

One real estate universe: Measurement, Performance and Portfolio Construction

Key findings

- > **Listed and non-listed real estate delivered similar long-term returns, but with very different risk profiles.** Non-listed real estate showed smoother performance and lower volatility, while listed real estate experienced greater short-term fluctuations due to market pricing and interest rate sensitivity.
- > **Non-listed real estate offers meaningful diversification, while listed real estate acts as a market indicator.** Non-listed real estate maintains low correlations with most asset classes, helping reduce portfolio risk, while listed real estate typically leads private market valuations by roughly two quarters.
- > **Both listed and non-listed real estate add value in a strategic allocation.** Portfolio optimization consistently supported a 5%-20% allocation to real estate, with non-listed real estate providing diversification benefits and listed real estate offering liquidity, price discovery, flexibility, and access to specialized performance sectors.

This study examines the role of listed and non-listed real estate within diversified institutional portfolios, comparing their historical performance, risk characteristics, diversification benefits, and optimal allocations relative to other major asset classes such as equities, bonds, infrastructure, and private equity. The analysis covers European markets over the period 2006-2025 and assesses both long-term and recent-decade results.

Real Estate in Institutional Portfolios

Real estate remains an important component of institutional investment portfolios. Large pension funds typically allocate significant portions of their assets to alternatives, including real estate, alongside equities and bonds. Understanding the relative merits of listed and non-listed real estate is therefore important for strategic asset allocation decisions.

Although listed and non-listed real estate ultimately generated similar cumulative returns over the past two decades, the route to those returns differed substantially. Non-listed real estate exhibited a relatively smooth return pattern because values are based largely on appraisals rather than continuous market pricing. Listed real estate, by contrast, experienced significant fluctuations, especially during the Global Financial Crisis (GFC) and the sharp interest-rate repricing of 2022. While both approaches ended the period at similar levels, investors experienced very different return paths and risk profiles.

Long-Term Risk and Return Characteristics

To compare real estate fairly with other asset classes, non-listed real estate returns were “desmoothed” to remove some of the artificial stability created by appraisal-based

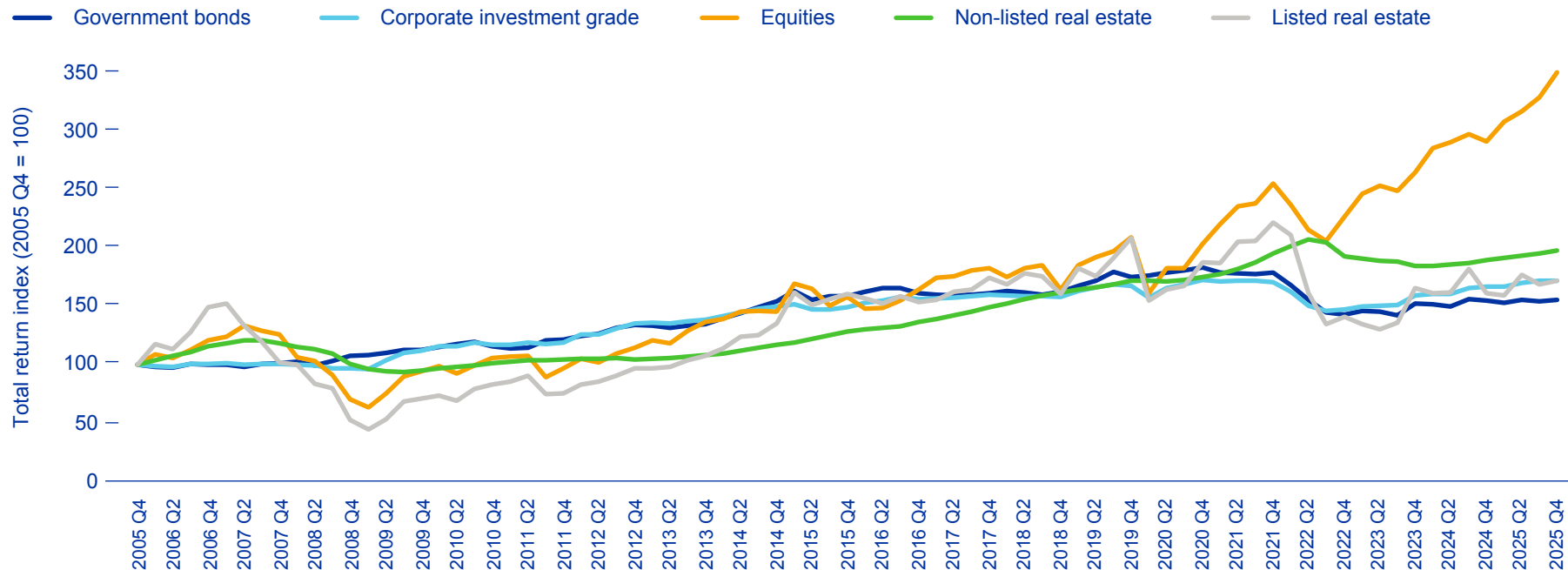
valuations. This adjustment provides a more realistic estimate of underlying volatility.

Across the full 2006-2025 period, listed infrastructure delivered the strongest risk-adjusted performance, followed by high-yield bonds and equities. Both listed and non-listed real estate ranked in the lower half of asset classes when measured by Sharpe and Sortino ratios, which evaluate returns relative to total risk and downside risk respectively.

After desmoothing, non-listed real estate exhibited volatility above that of government and investment-grade bonds, but below that of equities, listed real estate, private equity, infrastructure and high-yield debt. Importantly, listed and non-listed real estate generated nearly identical compound annual returns over the full period once the smoothing adjustment was applied.

These findings suggest that, as standalone

Figure 1: Cumulative total return, 2005 Q4 – 2025 Q4 (EUR)



Source: Bloomberg, EPRA, INREV. Index levels rebased to 100 at 2005 Q4.

investments, real estate did not produce exceptional risk-adjusted performance over the entire twenty-year sample. However, long-run averages can conceal significant differences across market environments.

A Different Picture in the Recent Decade

The period from 2016-2025 presents a markedly different market regime. It excludes the worst effects of the GFC while

encompassing quantitative easing, the Covid-19 pandemic, the post-pandemic inflation surge, the energy shock linked to Russia's invasion of Ukraine, and the subsequent rise in interest rates.

During this more recent decade, rankings changed considerably. Equities generated the strongest risk-adjusted performance. Non-listed real estate moved into second place on the Sharpe ratio, outperforming many traditional and alternative asset classes. Government bonds, which had

historically provided strong diversification benefits, delivered the weakest risk-adjusted performance.

Non-listed real estate achieved a stronger combination of return and risk than listed real estate during this period. Listed real estate remained highly sensitive to changes in interest rates and discount rates, resulting in low risk-adjusted returns despite maintaining a role in property exposure.

The contrast between the long-term and recent-decade findings demonstrates that asset class performance is highly dependent on the market environment being examined. Conclusions drawn solely from long historical periods may fail to reflect current market conditions.

Diversification Benefits: Real Estate's Strongest Contribution

Diversification, rather than superior standalone returns, is the most compelling reason to include non-listed real estate in institutional portfolios.

Correlation analysis reveals important differences between listed and non-listed property investments. Listed real estate behaves much like other publicly traded risk assets. Its correlations with equities, private equity, infrastructure and high-yield bonds are relatively high, indicating that these assets often move together during periods of market stress.

Non-listed real estate displays a very different pattern. Even after desmoothing, it maintains relatively low correlations with most asset classes. Its relationship with government bonds and investment-grade corporate bonds is particularly weak, often close to zero over both the full sample and the more recent decade.

This characteristic is especially important for pension funds and insurance companies,

Table 1: Correlation matrix 1: 2006 Q1 – 2025 Q4*

	Gov bonds	Corp IG	Corp HY	Non-listed RE	Listed RE	Equities	Listed PE	Listed infra
Gov bonds	1.00	0.62	0.11	-0.06	0.32	0.05	0.11	0.18
Corp IG	0.62	1.00	0.74	0.10	0.65	0.61	0.65	0.58
Corp HY	0.11	0.74	1.00	0.37	0.70	0.79	0.84	0.69
Non-listed RE	-0.06	0.10	0.37	1.00	0.35	0.37	0.40	0.36
Listed RE	0.32	0.65	0.70	0.35	1.00	0.76	0.83	0.79
Equities	0.05	0.61	0.79	0.37	0.76	1.00	0.90	0.85
Listed PE	0.11	0.65	0.84	0.40	0.83	0.90	1.00	0.79
Listed infra	0.18	0.58	0.69	0.36	0.79	0.85	0.79	1.00

**Non-listed real estate desmoothed (Geltner AR(1), $\rho \approx 0.75$), 8 assets (excludes Listed RE ex UK). All cells are live =CORREL() formulas. Non-listed RE uses the full-period desmoothed series; other pairs use reported series. Three-bucket colour: green ≤ 0.30 , no fill 0.31–0.69, amber ≥ 0.70 , grey diagonal.*

which tend to hold large allocations to fixed-income securities. As traditional bonds have become more positively correlated with risk assets in recent years, their diversification benefits have weakened. Non-listed real estate therefore emerges as an increasingly valuable source of portfolio diversification.

The main conclusion is that the low-correlation characteristics of non-listed real estate are genuine and not simply the result of appraisal smoothing. While desmoothing increases measured volatility, it does not materially alter the asset class's correlation profile.

Listed Real Estate: More Than Just Property Exposure

Although listed real estate does not offer the same diversification benefits as non-listed property, it possesses several advantages that make it valuable within a portfolio.

Its main strength is liquidity. Investors can buy or sell listed real estate quickly and efficiently, making it useful for tactical asset allocation, rebalancing, and implementation decisions. Listed vehicles also provide continuous market pricing, allowing investors to observe changing market conditions in real time.

It is important to highlight that listed real estate often serves as an early indicator of developments in direct property markets. Previous analysis showed listed markets leading non-listed valuations by roughly two quarters because stock market prices adjust immediately whereas appraised values update gradually.

Listed real estate also provides scalable access to specialized property sectors such as data centres, healthcare, self-storage, life sciences and other niche operating platforms that may be difficult to access through direct property ownership or private funds.

The drawback is greater short-term volatility. Listed real estate is frequently influenced by equity market sentiment and broader financial market conditions. However, this distinction becomes less important over longer investment horizons.

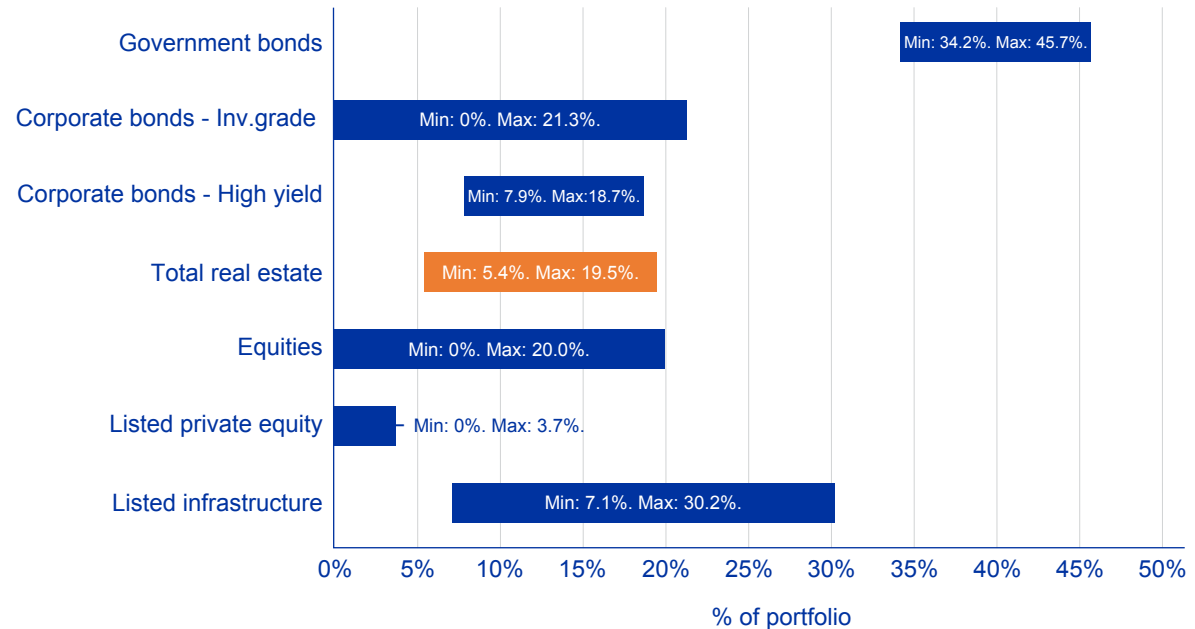
Convergence Over Long Holding Periods

A further analysis examined how investment outcomes change as holding periods lengthen.

At three-year horizons, listed real estate exhibited a very wide dispersion of outcomes, ranging from strongly negative returns to strongly positive returns. Non-listed real estate showed much narrower variability.

As holding periods extended to five, seven and ten years, the distribution of listed real

Figure 2: Allocation range by asset class (min-max across methods), 2006 Q2–2025 Q4



estate outcomes narrowed considerably. By ten years, the central return outcomes of listed and non-listed real estate became much more similar.

This finding suggests that listed real estate's reputation for being substantially riskier than non-listed real estate is largely driven by short-term volatility. Long-term investors experience far less difference between the two approaches than quarterly return statistics imply.

Consequently, listed real estate may be more suitable for strategic institutional investors than commonly assumed, particularly when evaluated over long horizons.

Portfolio Optimisation Analysis

The final section evaluates how real estate should be allocated within a multi-asset portfolio. Three portfolio construction approaches were used:

1. Maximum Sharpe Ratio (traditional mean-variance optimisation).
2. Equal Risk Contribution (Risk Parity).
3. Constrained Mean-Variance optimisation.

The analysis uses eight European asset classes: government bonds, investment-grade

corporate bonds, high-yield bonds, non-listed real estate, listed real estate, equities, listed private equity and listed infrastructure.

Despite methodological differences, all three optimisation approaches support maintaining a meaningful allocation to real estate.

Combined real estate allocations ranged from approximately 5% to nearly 20% of portfolio assets:

- Maximum Sharpe: 5.4%
- Risk Parity: 19.5%
- Constrained Mean-Variance: 5.0%

These results suggest that the inclusion of real estate is not dependent on a particular optimisation methodology. While recommended allocation sizes vary, every framework identifies some benefit from holding real estate.

Why Hold Both Listed and Non-Listed Real Estate?

One of the main take-aways is that listed and non-listed real estate should not be viewed as substitutes because each serves a distinct role.

Non-listed real estate's primary contribution is diversification. Its low correlations with other assets help reduce overall portfolio risk. Although it is less liquid and valuation adjustments occur gradually, its performance is anchored more closely to underlying property fundamentals and less influenced by short-term market sentiment.

Listed real estate contributes liquidity, price discovery, flexibility and access. It enables tactical portfolio management and offers exposure to specialized sectors unavailable through many private investment routes. It also reacts more quickly to economic and property market turning points.

Importantly, the greater volatility of listed real estate becomes less significant over longer investment horizons, where outcomes increasingly converge with those of non-listed property.

Overall Conclusion

The evidence suggests that both listed and non-listed real estate deserve a place in institutional portfolios, but for different reasons. Over long periods, they generate broadly similar returns, though with very different volatility profiles. Non-listed real estate's strongest attribute is its diversification benefit, particularly for bond-heavy institutional investors. Listed real estate offers superior liquidity, transparency, tactical flexibility and faster price discovery.

Portfolio optimisation results consistently support a dedicated allocation to real estate, generally in the range of 5% to 20%. While historical diversification effects favour non-listed property, listed real estate provides complementary benefits that are not fully captured by optimisation models. Therefore, the most effective approach for many long-term investors is not choosing one route over the other, but combining both within a strategic real estate allocation.