point that these private market investments do require investors to be able to take longer-term, multi-year commitments of capital. We look at the implications of this longer-term commitment for the form of real estate investment next.

Despite this clear agreement on the benefit of, and growth in, private market investments within wider portfolios, a debate remains as to the theoretical optimal levels of exposure to private markets generally, and real estate specifically. Norges Bank Investment Management (2025) reviewed the available academic literature and found that “the median of the suggested allocations to real estate in over 30 reviewed studies summarized was 15 percent with a median range of 6–21 percent.” And similarly, there is considerable opacity around the actual levels of exposure to real estate and private markets. Carlo, Eichholtz, and Kok (2021) used data on over 1,000 pension funds and found that the average exposure to real estate (at the end of 2018) was 8.3% within an overall average allocation to private market investments of 23.6%. Similarly, more recent data from Invesco (2025) showed that, as of 2024, a sample

of 141 central banks had an average 7.3% exposure to real estate within a 23% average exposure to illiquid alternatives.

The purpose of this article is not to try to define the correct level of real estate exposure for any specific investor type, but rather to examine the different forms that real estate investments can take, and to explain the relative differences between the returns offered by the different types of investments. We then use this analysis of both the investment characteristics and the return profiles to summarize how these key differences need to be considered in portfolio construction.

THE SOURCES OF REAL ESTATE INVESTMENT RETURNS

The total return from an investment in a particular property is a combination of the following:

1. The income generated, which will primarily be the rental income paid by the tenant
2. Movements in the capital value of the property, which comes from a combination of: (a) income growth, (b) movements in the capitalization rate (cap rate) used to derive the property valuation, and (c) capital expenditures deployed to develop or enhance the property

According to “Property Indexes Methodology” by MSCI (2025), “Multi-period capital growth and income return do not sum perfectly to total return, due to the cross product that occurs when capital and income returns are combined within compounded total returns,” and although the differences in this summation are minimal, for the purposes of this article, we shall focus primarily on the total return to investors.

These different drivers of the real estate total return result in differences in risk profile and therefore have implications for investment strategy. Although the reality is slightly more nuanced, two key categorizations within real estate are between core and value-add investments:

- **Core real estate:** Core investments are characterized by a lower-risk profile. These properties are typically well-located, high-quality assets with stable, long-term tenants. They require minimal-to-no renovations and are often fully leased. Core properties are usually found in prime locations and are often considered Class A assets (i.e., among the best properties of their type in their location). Investors in core real estate seek predictable and steady income streams, similar to bond investments. These investments are structured with an intended goal of providing higher stability in returns and capital values throughout market corrections, with the highest possible certainty over residual land and rental value at the end of the occupier’s lease. This is achieved by targeting high occupancy rates, income stability, and greater liquidity during market corrections. Core properties are often purchased with little debt, usually less than 40% leverage.¹
- **Value-add real estate:** Value-add investments, on the other hand, come with a moderate- to high-risk profile. These properties often require significant improvements or renovations to increase their value. At the time of purchase, value-add properties may have low occupancy rates or deferred maintenance issues. Investors in value-add real estate aim to enhance the property’s value through

¹NCREIF Open End Diversified Core Equity (ODCE) funds are limited to no more than 35% Tier 1 leverage as defined in the NCREIF PREA Reporting Standards, which uses the fund’s outstanding principal balance of debt relative to the fund’s gross assets.

active management, renovations, or repositioning. Many value-add investors aim to hold the asset only through the specific business plan before selling the asset to an investor with a lower cost of capital. To enhance the returns, these investments often involve higher leverage than core investments.

Core real estate investments offer lower risk and stable returns, with a primary focus on the rental income, whereas value-add investments provide the potential for higher returns through active management and property improvements. In turn, this has liquidity implications that need to be factored into risk considerations, as income-producing real estate properties are typically easier to sell than assets that are partway through a redevelopment. It is for this reason that more core forms of real estate investment, such as core funds and REITs, have restrictions on the proportion of development or non-income assets they can hold.²

EXAMINING THE DIFFERENT TYPES OF REAL ESTATE INVESTMENTS

The field of global institutional real estate investment covers a wide range of property types across a large number of countries. It is also notable that there is a considerable number of ways of accessing these investments. Although these different investment vehicles are all ultimately exposed to property returns, the differences in how these investments are structured are a key contributing factor to the differences in both the risk profile and the returns to investors. For this reason, one of the objectives of this article is to look at how closely the returns from these various investment channels are aligned over the short- and medium-term, and why.

As an underlying investment, direct real estate assets offer limited liquidity. Two key drivers of this are the heterogeneous nature of individual properties, which results in the need for purchasers to undertake extensive asset-level due diligence on the property they are buying, and the large average lot sizes that comprise the institutional real estate universe, with the US NPI showing an average lot size of almost \$70 million (NCREIF 2024). This is a key reason many investors seek to access commercial real estate investment exposure through listed or fund vehicles.

In the following sections, we summarize four key means of accessing real estate investments, starting with the most direct, but arguably least liquid, format and working through to that which is most liquid but arguably furthest removed from the direct real estate returns. Exhibit 2 provides a high-level overview of the different types of real estate investments.

Direct Property Investment

Direct property investment involves the investor purchasing physical properties, either acting for themselves or with an intermediary manager acting on their direct instructions. Direct property investment offers significant control over the property, and the holding has the potential to be structured so as to minimize the tax charge to that specific investor. Direct property investments typically require active management of the properties, however, and can be less liquid compared to other investment channels. Furthermore, as this typically involves buying properties in their entirety, direct property investment requires a considerable capital commitment, particularly for investors seeking to build a portfolio of real estate assets.

²NCREIF ODCE funds are required to hold at least 75% of the fund's gross assets in private equity direct real estate properties that are 75% or more leased.

EXHIBIT 2

Overview of Different Types of Real Estate Investments

	Direct	Funds	Nontraded REITs	Public REITs
Ownership	Direct ownership of physical properties, such as residential or commercial real estate.	Investment is into a diversified portfolio of real estate assets, typically through mutual funds or other tax structures.	Investment is into unlisted shares in a company that owns, operates, or finances income-producing real estate.	Investment is into shares, traded on public stock exchanges, in a company that owns, operates, or finances income-producing real estate.
Control	High level of control over property management, tenant selection, and maintenance.	Limited control as fund managers make investment decisions.	Limited control; managed by the REIT's management team.	Limited individual investor influence on REIT's management team.
Income Return	Earned through rental income, property appreciation, and business activities related to the property.	Generated from dividends and capital appreciation of the fund's holdings.	Earned through dividends; REITs are required to distribute at least 90% of taxable income to shareholders.	
Capital Return	Capital values are impacted by changes to the cap rate used in valuations, and through active management (e.g., through the investment of capital expenditures to improve asset quality).			Implied capital values are impacted by changes to the implied cap rates used by analysts; share price appreciation comes from changes to valuation multiples.
Liquidity	Low; selling property can take time and may incur significant costs.	Generally higher than direct real estate, as stakes can be bought and sold.	Lower than public REITs; shares are not traded on public exchanges and can be harder to sell.	High; shares can be easily bought and sold on public exchanges.
Tax Benefits	Potential for substantial tax breaks, including deductions for depreciation and maintenance costs.	Varies depending on the fund structure and the investor's tax situation.	REIT-qualified dividends are typically subject to the investors' individual tax rate for property income.	

Real Estate Funds

Real estate funds pool money from multiple investors into a portfolio of properties. Although this does not provide the individual investor with the level of control that direct investment offers, funds do allow investors to access a larger portfolio of real estate assets for a far lower total investment volume. Real estate funds can be structured as open-end or closed-end funds:

- **Open-end funds** are essentially permanent capital vehicles, continually allowing investors to buy and sell shares, providing liquidity within certain parameters. These funds draw down new investors to fund investments and redeem exiting investors when cash flows allow, and therefore typically focus on longer-term holdings that are intended to perform throughout the economic cycle.
- **Closed-end funds** are finite life vehicles, raising capital during an initial period, then aiming to invest over a discrete period of time, before divesting the assets and returning capital prior to the end of the life of the fund. As such, these vehicles typically focus more on very active business plans and the repositioning of assets over a shorter period of time, targeting capital returns over income returns. They can offer higher returns but are less liquid than open-end funds because of the inherent investor commitment through the fund life.

Nontraded REITs (Real Estate Investment Trusts)

Nontraded REITs are very similar to open-ended real estate funds, except that nontraded REITs (or unlisted REITs) benefit from the REIT tax status—REITs generally do not pay corporate income tax but are required to distribute at least 90% of their

taxable income to shareholders as dividends. As the name clearly indicates, however, these are not listed on public exchanges. Because of the REIT status, these vehicles invest in income-producing real estate and offer potential for high dividends. They are less liquid than public REITs, however, as they are not listed on a stock exchange like their public counterparts.

Public REITs

Public REITs are traded on major stock exchanges, making them more liquid and accessible to individual investors. Public REITs provide regular income through dividends and can be easily bought and sold like any other listed equity. The underlying REIT is intended to be a permanent life vehicle holding long-term income producing property, and because of investor preference, most REITs have a specific sector focus and often also a focus on certain specific markets. For more details see NAREIT (2011), *The Investor's Guide to REITs*.

These four means of accessing real estate investment have different risk profiles, particularly around liquidity and control, which will apply even if the underlying real estate exposure is similar. As such, one of the first considerations for investors seeking real estate exposure is to identify which of these structural alternatives best suits the underlying investment objectives. In addition, *ceteris paribus*, different risk profiles will result in different return profiles, which is where we show that listed and direct real estate are not close substitutes for each other.

DIFFERENCES IN RETURNS BETWEEN LISTED AND UNLISTED REAL ESTATE

Examining a 30-year history of NCREIF Property Index (NPI) returns, which is the most widely used proxy for unlisted real estate, we find that, on average, the income return of 6.34% has contributed 73.4% of the average annual property-level total return of 8.63%. In comparison, the FTSE Nareit US Real Estate Index, a commonly used proxy for listed real estate, shows a 30-year average annual total return of 9.49%, of which price appreciation contributed 4.16%.

We note that the time period over which these returns are measured is important. For example, our 30-year returns to the end of 2024 show a significant change to the returns noted by Pagliari, Scherer, and Monopoli (2005), in which the 21-year returns to the end of 2001 showed a similar level of returns for unlisted real estate, but a 400-basis-point-higher return for listed real estate. In our view, the more recent convergence of the relative returns warrants a reexamination of the portfolio construction implications.

Although income is still the largest contributor of returns for both listed and unlisted real estate, the 56.2% share of listed returns from income is lower than that from direct property (LSEG 2025). We should note that although included here for a general indication, the two sets of returns are not direct like-for-like comparisons, as the NPI comprises property-level returns of preleverage and premanagement costs, whereas the Nareit returns are levered and net of company-operating costs.

Although Boudry and Kallberg (2014) consider explanations for the differences in returns between listed real estate and unlisted real estate investments, our findings, presented in the next section, differ from their findings on one crucial point—Boudry notes a lack of correlation of REIT returns with the underlying properties and considers reasons for this. This lack of correlation applies in the shorter term, but the correlation increases over longer holding periods. These findings are aligned with those of Hoesli and Oikarinen (2012). We will further explore this aspect of real estate investing later in this article.

A STATISTICAL AND PRACTICAL ANALYSIS OF REAL ESTATE RETURNS

Comparing investment returns across different asset classes presents numerous challenges because of differences in risk profiles, liquidity, and holding time horizons. Furthermore, as noted previously, investors can access real estate exposure through a variety of different vehicles, each of which has its own relative profile. To keep the analytics involved manageable, we focus on the comparison between what we see as the respective ends of this particular spectrum, namely listed REITs (the most liquid but potentially most removed from the underlying property returns) and direct property investments (the least liquid but most direct exposure to underlying property returns).

To gain insight into the differences between the returns of direct and listed real estate, we conducted rolling three-year principal component analyses (PCA) on standardized quarterly return data for equities (S&P 500 Index), listed REITs (FTSE Nareit Equity REITs Index), and direct real estate (NCREIF Property Index, also referred to as NPI).³ Assessing rolling PCAs allows us to understand the dynamics of similarities or differences in return series over time.

PCA is a statistical technique used to simplify complex datasets by reducing their dimensionality. The purpose of the analysis is to identify uncorrelated statistical factors, called principal components (PCs), that explain the variance across the set of input variables. The PCs from an analysis, which are equal in number to the number of input variables, are ordered by the amount of variance they capture in the data, with the first principal component accounting for the most variance, the second for the next most, and so on. For example, if two assets are highly correlated, we would expect the first principal component to explain almost all the variance across the two variables. As correlation decreases between the two variables, the variance explained by the second PC would increase.

Although correlations directly influence a PCA, they merely describe the linear relationships between assets. PCA offers a different perspective, as it presents the independent statistical factors that explain returns and the extent to which they influence variations in returns. In the context of a multi-asset portfolio, you can think of the PCs as the distinct elements that are being added to a portfolio. If two assets are very similar, their returns will be mostly explained by one PC and could easily be viewed as substitutes. This perspective is useful in understanding the diversification benefits offered by different types of real estate and in understanding the importance of the factors influencing their returns over time. The dimensionality reduction aspects of PCA are especially useful as we consider relationships and benefits across more than two assets.

Importantly, the point here is not to provide absolute statistical proof of the distinctions between equity, listed REITs, and direct real estate returns. Instead, we intend this analysis to be a starting point for a qualitative discussion that provides the economic intuition for why investors should believe these distinctions should exist, and how these distinctions should be considered in a wider asset allocation strategy.

Equities versus Listed Real Estate

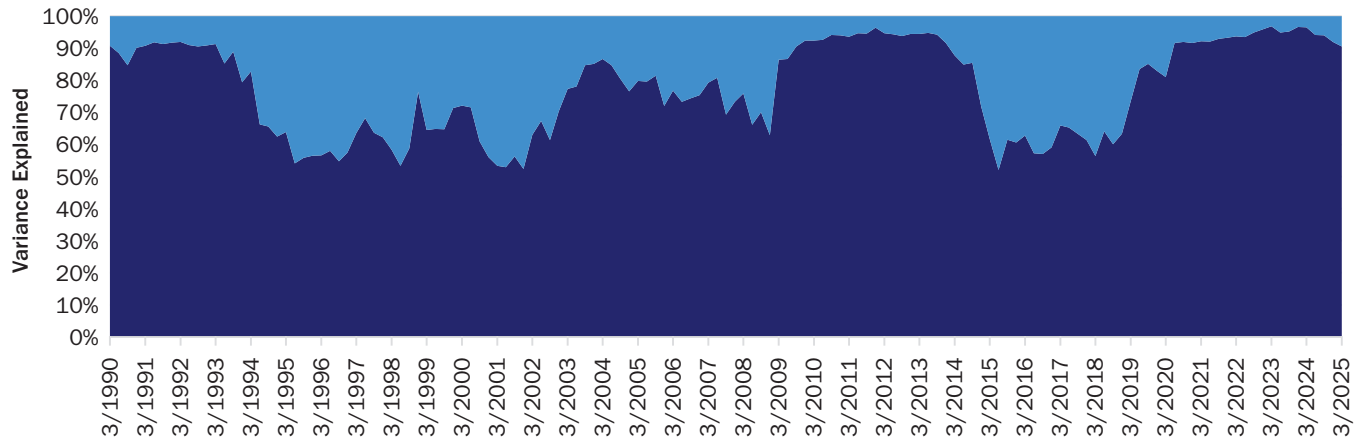
Panel A of Exhibit 3 presents our first rolling three-year PCA study, where we consider the variance between listed real estate and equities. Here we find that both of the two distinct statistical factors (principal components) explain significant amounts of variance across the returns of equities and listed REITs over time, highlighting that listed real estate provides valuable diversification versus the wider equity market.

³Standardization of inputs to a PCA avoids biasing results to variables with the highest variance. Given the well-understood differences in volatilities between public and private assets, standardization avoids biasing results to public assets.

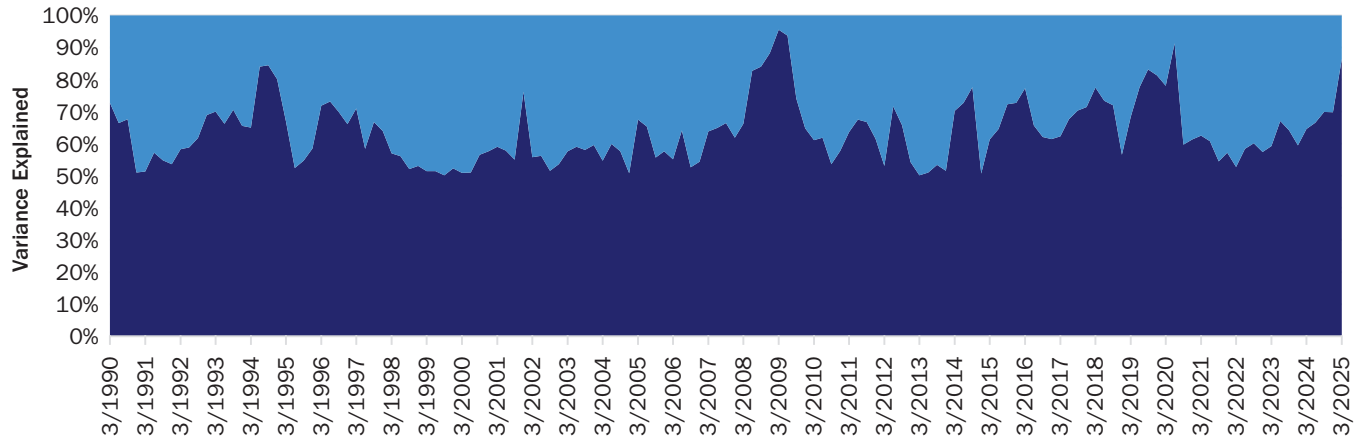
EXHIBIT 3

Rolling Three-Year Principal Component Analyses—Variance Explained, March 31, 1987–March 31, 2025

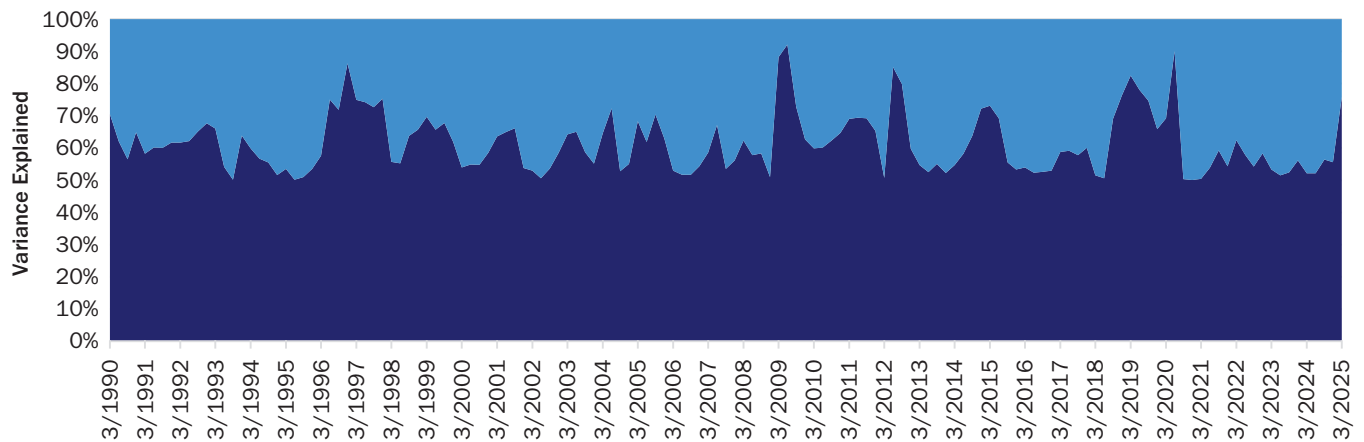
Panel A: Equities and Public REITs



Panel B: Equities and Direct Real Estate



Panel C: Public REITs and Direct Real Estate



■ Principal Component 1 ■ Principal Component 2

NOTES: Equities: S&P 500. Public REITs: FTSE Nareit Equity REITs. Direct Real Estate: NCREIF Property Index.

SOURCES: Bloomberg, FTSE Russell, S&P Global, NCREIF, and Invesco.

We also see, however, that there are prolonged periods in which one factor is dominant. Notably, these periods typically coincide with periods of financial stress, such as the aftermath of the global financial crisis (GFC) of 2008, the recent COVID-19 pandemic (2020–2022), the Ukraine conflict (2022–present), and subsequent interest rate resets (2022–2024). During these periods, when systemic risk factors are dominating investment returns, listed real estate exhibits substantially reduced diversification benefits versus wider equity markets.

Equities versus Direct Real Estate

In Panel B of Exhibit 3, we see the two principal components persistently explaining significant amounts of variance across equities and direct real estate. This provides an indication of the diversification benefits of direct real estate versus wider equity markets. We note that although there are spikes in the dominance of a single factor at the onset of periods where systemic risk factors are elevated, they are substantially shorter-lived than what we saw with listed real estate, quickly reverting to more normalized levels.

Listed Real Estate versus Direct Real Estate

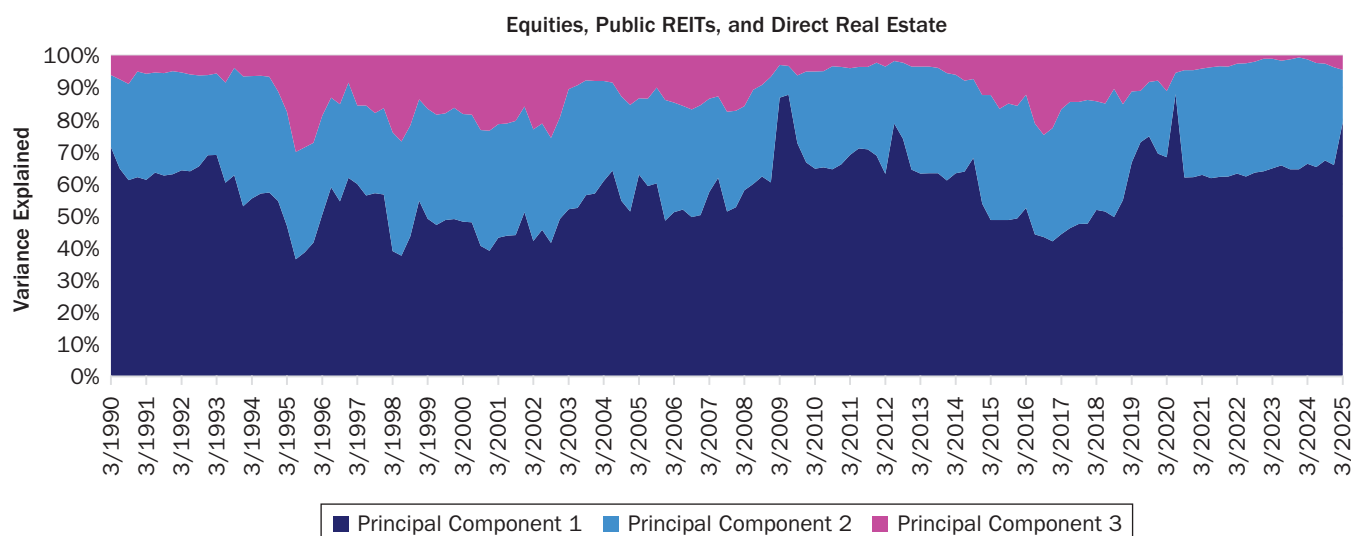
The obvious next PCA to consider is between direct real estate (at the property level) and the listed real estate market. In Panel C of Exhibit 3, we again find significant and persistent amounts of variance explained across the two principal components. This is a clear indication of the diversification benefits that can be gained from holding both types of real estate. In our view, this argues for consideration of the two as distinct types of real estate investments. As with the comparison of direct real estate to equities, although there are spikes in the dominance of a single factor at times, they are short-lived around periods in time when systemic risk factors are elevated.

Equities versus Listed Real Estate versus Direct Real Estate

Finally, we consider the variance across all three assets—equities, listed real estate, and direct real estate. In Exhibit 4, we again see notable amounts of

EXHIBIT 4

Rolling Three-Year Principal Component Analysis—Variance Explained, March 31, 1987–March 31, 2025



NOTES: Equities: S&P 500. Public REITs: FTSE Nareit Equity REITs. Direct Real Estate: NCREIF Property Index.

SOURCES: Bloomberg, FTSE Russell, S&P Global, NCREIF, and Invesco.

variance explained by all three principal components. This provides an indication of the diversification benefits of including both public and direct real estate alongside wider equity investments. Within a broader allocation, both listed and direct real estate exposures offer distinct benefits.

REAL ESTATE BETA AND ITS CHANGES OVER TIME

In trying to think of direct real estate investments in terms of traditional financial constructs, portfolio managers and asset allocators face the challenge that a direct real estate beta product does not exist. To that end, the closest thing to real estate beta available to investors is a listed equity REIT index fund, although we have shown that listed real estate is a very imperfect proxy for the direct real estate market.

Since the inclusion of real estate companies, and more recently REITs, as part of broader equity indexes, the return differences between listed and direct real estate have generally converged over longer return intervals (greater than three years), with the global financial crisis period as the one key exception. In Exhibit 5, we can see that the rolling three-year excess returns of direct real estate relative to public REITs are smaller and less cyclical since 2013, despite the distinct and persistent statistical factors shown by our PCA analysis.

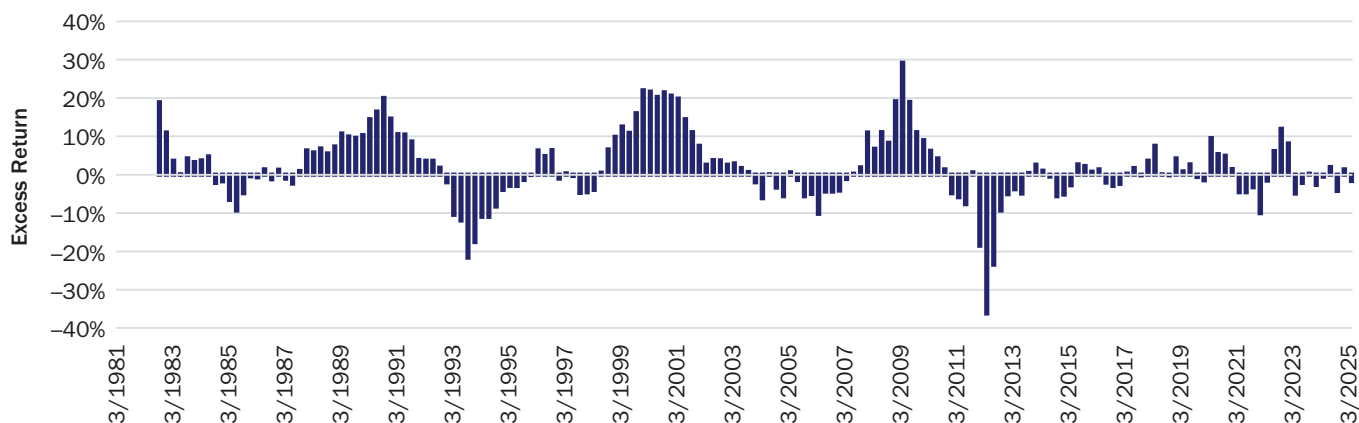
We note two structural changes to how REITs have been treated within the wider equity market that may have contributed to some of the reduced relative variability:

1. October 4, 2001: REITs were added to the S&P indexes (S&P 500 and S&P 400) as part of the financials sector.
2. August 31, 2016: REITs became a distinct GICS (global industry classification standard) sector.

Although, we also note that ongoing improvements in the availability of data, particularly as pertaining to underlying real estate, is probably the largest driving factor.

EXHIBIT 5

Rolling Three-Year Excess Returns—Direct Real Estate Minus Public REITs, March 31, 1980–March 31, 2025



SOURCES: Bloomberg, NCREIF, FTSE Nareit, Invesco Real Estate.

EXPLAINING THE STATISTICAL RESULTS

As previously noted, comparing different investment assets is challenging because of the number of characteristics that can and do vary between the relative exposures. There are, however, certain key differentiating features of the listed and direct real estate markets that we can draw out and are relevant to investment allocations between the two. We note that some of these explanations are more intuitive in nature and so may be more familiar to real estate practitioners but less obvious to the external observer.

Index Constitution

Using a set of observations on one market to make inferences on the likely changes in another requires the two comparators to be closely aligned. Yet a study of the respective composition of listed and direct real estate indexes shows some significant differences, and this in turn limits the validity of comparisons drawn between these two different real estate markets.

The United States is by far the largest and most established global market in terms of listed and unlisted real estate. Yet despite the scale and maturity of both markets in the United States, significant differences exist. Exhibit 6 provides a visual depiction of these differences.

On the left, we see the sector weightings, by value, of the NCREIF Property Index (NPI), the primary index that institutional investors rely on for benchmarking the performance of direct, or unlisted, US commercial real estate at the property level.

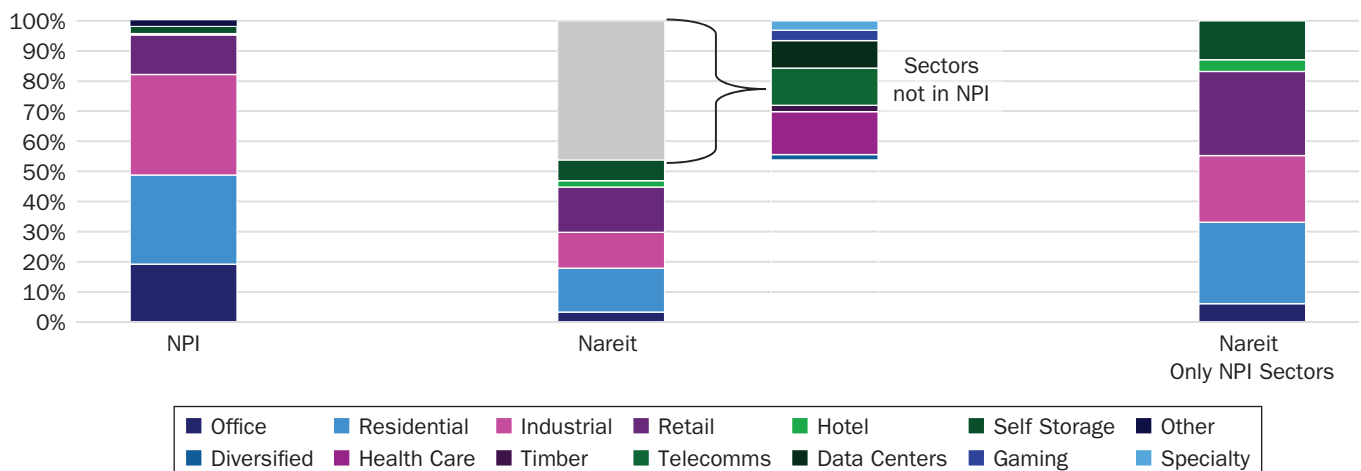
In the center are the sector weightings, by market capitalization, of the Nareit Equity REIT Index (Nareit), which, incidentally, represents 61.5% of the global REIT index. The lack of comparability is obvious, as almost half of the listed index is in sectors not considered by the NPI.

On the right is the Nareit index composition, rescaled to 100 percent, including only the sectors represented in NPI.

Even stripping out the Nareit exposures that are not covered by the NPI, the listed index remains significantly different from the direct index, with the NCREIF showing

EXHIBIT 6

Direct Real Estate (NPI) versus Listed Real Estate (Nareit) Index Composition, March 31, 2025



SOURCES: NCREIF, FTSE Nareit, and Invesco Real Estate.

more than double the exposure to office, whereas Nareit is higher in retail, industrial, and hotels. As a result, even if we were to assume that listed real estate responds to the same shorter-term drivers as direct real estate assets (and to the same magnitude), compositional differences between the indexes would be expected to drive differences in returns.

Benchmark Replicability

Indexes, such as those we've been discussing, provide convenient proxies for an overall "market," but there are important differences in the ability of investors to replicate these indexes.

An equity index is comprised of publicly traded units, typically liquid and in small unit sizes that enable an investor to achieve almost any desired allocation of funds. As such, a real estate index, such as the FTSE Nareit Equity REIT Index, can be almost perfectly replicated should an investor require, rebalancing when weightings change, as index trackers or exchange-traded funds do. By contrast, the NPI cannot be replicated. The aggregate weightings can be matched, but the index comprises \$825 billion (as of Q1 2025) of homogeneous and esoteric assets, which are typically individually and privately held.

Furthermore, Nareit index weightings will change both from new inclusions in the index and from relative stock price performances. Similarly, the NPI will change over time as those firms contributing to the index acquire or dispose of assets, and also as additional contributing investors are added to the set. Nareit is public, however, so these changes are known in real time. By contrast, the NPI's composition can only be known after the index has reported, potentially three to four months after a relevant change took place.

Liquidity Considerations

Liquidity differences drive short-term behavior variations between listed and unlisted real estate indexes, and these manifest through the speed and cost of undertaking transactions.

Listed securities on major public indexes trade in continuous markets, so anything but very large positions can typically be traded intraday and without material price impacts. Thanks to electronic share registers and settlement processes, listed securities have a low trading cost. Equity transactions typically pay away 5 bps to 20 bps of the value depending on the market, with the United States at the cheapest end of this range (J.P. Morgan 2025).

By contrast, the acquisition of a physical real estate asset requires specialist input, which takes time and adds cost. Brokerage fees, legal documentation, and due diligence typically cost 1%–2% of an asset's value. In addition, real estate transfer taxes may be due on a change of ownership, except when the asset can be sold within a corporate entity. Although transfer taxes vary by country, these can be significant—5% of the value of commercial property in the United Kingdom, almost 6% in France, and between 3.5% and 6.5% in Germany. In the United States, charges vary by municipality and in the customary split between buyer and vendor (PwC and the Urban Land Institute 2023; BOMA International 2025).

Direct ownership of real estate brings the benefit of control, in particular of an asset's business plan. The result is that owners of direct assets work to a longer-term time horizon to execute plans, of potentially up to 10 years, also providing a reasonable period over which to amortize acquisition costs. This illiquidity means, however, that direct real estate investment decisions are generally binary, typically buying or selling 100% ownership in a single transaction.

By contrast, investors in listed securities gain liquidity but lack direct control, instead basing decisions on business plans as publicly guided by corporate management. In addition, rather than trading entire holdings at once, the majority of equity transactions are incremental increases or reductions, particularly for benchmark-relative investors. The result is that REIT share prices can show shorter-term periods of selling pressure and negative valuation movements, resulting from tactical portfolio reweights rather than changes in the fundamental real estate valuation.

Furthermore, listed markets provide continuous pricing indications based on the most recent transactions in a particular stock. Although it is not always possible to trade an equity position exactly at the screen price, especially if the position is large or the market is particularly volatile, in general this does provide good transparency as to the current value of a holding or portfolio.

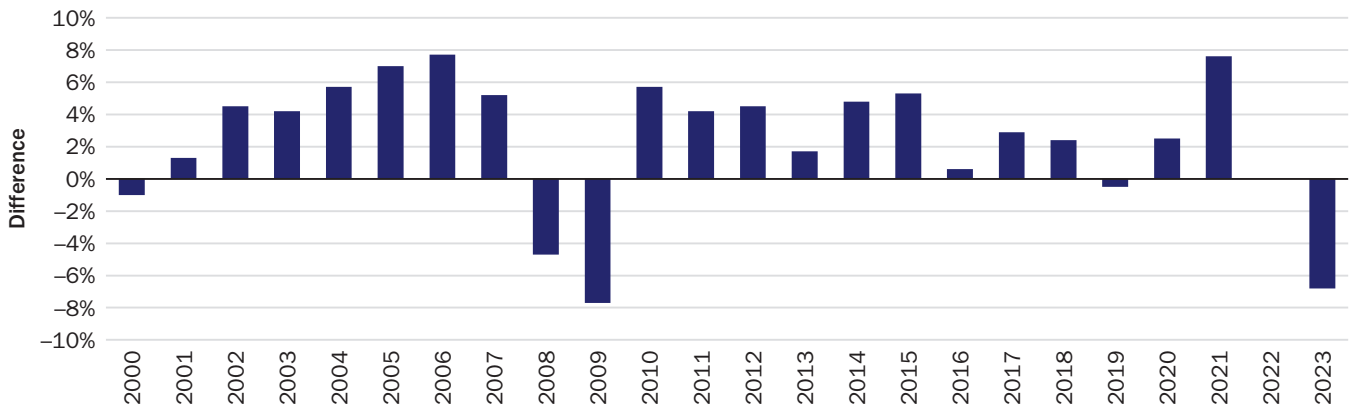
By contrast, direct real estate assets are typically valued on a quarterly basis in the United States, and this valuation takes into account broadly comparable market evidence over a period of time prior to the valuation date. In addition, real estate transactions take weeks, if not months, to complete, with the pricing being set at the outset of the transaction process. The result is that, rather than reflecting “live” market pricing, there is something of a lag in underlying trends reflecting in direct real estate valuations. This is clearly evidenced in Exhibit 7, which shows the weighted average difference between executed US real estate transactions and the last reported valuation. We clearly see that in times of market stress, such as the global financial crisis of 2008–2009, or the interest rate correction of 2023, real estate assets sell below their last appraised valuations as market pricing declines faster than is captured in the reported assessment. Outside of these periods of stress, however, real estate assets tend to trade at a premium to the last appraisal, likely reflecting some degree of conservatism in carrying valuations.

Direct Real Estate versus Real Estate Funds

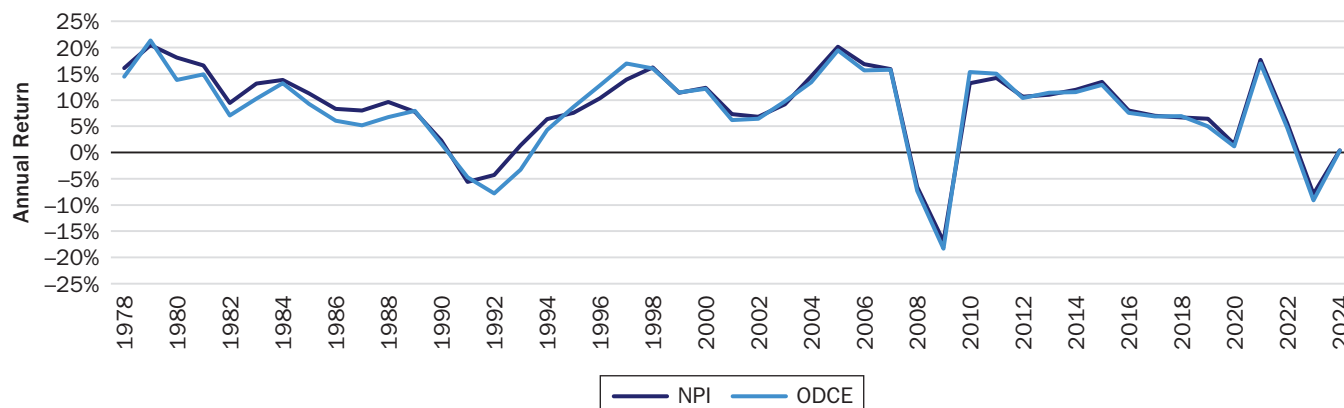
The aforementioned analysis has focused heavily on the comparison between direct real estate (at the property level) and listed real estate. We also note, however, that many investors access real estate through direct real estate funds. In Exhibit 8, we show that the annual property level returns of the NPI and the performance of the NCREIF Open End Diversified Core Equity (ODCE) fund index are very close. Even when

EXHIBIT 7

Weighted Average Difference between Valuation and Transaction Pricing (US)



SOURCES: MSCI and Invesco Real Estate.

EXHIBIT 8**Direct Real Estate (NPI) versus Direct Real Estate Fund (ODCE) Annual Returns**

SOURCES: NCREIF and Invesco Real Estate.

looking at returns on a quarterly basis, we see a correlation of 0.939, highlighting the close relationship between property-level and fund-level returns.

REAL ESTATE INVESTMENT CONSIDERATIONS

In this section, we show the fundamental challenge that investors face and why listed real estate equities need to be considered as an asset class in their own right. The long-term performance of global real estate markets, the listed (FTSE Nareit All Equity REITs Index) and the direct property (NPI), clearly shows both: (1) the shorter-term volatility of the listed real estate returns around the direct market returns and (2) the alignment of the longer-term trends.

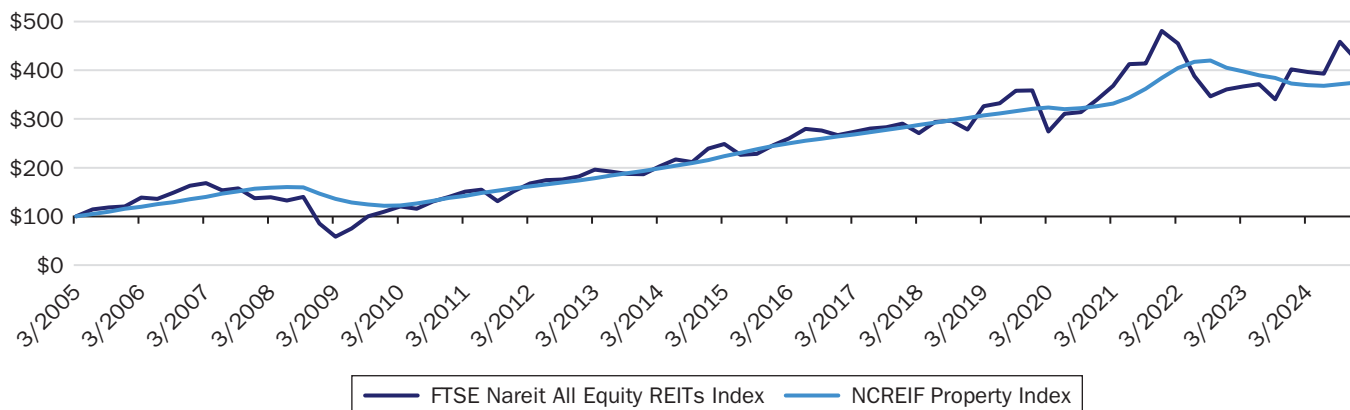
Digging deeper into the volatility between listed and direct real estate indexes, Exhibits 9 and 10 uses data from US markets and examines the correlation between the two over different time periods. In the shorter term, listed real estate equities are more correlated with wider equity market returns, but longer term, the correlation of listed returns becomes more closely aligned with direct real estate as the valuation drivers influence the underlying REIT performance.

This shows the inadvisability of using short-term movements in listed real estate as a proxy for direct real estate, as the shorter-term correlation between the two is very poor. Furthermore, the real estate assets reported in the index are required to report quarterly, yet the weak correlation persists for several valuation cycles, thus the differences in correlation reflect more than a mere time lag for the direct market to reflect new information.

It is also important to note that the highest correlation between the equity market and the direct real estate market occurs at 36 months. It should be noted that our three-year rolling principal component analyses were therefore based on holding periods with highest correlation between these two markets, despite which we still find significant diversification benefits of direct real estate against wider equity markets.

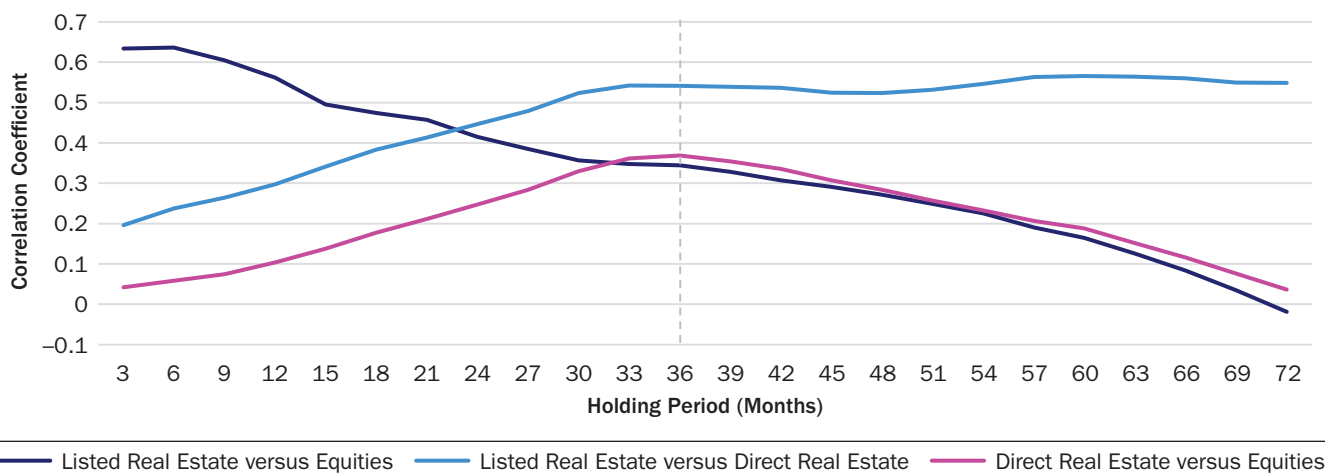
These fundamental differences reflect deviations in the return profiles between listed and direct real estate exposures, and as previously noted, investors also need to consider the differences in risk profile, particularly around liquidity and control. We therefore derive five conclusions that investors should consider when determining allocations to listed and direct real estate within portfolios. We note that this is a different approach to some prior studies, for example, Ametefe et al. 2019, which used UK data in seeking to provide liquidity while minimizing tracking error relative to direct real estate, whereas we consider a broader set of considerations.

EXHIBIT 9
US Listed and Direct Real Estate Performance



SOURCES: Bloomberg, MSCI, and Invesco Real Estate.

EXHIBIT 10
Holding Period Correlations for Listed Real Estate, Direct Real Estate, and Equities, December 31, 1998–December 31, 2024



SOURCES: Bloomberg, Macrobond, MSCI, and Invesco Real Estate; Equities: S&P 500. Public REITs: FTSE Nareit All Equity REITs. Direct Real Estate: MSCI/PREA US ACOE Quarterly Index.

1. REITs Are Not Just a Liquid Version of Direct Real Estate

Our first, and most important, conclusion is that REITs should not be considered as a proxy for direct real estate. As is clearly shown in Exhibits 3 and 10, each type of real estate exposure offers a diversification in its own right, but investors seeking to closely replicate direct real estate returns will not achieve this through listed real estate investments.

2. Sources of Alpha and Beta Are Different

Active listed REIT funds can and do offer added value over an investment in the underlying index (see Elyasiani, Rytchkov, and Stetsyuk 2022). For an active REIT

investor, however, the sources of alpha are limited primarily to security selection, sector selection, and market timing.

By contrast, direct real estate offers a much broader array of alpha sources beyond asset or sector selection, or the timing of acquisition and disposition. Direct real estate investment requires ongoing management of the asset, including leasing/releasing of spaces, and ongoing maintenance and asset improvement initiatives. Furthermore, many direct real estate investors add leverage at the individual asset level, providing a further tool through which to influence investment returns. Exhibit 2 summarizes the key levers available to managers of different types of real estate funds.

3. Liquidity versus Control Requirements

Listed real estate offers liquidity. Owning direct real estate assets offers control. Real estate funds, whether open-ended or closed-ended, offer a little more liquidity than owning individual assets but leave the investor one or two steps removed from control.

Ultimately, any asset allocation decision needs to consider the liquidity needs of the underlying portfolio. Illiquidity is a risk, but certain investors are better positioned to be able to accept this risk, particularly if there is very limited need for short-term cash flow, or if the wider portfolio provides ample liquidity to meet any possible shorter-term requirements, especially around periods of stress.

4. Size Matters in Allocation Decisions

As we noted earlier, the average asset value in the NPI at the end of 2024 was \$76.6 million. As such, investors seeking a diversified real estate portfolio need to be able to invest \$920 million, based on a minimum of 12 assets being needed for diversification (see e.g., Lee 2005).

This level of exposure to real estate will preclude many investors because of the capital commitment required. With institutional investors typically holding 7% to 10% of the overall portfolio in real estate (see the citations previously mentioned), holding a diversified portfolio of direct property assets would require an overall portfolio of at least \$9 billion. As such, it may not be possible for certain investors to maximize the diversification benefits shown in Exhibit 10, but as we see in Exhibit 8, real estate funds offer a close proxy to direct property assets, albeit without the same degree of control.

As such, for many investors, the use of real estate funds becomes a more efficient way of accessing a diversified portfolio of direct real estate assets with a far lower capital commitment, as summarized in Exhibit 2.

5. Think through the Cycle

Our analysis highlights that the diversification benefits of different asset classes are reduced during periods of financial market stress, as seen in Exhibit 3. Over the longer term, however, the diversification benefits of both listed and direct real estate are clear, as we show in Exhibit 10. As such, investors need to consider the longer-term gains but also ensure that the portfolio can withstand any shorter-term change in the covariance of returns. In particular, this latter point underlines the benefits to many investors of overlaying some element of listed real estate within a broader direct real estate portfolio.

CONCLUSION

Multi-asset allocation models need to integrate real assets, but the lack of frequent performance observations for real assets presents a challenge. As such, it is of no surprise that listed real estate performance is used as a proxy for unlisted real estate returns. As this article has demonstrated, however, the relationship between these two should be treated with considerable caution, particularly in the short term. Our analysis started with a summary of the differences between the different types of real estate investment exposure, looking both at how investor returns are derived and also the risk considerations for each type of exposure.

Our statistical examination, using principal component analysis, clearly showed that both listed and direct real estate offer considerable diversification benefits relative to equities, but also to each other.

To further understand the diversification benefits between listed and direct real estate, we then examined the key factors that contribute to these differences, including the relative index composition, the ability of investors to replicate the respective indexes, and liquidity limitations.

We conclude that, rather than conflating returns between listed and direct real estate, asset allocators should focus on the benefits of including both in their portfolios in appropriate proportions. Doing so not only reduces the risk of deriving inaccurate conclusions through erroneous proxies but further improves the diversification benefits that can be achieved through recognizing the independent benefits offered by each of these types of real estate investments.

Our analysis shows the portfolio diversification benefits of adding both direct and listed real estate investments alongside equity market exposures. The means by which investors access direct real estate should consider the size of the allocation, as many real estate funds will offer immediate access to a diversified portfolio. By combining some proportions of both listed and direct real estate, investors can benefit from the liquidity and diversification of listed real estate and the income stability and inflation protection of direct holdings, smoothing out some of the volatility seen in listed real estate returns and also providing both liquidity and greater flexibility through the cycle.

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