



Time for a  
**RE**

**THINK**

**The role of listed real  
estate (LRE) for  
generalist investors**

EPRA Research | March 2025

# Table of Contents

## AUTHORS:



**Alex Moss**

Chairman EPRA  
Research Committee



**Yiqing Gu**

MSc Research Assistant



**Introduction**..... p 03

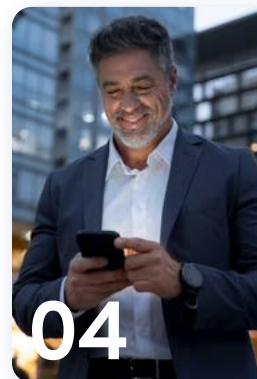


**Executive summary**..... p 05



**Empirical evidence**..... p 07

- a. The story so far: review of previous evidence
- b. Market cycles: definitions and asset class performance
- c. LRE and direct property: an update on the blended approach
- d. Automated trading strategies
- e. LRE and multi asset funds: new evidence
- f. Smart Beta themes



**Generalist investors**..... p 17

- a. Definition and examples of different risk and requirements of generalist's investors
- b. Integration issues of LRE and how to overcome them
- c. Strategic approaches to LRE – Case studies
- d. Tactical approaches to LRE – Suggested approaches



**Appendices and references**..... p 27

## Disclaimer

Any interpretation and implementation resulting from the data and findings within remain the responsibility of the company concerned. This report cannot be republished without the express permission from EPRA.

## Acknowledgements

The authors would like to acknowledge the significant help provided by Kieran Farrelly, EPRA Research Committee Member, Dr. Dilek Pekdemir, EPRA Research Manager, David Moreno, CFA, Indexes Manager and Matt Fletcher, Director of European Investor Outreach at EPRA for their valuable contributions to this report:



# 1. Introduction

In this paper we examine investment strategies that use listed real estate securities (LRE) to enhance performance in multi-asset, equity, or blended real estate portfolios. We refer to the managers of these portfolios collectively as “generalists”, to differentiate them from portfolio managers whose focus and investable universe is purely LRE, whom we call “specialists”. It is important to remember therefore that our definition of specialists is restricted to LRE, and real estate participants in the private markets (e.g. fund managers who own and manage buildings rather than LRE) are for this purpose deemed generalists. We expect that this will be the first in a series of papers on this topic.

Historically, many equity and multi-asset generalists have tended to take an “all or nothing” view about adding LRE to their portfolios. Simply put, they might incorporate a 5-10% allocation when interest rates are peaking and about to enter a downward trend and reduce this to 0% when rates had reached their inflexion point and are expected to rise. Whilst this approach may have advantages, we believe that it is important to see if this approach can be refined, and a permanent allocation to LRE maintained throughout the cycle for several reasons:

- Since 2016 the share price performance of companies in the sector with different sector exposures (retail, office, industrial/logistics etc) have started to diverge significantly due to the structural changes in their underlying asset class (office, retail and industrial in particular). **It is therefore now important to consider approaches other than using a handful of the largest companies as a proxy for an on/off approach to optimise sector performance.**



- LRE was often seen historically by generalists as asset-heavy, with lagging performance relative to the economy, corporate over-leverage (particularly at the top of the market) and with a tardiness in responding to structural market changes such as the shift to e-commerce. However, markets have changed, and **new sectors have emerged with a far more direct and immediate relationship with the underlying economy and/or key structural trends such as demographic shifts.** These sectors include healthcare, student accommodation, data centres, self-storage, life sciences, and the Private Rented Sector (PRS).
- In addition, companies operating in the traditional sectors (office, retail, industrial) have been forced to reassess their strategies to survive and deal with the series of structural shifts that have occurred post 2016. **As a result, LRE companies are now more dynamic in terms of asset recycling, repositioning and take a more conservative view towards leverage.**
- Historically a NAV valuation methodology was used almost exclusively by investors. This is changing; companies and analysts/fund managers are now focusing on operational cash flow. This means that **it is easier for LRE to fit into the generalists' screening process,** which in addition to earnings growth has an emphasis on exposure to broader trends such as demographics, urbanisation, and technological change that impact all equities sectors including LRE.



# 2. Executive summary

This paper seeks to provide both empirical and anecdotal evidence to answer the following three questions:

1. *Are there strategies for adding LRE on a permanent basis to a **direct property portfolio** that would enhance returns?*
2. *Are there strategies for adding LRE on a permanent basis to a **mixed asset portfolio** that would enhance returns?*
3. *What are the **key investor groups**, and how can the management teams of LREs address their requirements?*

We have conducted a wide-ranging study over a 25-year period broken down into different stages of the cycle (Figure 1). The evidence is clear and as follows:

Firstly, in terms of adding LRE to a direct portfolio: For the UK, the beneficial impact was significant (+57% and +77% over the full period) (Figure 2). For Europe the figure was positive but lower (+9%). By adding a rules-based momentum adjustment to the LRE weighting, the results improved significantly (Figure 3), with the benefit to the UK portfolio rising to +7% and to the European portfolio to +6%.

One of the key issues with LRE has always been the persistence of performance through the cycle. By adding a rules-based momentum strategy, we were able to improve performance in all but one period in the UK and all but two in Europe (Figure 4).

Secondly, in terms of adding LRE to European multi asset funds we found significant benefits. For the period 2000-2023, we added a 10% global LRE allocation to a 60% equity/40% bond portfolio. In the majority of cyclical phases, performance was enhanced and over the full period there was performance accretion of over 14% (Figure 6).

Finally, in terms of empirical evidence we provide examples of how Smart Beta strategies can be used to enhance performance. For the period 2015-2023 we took six common Smart Beta strategies from the equity market and applied them to the European listed real estate universe. These were: low leverage, largest stocks, highest NAV valuation, highest dividend yield valuation, lowest volatility and highest analyst rating (Table 2).

We found that all these strategies outperformed not only bonds (not a surprise given the period), but also LRE indices. In addition, in two of the six periods they outperformed equities.

We believe that by grouping European LRE into these, or similar buckets, both generalists and specialists can use LRE to optimise performance at different stages of the cycle, regardless of underlying asset exposure or index weighting.

It is important to understand that there are (at least) six different investors groups, all with different risk/return criteria, strategies and requirements for how they allocate to real estate in general and LRE in particular. We provide a guide to these groups, which we believe will enable companies to understand more accurately which investors to target as their shareholder base evolves, and to widen the pool of potential investors for equity fundraising.



Historically generalists have faced challenges integrating LRE with other equity sectors. We show that by using earnings as a key metric, rather than NAV as the sole measure, LRE can be more easily and efficiently integrated into the allocation process leading to a greater likelihood of a permanent allocation.

Regarding the practical application of an LRE strategy we have provided three case studies demonstrating how larger investors have successfully integrated LRE into their allocation process. Finally, we provide a roadmap for generalists on effectively utilising LRE throughout the cycle to enhance returns.



# 3. Empirical evidence

## a) The story so far: a review of previous evidence

So far, the role of LRE in mixed-asset portfolios has been primarily focused on its diversification benefits and risk-adjusted return potential. LRE is often recognised, both theoretically and empirically, as a reliable income-generating class. Despite the significant impact of the GFC on real estate markets and LRE returns, the post-GFC period saw not only the expansion of REITs beyond traditional markets like the US, UK, and Australia, but also a surge in literature reassessing their role in mixed-asset portfolios, driven by the disruptions in market dynamics caused by the crisis. At the end of this section, we provide a table with the key findings of the studies highlighted here, along with the periods and regions they covered.

## REIT + Direct Real Estate (i.e. a blended real estate strategy)

Unlike its place in traditional stock/bond portfolios, LRE in portfolios that include both LRE and direct real estate tends to serve a complementary function. Studies in this area, particularly those focusing on institutional investors such as pension funds with large capital allocations, suggest that LRE often serves as a substitute for direct real estate in the short term. For instance, Hoesli and Oikarinen (2021) observed that the risk-return profile converges as the investment horizon lengthens, suggesting that LRE may serve as a more liquid substitute for direct real estate, albeit with higher volatility. Their previous work in 2016 also emphasized the liquidity benefits of a blended real estate portfolio and suggested that REIT-related ETFs could offer risk-hedging advantages. Similarly, Delfim

and Hoesli (2019) found that incorporating LRE improves liquidity and reduces transaction costs compared to direct real estate for short-term strategies. They also observed that adding REITs to a portfolio alongside direct real estate increased the overall real estate allocation in an optimal portfolio, as determined by the Sharpe ratio over the long-term.

This theory has been further explored through practical research. In 2015, Moss and Farrelly tested the benefits of a blended real estate allocation strategy in a mixed-asset portfolio, using fund data from the past 15 years instead of the index data typically employed in empirical studies. Specifically, they found a total return enhancement of 19% in their unlisted real estate portfolio





over 15 years, 43% over the last decade, and 4% annually over the past five years by incorporating a 30% allocation to listed real estate with relatively mild volatility compared to unlisted real estate.

These findings highlight the return-enhancement potential of combining LRE with direct real estate, showing significant improvements in returns over multiple periods – a benefit often neglected in the academic literature of this field. Real-world data often reveals dynamics not captured by theoretical models, making it essential to combine academic and practical perspectives for a fuller understanding. In support of this, Boudry et al. (2020) argued that while academic perspectives may view the diversification benefits of REITs in mixed-asset portfolios as limited, these benefits ultimately depend on the investor's risk profile and the specific challenges faced in decision-making.

## LRE v traditional stock/bond portfolios

The GFC prompted many to view LRE's return-enhancement capability in portfolios as time-varying, with studies examining this dynamic across regions such as the US (Lee, 2010; Lee and Moss, 2018) and global developed markets (Morri and Romito, 2017). Yet broadly, studies agree on LREs' ability to enhance the risk-adjusted returns of portfolios particularly in post-GFC periods. Empirical evidence from developed markets, including the US, UK, Australia (Habbab et al., 2022), Europe (Niskanen and Falkenbach, 2010; Newell et al., 2013; Marzuki et al., 2018; Newell et al., 2018), Japan (Newell et al., 2012; Razak and Zaim, 2023), and particularly Singapore (Newell and Pham, 2015), highlights these benefits. Notably, in Singapore, S-REITs outperformed the broader stock market by 4.5% over the study period, leading

researchers to advocate for a significant allocation to this asset class. Similar findings have emerged from studies in emerging markets, including Thailand (Pham and Khoi, 2011a), South Korea (Pham and Khoi, 2011b), South Africa (Ntuli and Akinsomi, 2017), and Mexico (Marzuki et al., 2020), further reinforcing the value of REITs as a return-enhancing component of investment portfolios.

On the other hand, the diversification benefits of LRE, though extensively analysed, remain a subject of debate. Many studies, including most of the literature mentioned so far, have concluded that LRE offers limited or no diversification with equities but demonstrates more substantial diversification advantages when paired with fixed-income assets, particularly during periods of financial instability such as the GFC. Although the correlations between LRE and other traditional capital market assets have long been considered time-varying, their short-term link with stocks has shown remarkable consistency, even in the post-GFC era. For instance, research by Newell et al. (2012) and Razak and Zaim (2023) on J-REITs, spanning the pre-GFC to pre-COVID-19 periods, found significantly reduced diversification benefits with equities during the GFC and its aftermath. Instead, J-REITs demonstrated consistent diversification benefits with bonds due to their weak correlations across all sub-periods.

However, the turmoil caused by the global pandemic has brought forward new evidence indicating that diversification might only be achievable through foreign exposure, as domestic assets, including bonds, can display heightened correlations during times of market distress (Habbab et al., 2022), though even this view is not without its limitations, as Leasame et al. (2021) highlight that LRE performance is geographically heterogeneous yet interconnected, particularly during periods of volatility.



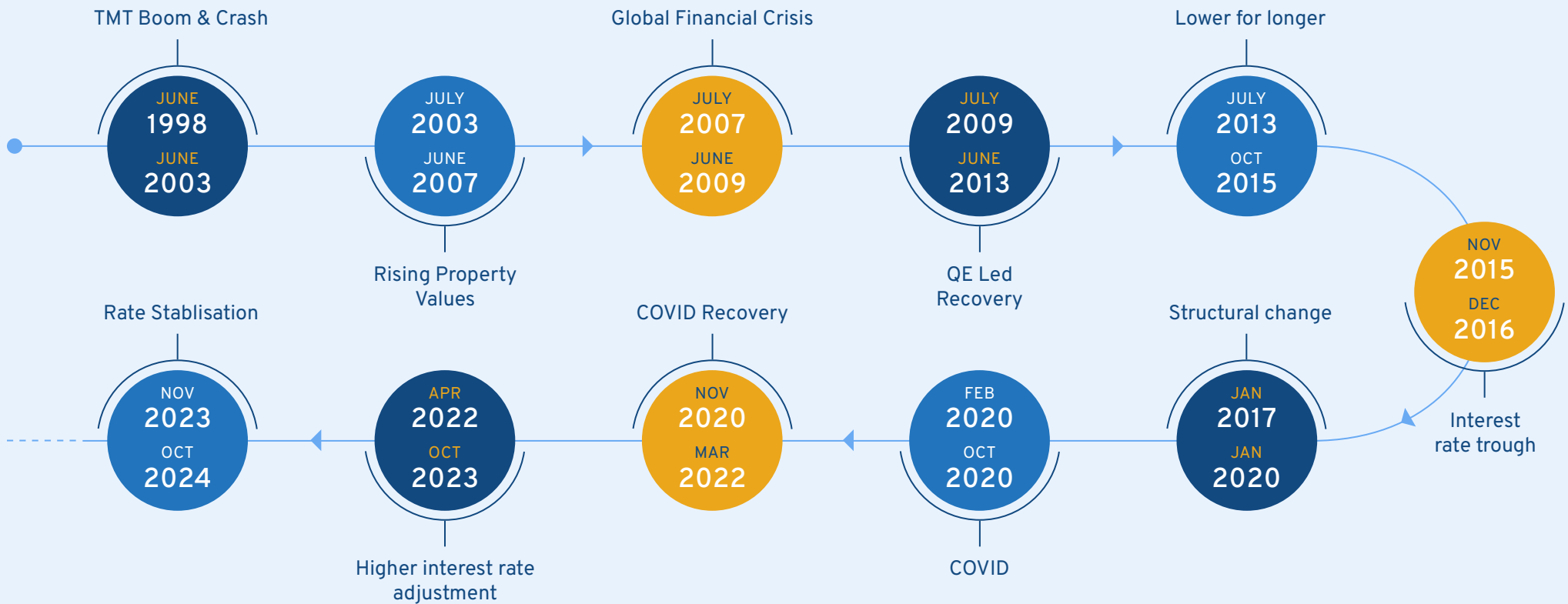
## b) Market cycles

In a previous paper (Moss and Farrelly 2015), looking at blended portfolios, divided the full period of the study into sub periods or cycles to isolate the performance of LRE under certain market conditions. We have decided to adopt this approach again in this

paper. We have therefore taken the stated cycle periods of the previous study and extended them to the present day. The periods were chosen using the inflection points of LRE as a starting point. The periods we have used throughout this study are as follows:

Figure 1 – Market cycles 1998-2024

Source: Authors



A few points to note on this approach:

- This is the approach that generalists, especially multi-asset investors, would take to their asset allocations i.e. adjusting weightings according to valuation and expected performance within the context of both a current and expected market cycle.
- The exact timing of the cycles is subject to interpretation, as are the names used.
- All our analysis in this paper is based on monthly data hence the cycle periods are all month ending. In practice, the turning points of these cycles will often be on a certain day.
- We have based the cycle periods on the turning points in LRE performance.
- Not all cycles are of equal length – they range from a few months to several years depending on the change in valuation; and
- As a result, certain periods may be different to the perception of the impact on the underlying economy, e.g. the COVID cycle is shorter than some people might imagine but that is because:
  - a. the pricing impact was swift; and
  - b. the laggard characteristics of the sector (due to lease contracts in place) provided some respite compared to, say, the hospitality industry.



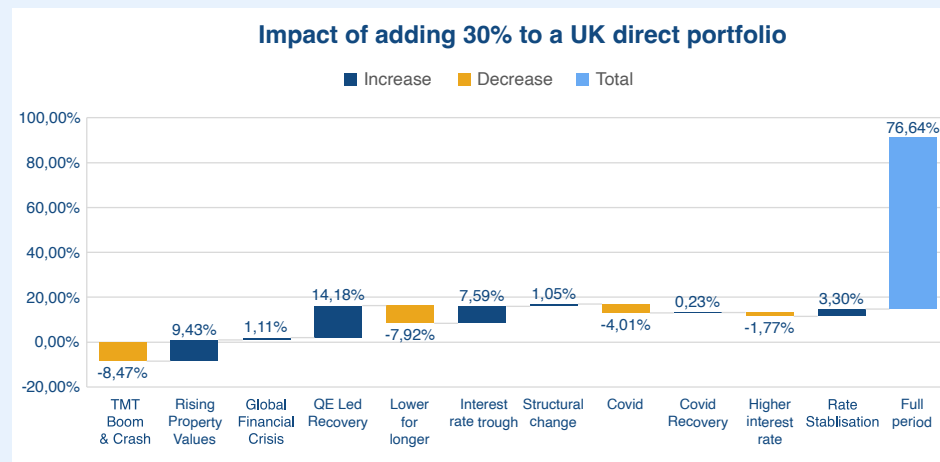
## c) LRE and direct property: an update on the blended approach

It is now ten years since the previous study we undertook on blending direct property and LRE, which was UK based and in GBP. In the first part of this section, we update those results to reflect the period 2013-2024 and see if the benefits of blending still hold true. Importantly we have also extended the study to include a separate analysis of the European ex-UK market from 2000 which is when data became available. We have used the same methods as previously, which was replicating the fund structure set up by LGIM for DC pension funds, combining a 70% allocation to direct property with 30% to a passive global REIT index tracker. In this case, for consistency we have used indices rather than funds data as some funds faced a survivorship issue, which affected the consistency of results.

So, is there any benefit? We show the results below, in Figure 2. We have broken down the full period into the different phases of the cycle, then shown the results for:

1. 100% Direct exposure
2. 100% Global LRE exposure
3. The 70/30 Blended exposure
4. Return enhancement (%) over the cycle period
5. Finally, as the cycle periods are of different lengths we show in the final column the annualised enhancement:

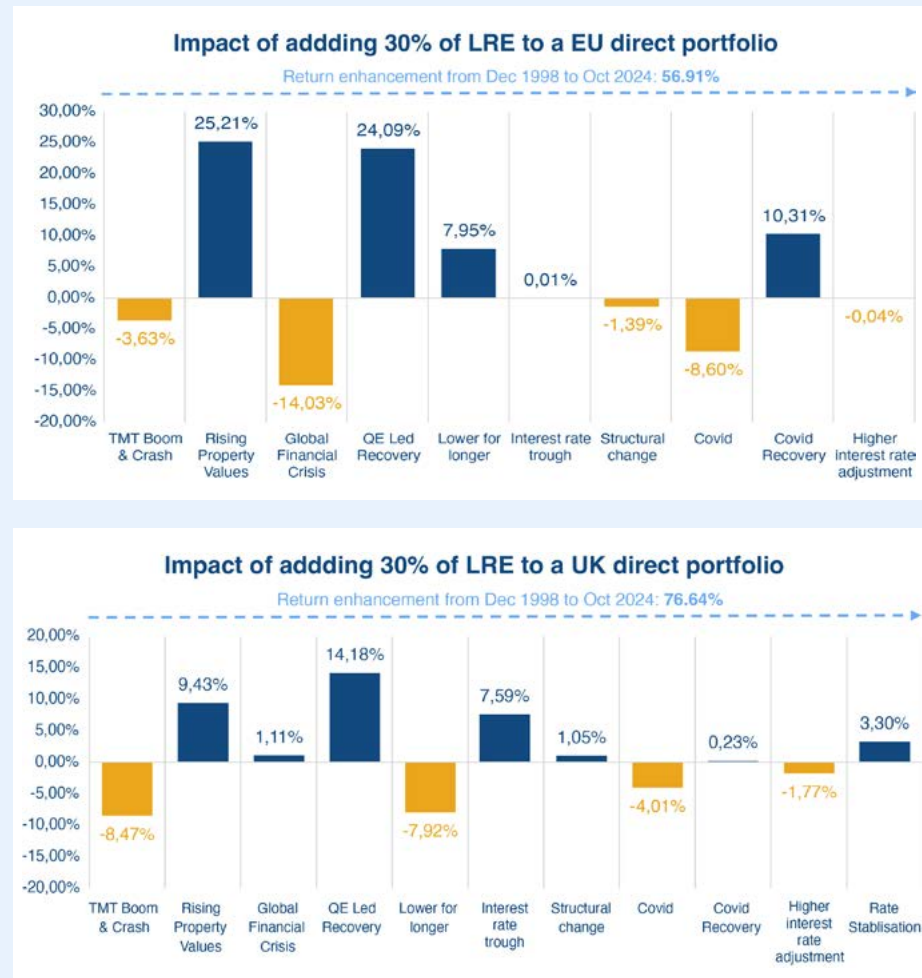
**Figure 2 – UK blended returns update 1998-2024**



Source: EPRA, MSCI, Authors



**Figure 3 – Europe blended returns update - cumulative**



Source: EPRA, MSCI, Authors

The clear answer for the UK is again that there are definitive benefits. Out of the eleven periods of the cycle seven had a positive impact of adding UK LRE and four had a negative impact. Overall, across the full period, the impact was significant: +76%, equating to 2.2% per annum.

But is this also true for Europe more broadly? Direct market index data for the region is of less frequency (annual not monthly) But the results are shown in Figure 3.

The overall results are similarly positive to those of the UK – four out of ten periods saw a total return enhancement of 57% over the full period, equating to an annualised enhancement of 2% per annum and a positive impact on six occasions.

We are aware that there have been developments in this strategy since it was first introduced. These include:

- Reducing the listed element to form a purely private markets strategy
- Increasing the listed element to produce a 45% direct / 45% listed / 10% cash allocation (e.g. the LGIM PAIF)
- Combining structures for a 50% closed-end fund, 25% open-ended fund, and 25% LRE.

A good example of this latter allocation is the LGIM Private Markets Access Fund managed by their multi asset business with allocations to real estate, infrastructure, private equity and private credit and aimed at UK DC investors.

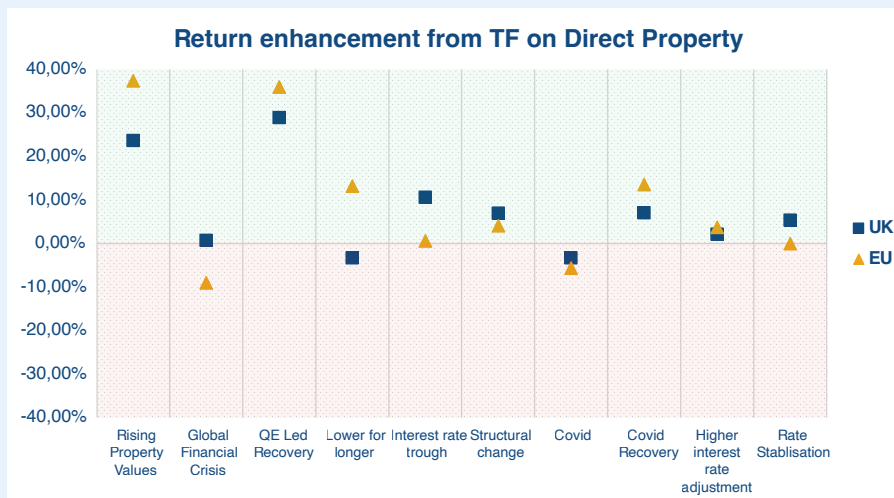
## d) Automated strategies

One of the issues that concern non-specialist holders of LRE is how to time the reduction in exposure to minimise losses in a period when LRE generates negative or lower returns. In the case of blending the question would be whether it is possible to use an automated trading strategy to reduce the LRE exposure from the regular 25% during downturns and increase it during upturns. In a previous paper (Moss et al 2015) we looked at Trend Following and Momentum techniques for doing just this with strong positive results. The Trend Following technique follows Faber (2007) and involves increasing weighting when the portfolio/index breaks above its 10 month Moving Average (“MA”) and reducing weighting when it falls below.

However, in that paper a constant weighting was maintained above the MA and reduced the global weighting to 0 when it fell below. For this paper, we decided to focus on maintaining a core exposure throughout all the periods of the cycle. Therefore, instead of 0, when the index fell below the MA the LRE weighting would be cut to 20% (compared to a core 30%) and when it went above this would increase to 40%. So, does this make a difference? For simplicity we have just used annualised returns as a comparison.

Figure 4 shows the difference between the enhancement of an unadjusted LRE allocation in a blended portfolio and one adjusted using Trend following. The results show a significant improvement most periods and we believe this automated strategy has significant benefits in allowing dynamic rebalancing within constraints to optimise performance.

**Figure 4 – Impact of trend following on blended portfolios**



Source: EPRA, MSCI, Authors

## e) LRE and multi asset funds: new evidence

We have therefore established that LRE can enhance the performance of a direct property portfolio at most stages of the cycle. However, can LRE enhance a multi asset portfolio? For this study we have focussed purely on the broader European region. The asset classes we have used are:

- European Equities
- European Bonds
- Global LRE
- European LRE
- A Blended European Direct /Global LRE portfolio

The period we have data for covers 2000-2023.

As a starting point, let's examine the summary investment statistics for the period:

**Table 1** – Investment statistics – full period 2000-2023

	European Equity	European Bonds	Global LRE	European Direct Property
Annulised Mean	7,93%	3,11%	8,88%	4,95%
Volatility (s.d.)	14,80%	10,48%	16,67%	3,48%
Kurtosis	1,80	1,29	-0,01	8,50
Skewness	-0,58	0,47	-0,65	-2,29
Sharpe Ratio	0,37	0,06	0,38	0,70

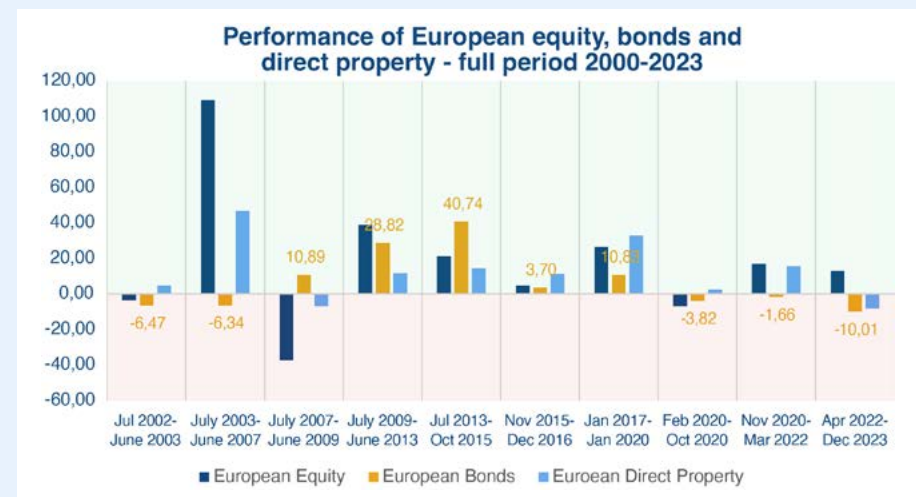
Source: EPRA, MSCI, INREV, Authors

As we would expect from both anecdotal and empirical evidence, global LRE provides a significant boost to European direct property returns and outperforms European equity and bonds. Given that it is a single equity sector, volatility is higher, though not significantly relative to the broader equity market. It therefore seems reasonable

to assume that adding global LRE should enhance performance. However, it might be the case that all this annualised outperformance occurred in one period, so let's examine the breakdown by period.

Figure 5 shows the performance by cycle period. We have assumed that in up periods, global LRE will outperform direct property and bonds so the key question is: can it outperform equities? Figure 5 shows conclusively that it can, with superior performance in six out of nine cycle periods shown.

**Figure 5** – Performance by different cycles



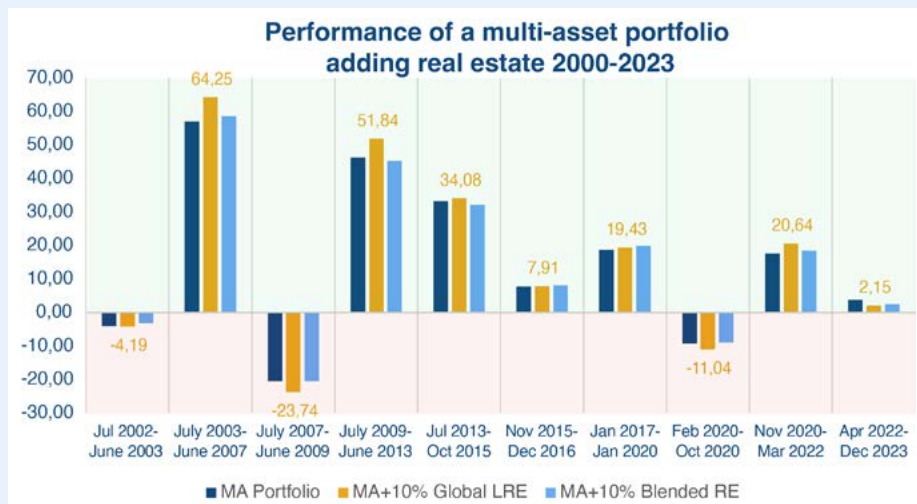
Source: EPRA, MSCI, Authors



The final step is to see how the addition of an LRE allocation impacts a mixed asset portfolio. We have chosen a standard 60% Equity 40% Bond portfolio as the default, and then added firstly a 10% Global LRE allocation and then a 10% Blended (70% Direct, 30% Global LRE) allocation.

The key findings are that in the majority of cases adding LRE improves the performance of a multi-asset portfolio. Interestingly in only one case do the Global LRE and Blended allocations fail to enhance performance at the same time.

**Figure 6 – Performance by different cycles**



Source: EPRA, MSCI, Authors

## f) Smart Beta themes

Thus far we have looked at how the returns on a free float market capitalisation-based LRE index can enhance performance (in practice this would be executed using either an ETF based on an EPRA Index or an internal LRE tracker fund). We then looked at how the returns can be enhanced further by using an automated rules-based Momentum strategy which increases LRE exposure during upcycles and reduces it during downcycles.

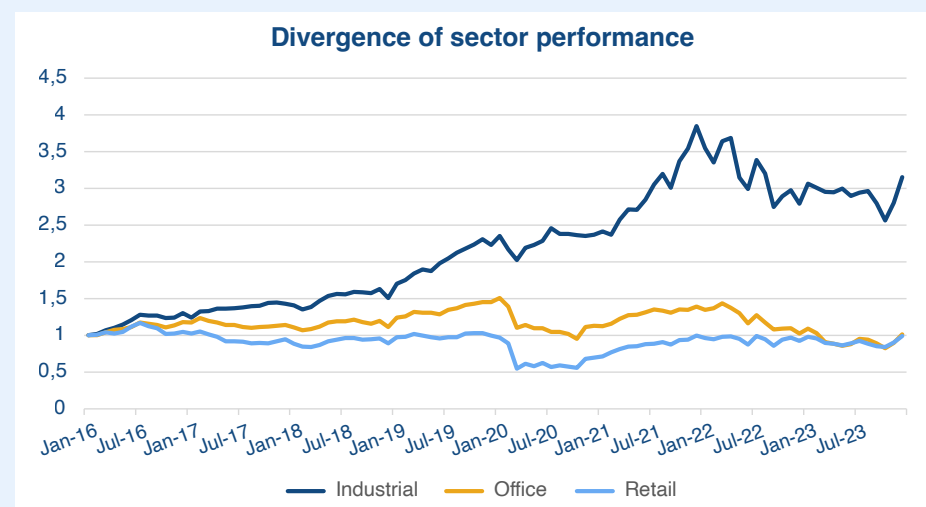
There are two further extensions to be added to this.

- The first is Smart Beta, which involves a rules-based selection and weighting criteria that is not based on free market capitalisation. We deal with this in the following section.
- The second is Thematic Clusters, which involves grouping LRE arbitrarily according to different themes. This will be addressed in a subsequent paper.

With Smart Beta strategies we are therefore focussed on strategies which can capture the outperformance for generalists but minimise the extent that it is given away when the sector underperforms. One problem that has arisen is the extent to which the performance of the different asset types has diverged since the advent of e-commerce and WFH.

As can be seen in the figure 7 on the next page, the sector has had significant divergence of performance since 2016. There has, however, also been significant divergence of performance according to non-real estate factors such as Leverage, Size and Valuation. We are interested in discovering whether this divergence is purely sector related or masks other underlying security specific factors/attributes. We therefore start our study in Dec 2015.

**Figure 7 – Comparative performance 2016-2023**



Source: EPRA, MSCI, Authors

The full period we used was Dec 2015 to June 2023. From the initial screen of all European LRE stocks we imposed a minimum liquidity threshold of >€500m market capitalisation to ensure a level of investibility. We then determined the ten highest scoring stocks in each of the following categories:

- **Gearing:** Low Leverage (under 20% LTV).
- **Size:** Largest stocks (by market cap).
- **Valuation#1 Quality Premium to NAV:** Highest premium to NAV.
- **Valuation #2 Quality Income:** Lowest dividend yield.
- **Sentiment:** Highest sell side analyst rating; and
- **Volatility:** Lowest annual volatility.

The purpose of this study is to identify a set of general equity style and factor guidelines for European LRE that can be used by non-specialist investors across different periods of the cycle. These style and factor guidelines are asset ambivalent. Performance characteristics are relative to both an equity benchmark and a property benchmark. The aim is to identify performance over both the full period and different stages of the cycle to determine if there are strategies a multi-asset/generalist fund manager can use to maintain a consistent exposure to the LRE.

The results can be seen in the table below.

**Table 2 – Risk and Return by Asset Class**

FULL PERIOD RESULTS DEC 2015 TO JUNE 2023				
	Total Return	Mean Return	Max drawdown	Volatility
European Equities	62%	0.62%	-43%	13.78%
UK Equities	56%	0.57%	-40%	12.32%
European Bonds	-8%	-0.08%	-21%	4.49%
UK Bonds	-10%	-0.08%	-33%	8.17%
European LRE Index	-20%	-0.09%	-42%	18.14%

**Table 3 – Smart Beta results 2015 to 2023**

FULL PERIOD RESULTS DEC 2015 TO JUNE 2023				
	Total Return	Mean Return	Max drawdown	Volatility
Low Leverage	31%	0.37%	-44%	12.12%
Largest Stock	9%	0.36%	-63%	20.66%
Quality Prem/NAV	126%	0.96%	-65%	9.90%
Quality Income	-55%	0.57%	-62%	12.65%
Low Volatility	47%	0.45%	-46%	6.40%
Analyst Rating	75%	1%	-54%	12.22%

Source: EPRA, MSCI, Authors

All Factor strategies outperformed LRE Index and Bonds and 2/6 outperformed equities. Volatility (ex-Large Stocks) was lower than LRE Index. However, Maximum Drawdown was higher suggesting they need to be subject to an automated trading strategy such as 10-months MA Momentum to reduce this risk. Our conclusion is that smart-beta strategies can offer a diversifying and potentially outperforming listed real estate sector exposure vs a benchmark for broader equities and multi-asset investors. The low volatility strategy provides the highest level of diversification.

Overall, it can be seen that as well as Momentum the use of a Smart Beta approach to re-weight an LRE allocation can lead to consistent superior performance.

# 4. Generalist investors

## a) Definition and examples of different risks and requirements of generalist’s investors

A key aspect of understanding valuation movements and fund flows in real estate capital markets is developing an appreciation of the range of different shareholders participating in the market, their motivations, and their investment objectives. Moss and Farrelly (2024) provide an approach to identifying the different investor types and classifying them into groups according to the specific criteria of size, time horizon and investment objective/risk-adjusted return. We use examples of how they allocate to real estate in broad terms and conclude with some specific examples of practical applications for LRE. This framework provides a greater understanding of how LRE asset allocations are determined.

How can we break down the different participants into common groupings based on their overall size and investment preferences? We believe that there are six different types of investors to consider, and we use these groupings throughout this chapter. They are:

1. Private individuals
2. Wealth managers
3. Ultra-high net-worth wealth managers
4. Institutional asset managers
5. Pension funds
6. Sovereign wealth funds



Family offices have not been included in this list, even though they are important, as it is very difficult to make general assumptions about them. The smallest family offices fall more into the category of private individuals whilst the largest can be more accurately grouped in terms of characteristics (but not size) under sovereign wealth funds. Also, it is important to note that these size groupings are based on individual rather than aggregate size. In other words, most sovereign wealth funds are larger than most pension funds, and most wealth managers will be larger than individual asset owners.

However, in aggregate, institutional asset managers may have a larger total AUM than pension funds in total. In addition, it is worth noting that one must be wary of double-counting. A sovereign wealth fund may, for example, own US\$100bn of assets, of which US\$60bn is managed by institutional asset managers. These managers would also report that US\$60bn under their AUM.

We now look at each of the six groups (shown in ascending order) and highlight key points about their asset allocation.

## **1** Private individuals

- Individuals typically invest in REITs (or unlisted funds) after conducting their own research or following the advice of a broker.
- Individuals provide liquidity into the market, as typically they are dealing in a small lot sizes with “frictionless” trades (i.e., their trades do not alter prices).
- Individuals’ trade executions can normally be accommodated within the market size quote.
- Research is typically from tipsheets/paid-for research providers/stockbrokers.

- Income-based REITs and REIT funds are popular with investors reliant upon passive income sources (e.g., pensioners).
- Monthly or quarterly payouts may be especially attractive.
- The time horizon for these income investors is typically long-term.
- It is dependent upon the age of the individual.
- Broadly speaking, the younger the investor, the greater the risk appetite = the greater the proportion of total return to be in capital rather than income, and the shorter the investment time horizon.
- Prima facie, this suggests REITs with their minimum payout should attract an “ageing” investor; however, this ignores the impact of leverage on capital returns.
- Capital preservation is often key. Therefore, an 80/20 return split (income/capital) is often desired.
- For most individual clients, there is little need for additional residential exposure as they typically own equity in at least one residential asset.

## **2** Wealth managers (discretionary aggregated private client accounts)

- This sector has shown dramatic growth in the last ten years due to sector consolidation. As an example, Investec Wealth Management merged with Rathbones to create a £100bn AUM institution.
- The largest are as powerful as institutional asset managers and are often staffed by ex-institutional fund managers.

- They have been known to hold >10% positions and be the largest group of shareholders in smaller IPOs.
- Typically, they hold individual stocks/funds for specific asset exposure (e.g., Life Science REIT, Digital Realty, Prologis) or diversified vehicles as a tactical/core exposure to the sector.
- In the latter case, they often prefer less volatile (smaller) stocks/funds to replicate direct exposure, minimising equity market influences on pricing.
- Typically, their standing depends on two factors, the market cycle, and the stage of a company's evolution.
- The longevity of the cycle if the investment is for tactical reasons.
- Company growth, both in terms of fundamentals and capital raises.
- Wealth managers typically prefer lower volatility and more infrequent cash calls.
- The more a company raises fresh equity and becomes part of equity indices, the more the wealth manager's stake becomes diluted.
- Return criteria is similar to individuals Capital preservation is often key. Therefore, a variation on an 80/20 return split (income/capital) is often desired.
- For most individual clients, there is little need for additional residential exposure as they typically own equity in at least one residential asset.



### Ultra-high net-worth wealth managers (Swiss/US banks) and family offices

- Allocation is typically those with US\$1m of investable assets that are regarded as high net worth (HNW) individuals and those with >US\$30m of investable assets are known as ultra-high net worth (UHNW) individuals.
- Well-known examples of institutions who deal with both groups are UBS and Citibank.
- The higher the investable amount, the more customised the investment solution provided.
- Firms often sponsor or create structured products where listed real estate has a role.
- Clients' requirements are normally very specific.
- Often the products used are leveraged or have variable leverage.
- Time horizons can be anything - from very short-term tactical (e.g., a Brexit basket) to longer-term structural (investment in residential across Europe).
- A number of products have been developed that allow the investor to select the leverage applicable to them.
- The investment can be in anything from a quant-driven fund to an actively managed (higher fees) separate account.
  - They provide a multitude of investment strategies, utilising both strategic and tactical exposure across the capital stack. Products offered can include one or all of listed, direct, unlisted, debt, and derivatives.

## 4

### Institutional asset managers

- Well-known examples include Blackrock, Fidelity, and Schrodgers.
- The main distinction in their product range is between active and passive products.
- Most offer a suite of funds to investors including general equity and specialist real estate products.
- In addition to funds (pooled vehicles), separate account mandates can also be offered.
- Funds can be absolute or relative index benchmarked.
- Average holding periods for institutional asset managers are estimated at 3-5 years. However, there are many exceptions.
- Most absolute return allocations will be given cap and collar review prices to see if the strategy is working. Holding periods can range from days to several years.
- For benchmark weightings, a Core holding of the largest stocks in the index will be broadly permanent, although it is subject to weighting rebalancing on a regular basis to try and outperform the index.
- The performance of most funds versus the benchmark (absolute or relative) is key to gaining AuM and retaining clients. They typically provide a detailed explanation of the components of the expected return as well as expected volatility, liquidity and tracking error.

## 5

### Pension funds

- Examples: PGGM, APG.
- The main distinction is between defined benefit (DB) and defined contribution (DC) schemes.
- A significant consolidation amongst managers is occurring globally, with a heavy focus on administrative costs and net returns.
- A good example of this is the Legal and General DC mandate for a NEST for blended real estate products.
- Typically, there are longer-term time horizons.
- Holdings tend to be significant, so a large amount of due diligence is undertaken (sunk cost).
- In addition, due to the size of the holding (3%-20% is not uncommon), it is impossible to trade out quickly without affecting the price. The normal option is a block sale or book-building exercise.
- For DB schemes, the return criteria are normally asset/liability matching. Therefore, a high-income component to total returns with capital preservation in real terms (i.e., after adjusting for inflation) is a requirement. For DC schemes, the purpose is normally to add liquidity to existing real estate exposure.



## 6 Sovereign wealth funds

The table below shows the largest sovereign wealth funds at the end of 2022 by AUM. Note that the AUM shown is total assets, not just real estate. As can be seen, the largest controls US\$1.4 trillion of assets.

### Leading global sovereign wealth funds by AUM.

Name	Country	AUM US \$bn
China Investment Corp (CIC)	China	1,351
Norges Bank Investment	Norway	1,145
Abu Dhabi Investment Authority (ADIA)	UAE	993
State Admin of Foreign Exchanges	China	980
Kuwait Investment Authority	Kuwait	769
Govt of Singapore Investment Corporation (GIC)	Singapore	690
Public Investment Fund	Saudi Arabia	620
Hong Kong Monetary Authority	Hong Kong	500
National Council for Social Security	China	474
Qatar Investment Authority	UAE	450

Source: Statista 2022



- These funds have been hugely influential over the last ten years.
- They can invest across the capital stack, for example, GIC owning equity and debt instruments of British Land, as well as having a JV with them. This is similarly the case with Norges and Prologis.
- Potentially this is the largest pool of investment capital; therefore, allocations are limited to larger companies.
- Potentially very long-term time horizons are involved, partly due to the same reasons as those for pension funds.
- Note that they may exit one, but not all parts of the capital stack.
- As mentioned, Norges holds Prologis equity has a JV portfolio with them and possibly own their bonds. They may increase or decrease their weighting in any of these to reweight their overall exposure to the company.
- These funds offer a strategic deployment across the capital stack, including private debt and underwriting. They may have board representation and up to a 20% stake in individual companies.

## b) Integration issues

There are two (related) major impediments to generalists integrating LRE into their allocations:

- The first is valuation; and
- The second is data availability.

### Valuation

Historically net asset value (“NAV”) has been the preferred metric for LRE. This poses a problem for generalists as real estate is the only sector out of 11, as defined by Global Industry Classification Standard (“GICS”) that uses this metric extensively. The other sectors are:



In addition, it is only relevant where IFRS (i.e. making assets to market value) rather than GAAP accounting is used. It therefore is not a dominant feature of US REITs valuations as assets are held at cost less depreciation and amortisation under US GAAP. In addition, there are three definitions of NAV by EPRA, namely:

- EPRA Net Reinstatement Value (NRV)
- EPRA Net Tangible Assets (NTA)
- EPRA Net Disposal Value (NDV)

These nuances are very important for the specialists, but can cause issues for generalists and, as a result, most third-party data providers (Bloomberg and Eikon) have set up their general screening systems and information infrastructure to cope with majority of equity sectors rather than real estate.

However, we believe that this idea of NAV being the sole driver of returns is changing. Evidence from the insightful EPRA Equity Fund Managers Survey (October 2024) shows that for the specialists there are three metrics they think are more important than NAV. These are:

- Net debt/EBITDA
- Total shareholder return
- Net operating income growth

For generalists, NAV was still the most important but only marginally above net operating income and FFO multiple. Similarly, in the same survey the most important characteristics of the sector for generalists were seen to be stable and predictable cash flows.

## Data availability

Therefore, it seems clear that valuing LRE on a cashflow basis is a clear way of integrating it into a general equity approach and focussing on the key financial characteristics. The good news is that

this information is easily available and Table 3. shows the cash flow data available on a random European LRE company, in this case Swiss Prime Site.

**Table 4 – Sample cash flow data available from Eikon: Swiss Prime Site**

Source: Refinitiv Eikon

	HISTORICAL (ACTUALS)			FORECAST (SMART ESTIMATE)		
	FY Dec-21	FY Dec-22	FY Dec-23	FY Dec-24	FY Dec-25	FY Dec-26
NET WORKING CAPITAL	147,725	-401,837	-393,713	-75,000	-	-
INCOME TAXES PAID	-	-	31,869	-	-	-
CASH FLOW FROM OPERATIONS	429,652	364,851	430,585	256,182	264,560	306,984
CAPITAL EXPENDITURES	-	4,012	0,170	57,719	222,332	268,083
Guidance	-	T	-	T	-	-
CASH FLOW FROM INVESTING	-108,718	-214,280	-292,680	-178,951	408,164	-144,769
TOTAL DIVIDENDS	254,496	256,975	260,794	262,800	266,700	1804,961
CASH FLOW FROM FINANCING	-349,028	-244,026	-137,037	-108,350	-712,473	-226,329
FREE CASH FLOW	59,911	-69,390	-67,763	214,806	749,932	250,886
FREE CASH FLOW PER SHARE	-	-	-	2,720	10,340	3,510
CASH FLOW PER SHARE	4,700	4,760	5,610	3,108	4,199	2,966
FUNDS FROM OPERATIONS	304,600	317,600	311,000	323,216	323,385	331,027
FFO PER SHARE	3,590	4,010	4,050	4,187	4,184	4,279
Guidance	-	T	T	T	-	-
ADJUSTED FFO	-	4,259	4,049	4,180	4,240	4,260

## c) Strategic approaches

In terms of strategic to the use of LRE it is the largest pension funds and sovereign wealth funds that have the advantage, as they can invest throughout the capital stack (i.e. equity and debt, public and private markets). As an example, we can look at two examples, from Canada and Norway, namely the Canada Pension Plan Investment Board (CPPIB), and Norges Bank Investment Management (NBIM). Both have an integrated approach to real estate, scanning private and public markets for opportunities to generate the best risk-adjusted returns. While listed real estate equities are critical to their portfolio construction, they diverge when it comes to putting their respective strategies into action.

CPPIB and NBIM were set up by their respective governments with investment mandates enacted by law during the 1990s to deliver the returns necessary to serve future generations. The funds they manage have different funding sources and objectives, which determine how, where and for how long they make investments. Established 25 years ago, CPPIB manages investments on behalf of more than 22 million contributors and beneficiaries of Canada Pension Plan, the country's national retirement income system. CPPIB oversaw C\$632.3 billion (429 billion euros) in assets as of the end of March, of which 8% was in real estate. It does not disclose how much it holds in the listed sector.

NBIM is owned by Norway's central bank and oversees the 17.7 trillion kroner (1.5 trillion euro) Government Pension Fund Global, which receives tax and other revenues generated from the country's oil assets. Only a small proportion of the Fund's returns is returned to the government for immediate spending, however it still represents around 20% of Norway's annual budget. The rest is kept for when the oil reserves become exhausted, which may occur in 50 years, according to some projections. The Fund has around US\$60 billion of real estate assets, of which around 50% is in listed markets (some US\$30 billion).

## INTEGRATED APPROACH TO PUBLIC AND PRIVATE REAL ESTATE MARKETS

CPPIB's team is responsible for investments in public securities across the real asset's investment universe, which includes real estate, infrastructure and sustainable energies. By working closely with the private investment groups, the team helps deliver an integrated public and private investment strategy that "maximises alpha, contributes towards desired portfolio construction and facilitates knowledge sharing." It is a global approach focused on sectors which have "favourable tailwinds and will deliver competitive returns," such as data centres and housing. The team undertakes in-depth sector research and builds detailed company models which are used to forecast five-year total returns, forming the basis for relative value decision-making across the Real Estate group.

CPPIB actively manages the portfolio to maximise the risk adjusted return. "We're constantly assessing the relative forward returns of each of our investments. We typically invest with a three- to five-year investment horizon in mind, but if the forward returns are no longer competitive following strong share price appreciation, or a changed investment view, the team will sell or reduce its position and focus on opportunities with better forward returns" they said. Another key focus is the quality and experience of the management team. CPPIB keeps tabs on a company's management "through an active dialogue," typically involving at least quarterly meetings, as well as improving understanding of market dynamics by talking to listed and private peer companies, industry experts and site visits. "It's really about understanding the medium-term thematic behind any investment, market fundamentals, the specifics of the company and the management's strategy," they added.





Its active investment strategy has resulted in 40 investments to date in Europe and the U.S., generally involving a 5-10% interest in each company, CPPIB say that they have focused their listed real estate investments in sectors such as data centres, housing and self-storage, underwriting its investments over five years. This contrasts with NBIM, although the sector focus is largely the same, NBIM treats unlisted and listed real estate investments as complementary strategic allocation decisions and applies the same long-term horizon in its underwriting.

## LIQUID FACTOR OF LISTED REAL ESTATE

Both CPPIB and Norges work with specialist teams in sustainability and corporate governance. The listed real estate team at CPPIB works closely with the direct real estate investment team across the globe, within the larger Real Assets department, which includes Infrastructure and Sustainable Energies. The listed real estate team actively leverages expertise across the Fund, including Private Equity, Credit and Active Equities. NBIM also combines public and private market real estate expertise, within a larger Real Assets department which includes infrastructure for renewable energy. Both CPPIB and NBIM's holistic approach to real estate markets also involves sharing their insights with colleagues in the fixed income and equities departments.

Their active listed real estate strategies sit separately from their respective funds' broader public equities sleeves; however, this does not preclude liaison with those teams. Public equities accounted for 28% of CPPIB's overall assets under management, whereas they make up 71% of the assets managed by NBIM and involve shares issued by almost 9,000 companies. With a 3-7% allocation to real estate, NBIM has tended to focus its direct property investments on the office, retail and logistics sectors, while the listed real estate strategy concentrates on consumer-facing real estate and niche sectors that are harder to access through direct investments.

## DIFFERENT APPROACHES TO UNDERWRITING INVESTMENTS

A significant part of the listed portfolio is not acquired in open market purchases. Instead NBIM uses IPOs (initial public offerings), ATMs (at the market offerings), ABBs (accelerated book building), for example, as the entry point. This has contributed to significant savings in implementation costs and speed in ramping up the portfolio, NBIM believes in stock selection and has a concentrated portfolio. The ten largest holdings represent around 60% of the total portfolio value, many of these positions are core positions owned for many years, and a few are considered liquidity positions while the team establishes a firm view about the management team, its business plan and the company's direction of travel.

NBIM is the largest foreign institutional owner of REITs in the U.S., where eight of its ten largest holdings are held. In Europe, the Fund owns 25.2% of Shaftesbury Capital, 14.9% of Vonovia and 12.0% of Great Portland Estates, according to its latest disclosures. Once invested, NBIM might take a "hybrid approach" by setting up a private joint venture with a listed company, such as the Fund's life sciences co-investment with Alexandria Real Estate Equities, in which it also has a shareholding.

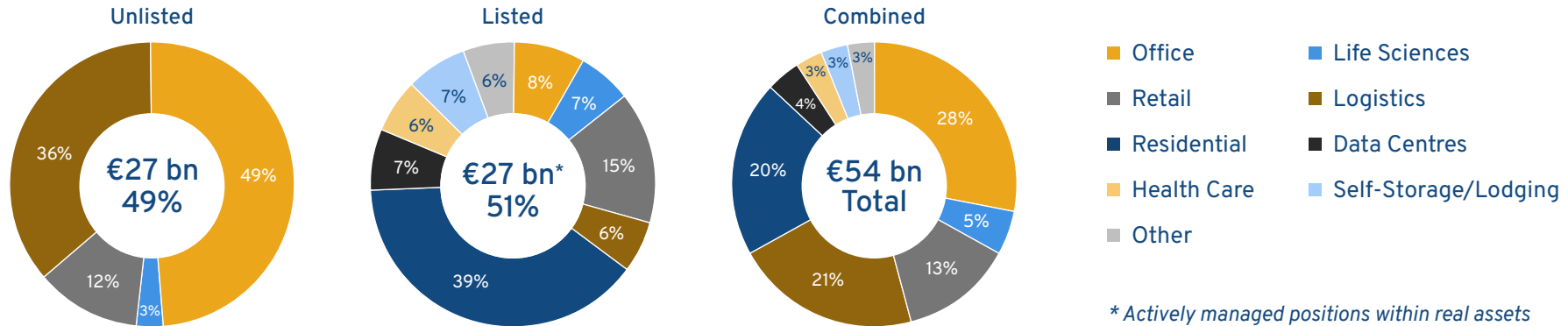
As an example of how these strategies can alter a portfolio, we show below the example of NBIM.

**Figure 8 – Impact on overall asset exposure of adding LRE examples**

Source: EPRA Magazine, September 2024

**Investment Testimonial: Norges Bank Investment Management (NBIM)**

Listed real estate enables efficient sector diversification at pace



**d) Tactical approaches**

We believe that the evidence produced in this paper shows conclusively that generalists should consider a core allocation to LRE to enhance performance throughout the cycle. However, it should be noted that this would not be, merely a buy and hold allocation. We recommend integrating LRE with their other asset classes, and using the some of the following strategies for different stages of the cycle:

- Blended portfolios of direct real estate and LRE.
- A global LRE allocation to enhance a domestic/regional Mixed asset Portfolio.
- Automated Trend following to increase /reduce exposure from the core to a cap and collar according to their reading of the cycle.
- Automated Smart Beta groupings such as low volatility, low leverage, high earnings growth to reweight the LRE allocation according to the cycle.
- Discretionary clusters which group LRE stocks according to their overall MA themes such as demographics, urbanisation, technology, infrastructure beneficiaries etc; and
- Adoption of these tactical approaches would allow generalists to maintain a core LRE allocation throughout the cycle.

# 5. Appendices and references

## Appendix 1 – Summary of previous academic findings

No.	Title	Author & published year	Sample period	Geographic coverage	Summary of findings
1	The Performance Implications of Adding Global Listed Real Estate to an Unlisted Real Estate Portfolio: A Case Study for UK Defined Contribution Funds	Moss and Farrelly, 2015	"Jun 1998 - Jun 2013"	UK	Enhanced performance and improved liquidity profile of real estate and mixed-asset portfolios adding REITs at costs of considerable higher volatility.
2	An Overview of the Initial Performance of the South African REIT Market	Ntuli and Akinsomi, 2017	"May 2013 - Dec 2015"	South Africa	Empirical evidence of REIT as a return-enhancer in portfolios made of stocks and bonds. Weak link between REITs and stocks hence diversification benefit also identified during the sample period.
3	The investment attributes of Mexico REITs as a listed property investment vehicle	Marzuki et al., 2020	"Apr 2011 - Dec 2019"	Mexico	Concluded return-enhancement benefit of REITs in traditional stock/bonds portfolio over 8-years of sample period through empirical research. Diversification benefit is limited.
4	The Performance of Thai-Reits in A Mixed-Asset Portfolio	Pham and Khoi, 2011	"Oct 2003 - Sep 2010"	Thailand	Return-enhancement benefit of REITs found post-GFC but not before or during the GFC in stock/bonds portfolio. Restrictive Legislation has contributed to small size low RE exposure of local REITs.
5	International Articles: The Significance and Performance of South Korean Reits in a Mixed-Asset Portfolio	Pham and Khoi, 2011	"Jan 2002 - Dec 2010"	South Korea	Return-enhancement benefit of REITs but limited diversification identified by empirical analysis regarding holistic time period from 2002-2010.
7	Does listed real estate behave like direct real estate? Updated and broader evidence	Hoesli and Oikarinen, 2021	"1998 - 2017"	USA, UK, Australia, France, Germany, and Netherlands	REIT and direct RE are largely substitutable over the long-term. Hence REIT only possess liquidity benefit when direct RE is also present in a mixed-asset portfolio..
8	Are Public and Private Asset Returns and Risks the Same? Evidence from Real Estate Data	Hoesli and Oikarinen, 2016	"1994 - 2011 (US) 1991 - 2001 (UK)"	USA, UK	REIT and unlisted real estate have similar return and risk profile regardless of investment horizon. Still, risk-hedging benefit of REIT-related ETFs with direct real estate is suggested.
10	REIT asset allocation	Lee and Moss, 2018	"Jan 1994 - Dec 2016"	USA	Time-varying correlations between REITs and other financial assets including small-cap & large-cap stocks & long-term government bonds identified across major events e.g. GFC over 23-year time. Similar time-varying characteristics of their risk and return profile found. Lack of correlations between REIT and private RE during short-term identified, possibly due to capital appreciation.
12	Optimizing Mixed-Asset Portfolios Involving REITs	Habbab et al., 2022	"Jun 2017 - Jan 2021"	USA, UK, Australia	Diversification benefit of REIT in stock/bond portfolio is only achieved through exposure to foreign markets as there is empirical evidence of high correlations between domestic assets (both stocks and bonds). Significant risk-adjusted return enhancement benefit of REIT inclusion identified.
13	An international analysis of time varying beta risk in listed real estate securities	Morri and Romito, 2017	"Nov 2001 - Oct 2013"	Global Developed Market (USA, UK, France, Japan, Singapore, Hong Kong and Australia)	The return and risk profile of REITs varies over time and across regions, including their correlations with stocks. Structural break of REIT return in conjunction with GFC has been found only in certain countries.

No.	Title	Author & published year	Sample period	Geographic coverage	Summary of findings
14	Real Estate in Mixed-Asset Portfolios for Various Investment Horizons	Delfim and Hoesli, 2019	"Q2 1990 - Q2 2018"	USA	Incorporating REITs into traditional stock/bond portfolios enhance risk-adjusted returns. It also offers greater liquidity and lower transaction costs compared with direct RE for short-term strategies. Adding REIT in conjunction with direct RE also lead to higher total allocation to real estate in optimal portfolio (determined by sharpe ratio) in long-term investment horizon.
15	The Changing Benefit of REITs to the Mixed-Asset Portfolio	Lee, 2010	"Jan 1972 - Dec 2009"	USA	REITs demonstrate time-varying diversification and return enhancement relative to small-cap stocks, while providing strong diversification and return benefits for both corporate and government bonds.
16	On the Dynamics of International Real-Estate-Investment Trust-Propagation Mechanisms: Evidence from Time-Varying Return and Volatility Connectedness Measures	Lesame et al., 2021	"Oct 2007 - May 2021"	Global, but with USA Performance as Benchmark	REIT performances are geographically heterogeneous yet inter-connected, particularly in the case of volatility. US REITs are typically a source of shocks for Asia-Pacific REIT markets while exerting a dominant influence over European REITs.
17	Diversification Benefits of REIT Preferred and Common Stock: New Evidence from a Utility-based Framework	Boudry et al., 2020	"Nov 1992 - Nov 2012"	USA	The diversification benefits of REIT (common and preferred stocks) in mixed-asset portfolios are subject to investors' risk profiles, with each offering distinct advantages to different types of investors, depending on the constraints they face.
18	The dynamic role of the Japanese property sector REITs in mixed-assets portfolio	Razak and Zaim, 2023	"01 Jan 2008 - 31 Dec 2019"	Japan	During the sample period REITs have demonstrated strong risk-adjusted return enhancement potential for traditional stock/bond portfolios, though their diversification benefits are limited. These capabilities, however, vary over time and across sectors.
19	The Significance and Performance of Japan REITs in a Mixed-Asset Portfolio	Newell et al., 2012	"2001 - 2011"	Japan	Empirical evidence of REIT's diversification benefits when paired with bonds, but not with stocks. Unlike direct real estate (property companies), REITs deliver superior risk-adjusted returns, outperforming other traditional assets. Model also indicates that increasing REIT allocation during the GFC could optimise portfolio performance.
20	The significance and performance of Singapore REITs in a mixed-asset portfolio	Newell and Pham, 2015	"2003 - 2013"	Singapore	Diversification benefit is very limited. Yet strong risk-adjusted returns enhancement capability of REIT found in empirical evidence, supported by a favourable regulatory environment, making them a solid investment choice.
21	Performance Determinants of Malaysian Real Estate Investment Trusts	Jalil et al., 2015	N/A	Malaysian	REIT's role of diversifier or return-enhancement in a portfolio is subject to factors including size of firms, financing policies, property types of its underlying assets and location.
22	The emergence and performance of German REITs	Newell et al., 2018	"2007 - 2015"	Germany	No enhancement in risk-adjusted returns from REITs, and their diversification benefit with stocks is limited. However, since the post-GFC era, REITs have demonstrated strong risk-adjusted returns.
23	The emergence of Spanish REITs	Marzuki et al., 2018	"Aug 2014 - Feb 2018"	Spanish	Empirical evidence from 2014 to 2018 shows that REIT offer limited diversification benefits with stocks, but provide diversification with bonds and enhance returns with both asset classes.
24	REITs and Correlations with Other Asset Classes: A European Perspective	Niskanen and Falkenbach, 2010	"10 Mar 2006 - 23th Dec 2009"	Europe	Limited diversification benefits of REITs to stocks are identified and particularly during distress time in the stock market. In contrast, there were still considerable diversification benefits of REIT to fixed-income even at distress time.
25	The significance and performance of French REITs (SIICs) in a mixed-asset portfolio	Newell et al., 2013	"2003 - 2012"	French	Empirical evidence of SIICs (French REITs) possessed strong risk-adjusted return enhancement capability but limited diversification benefit, especially to stocks.



## Appendix 2 – UK blended returns update 1998-2024

Source: MSCI, EPRA, Authors

Period	Date	100% UK Direct Property	100% Global LRE	Blended: 70% Direct 30% LRE	Return Enhancement From Adding Listed (70:30)	Annualised Return Enhancement From Adding Listed (70:30)
TMT Boom & Crash	June 1998 - June 2003	66,37	38,13	57,90	-8,47%	-1,73%
Rising Property Values	July 2003 - June 2007	87,17	118,59	96,59	9,43%	2,28%
Global Financial Crisis	July 2007 - June 2009	-36,84	-33,14	-35,73	1,11%	0,55%
QE Led Recovery	July 2009 - June 2013	46,56	93,84	60,74	14,18%	3,37%
Lower for longer	Jul 2013 - Oct 2015	42,52	16,11	34,60	-7,92%	-3,47%
Interest rate trough	Nov 2015 - Dec 2016	3,79	29,09	11,38	7,59%	6,47%
Structural change	Jan 2017 - Jan 2020	21,53	25,03	22,58	1,05%	0,34%
Covid	Feb 2020 - Oct 2020	-3,17	-16,53	-7,18	-4,01%	-5,31%
Covid Recovery	Nov 2020 - Mar 2022	27,86	28,62	28,09	0,23%	0,16%
Higher interest rate adjustment	Apr 2022 - Oct 2023	-15,59	-21,49	-17,36	-1,77%	-1,12%
Rate Stabilisation	Nov 2023 - Oct 2024	4,50	15,51	7,80	3,30%	3,30%
<b>Full Period</b>	<b>Dec 1998 - Oct 2024</b>				<b>76,64%</b>	<b>2,18%</b>

## Appendix 3 – European blended returns 2000-2023

Source: EPRA, INREV, Authors

Period	Date	100% European Property	100% Global LRE	Blended: 70% Direct 30% LRE	Return Enhancement From Adding Listed (70:30)	Annualised Return Enhancement From Adding Listed (70:30)
TMT Boom & Crash	Dec 2000 - June 2003	4,72	-8,51	1,10	-3,63%	-1,52%
Rising Property Values	July 2003 - June 2007	46,84	127,36	72,05	25,21%	5,78%
Global Financial Crisis	July 2007 - June 2009	-6,87	-47,12	-20,90	-14,03%	-7,28%
QE Led Recovery	July 2009 - June 2013	11,59	93,43	36,08	24,49%	5,63%
Lower for longer	Jul 2013 - Oct 2015	14,62	80,18	22,57	7,95%	3,33%
Interest rate trough	Nov 2015 - Dec 2016	11,19	54,37	11,20	0,01%	0,01%
Structural change	Jan 2017 - Jan 2020	32,85	27,75	31,46	-1,39%	-0,45%
Covid	Feb 2020 - Oct 2020	2,52	-20,33	-6,07	-8,60%	-11,29%
Covid Recovery	Nov 2020 - Mar 2022	15,72	36,37	26,02	10,31%	7,17%
Higher interest rate adjustment	Apr 2022 - Dec 2023	-8,28	-11,67	-8,32	-0,04%	-0,02%
<b>Full Period</b>	<b>Dec 2000 - Dec 2023</b>				<b>56,91%</b>	<b>1,97%</b>

## Appendix 4 – Impact of trend following on blended portfolios

Source: INREV, MSCI, EPRA, Authors

	Date	UNITED KINGDOM				EUROPE			
		UK Blended Return	Return Enhancement on Direct Property	Trend Following on LRE Weighting	Return Enhancement from TF on Direct Property	Europe Blended Return	Return Enhancement on Direct Property	Trend Following on LRE Weighting	Return Enhancement from TF on Direct Property
Rising Property Values	July 2003 - June 2007	96,59	9,43%	110,85	23,68%	72,05	25,21%	84,30	37,45%
Global Financial Crisis	July 2007 - June 2009	-35,73	1,11%	-36,07	0,77%	-20,90	-14,03%	-15,89	-9,02%
QE Led Recovery	July 2009 - June 2013	60,74	14,18%	75,50	28,94%	36,08	24,49%	47,63	36,04%
Lower for longer	Jul 2013 - Oct 2015	34,60	-7,92%	39,21	-3,31%	22,57	7,95%	27,83	13,21%
Interest rate trough	Nov 2015 - Dec 2016	11,38	7,59%	14,47	10,68%	11,20	0,01%	11,84	0,65%
Structural change	Jan 2017 - Jan 2020	22,58	1,05%	28,56	7,03%	31,46	-1,39%	36,94	4,09%
Covid	Feb 2020 - Oct 2020	-7,18	-4,01%	-6,43	-3,26%	-6,07	-8,60%	-3,10	-5,62%
Covid Recovery	Nov 2020 - Mar 2022	28,09	0,23%	34,94	7,08%	26,02	10,31%	29,35	13,63%
Higher interest rate adjustment	Apr 2022 - Oct 2023	-17,36	-1,77%	-13,40	2,19%	-8,32	-0,04%	-4,46	3,82%
Rate Stabilisation	Nov 2023 - Oct 2024	7,80	3,30%	9,89	5,39%	n/a	n/a	n/a	n/a

## Appendix 5 and 6 – Data for performance by cycle: full period 2000-2023

Source: EPRA, MSCI, INREV Authors

Date	European Equity	European Bonds	European Direct Property	Global LRE	Global LRE less European Equity	Date	MA Portfolio	MA+10% Global LRE	MA+10% Blended RE	Return Enhancement Global LRE	Return Enhancement Blended
Jul 2002 - June 2003	-3,64	-6,47	4,72	-8,51	-4,86	Jul 2002 - June 2003	-3,98	-4,19	-3,15	-0,22	0,83
July 2003 - June 2007	109,12	-6,34	46,84	127,36	18,25	July 2003 - June 2007	57,02	64,25	58,54	7,22	1,52
July 2007 - June 2009	-37,26	10,89	-6,87	-47,12	-9,87	July 2007 - June 2009	-20,42	-23,74	-20,41	-3,32	0,01
July 2009 - June 2013	38,73	28,82	11,59	93,43	54,70	July 2009 - June 2013	46,17	51,84	45,19	5,67	-0,98
Jul 2013 - Oct 2015	21,31	40,74	14,62	80,18	58,87	Jul 2013 - Oct 2015	33,19	34,08	32,15	0,88	-1,04
Nov 2015 - Dec 2016	4,69	3,70	11,19	54,37	49,67	Nov 2015 - Dec 2016	7,80	7,91	8,15	0,11	0,35
Jan 2017 - Jan 2020	26,66	10,83	32,85	27,75	1,09	Jan 2017 - Jan 2020	18,65	19,43	19,92	0,77	1,27
Feb 2020 - Oct 2020	-6,78	-3,82	2,52	-20,33	-13,55	Feb 2020 - Oct 2020	-9,30	-11,04	-8,97	-1,74	0,33
Nov 2020 - Mar 2022	17,05	-1,66	15,72	36,37	19,32	Nov 2020 - Mar 2022	17,65	20,64	18,49	2,98	0,84
Apr 2022 - Dec 2023	12,90	-10,01	-8,28	-11,67	-24,57	Apr 2022 - Dec 2023	3,75	2,15	2,51	-1,59	-1,24
						<b>Jul 2002 - Dec 2023</b>	<b>230,79</b>	<b>245,17</b>	<b>236,27</b>	<b>14,38</b>	<b>5,48</b>

# References

- Boudry, W.I., deRoos, J.A. and Ukhov, A.D. (2020) 'Diversification Benefits of REIT Preferred and Common Stock: New Evidence from a Utility-based Framework', *Real Estate Economics*, 48(1), pp. 240–293.
- Delfim, J.-C. and Hoesli, M. (2019) 'Real Estate in Mixed-Asset Portfolios for Various Investment Horizons', *Journal of Portfolio Management*, 45(7), pp. 141–158.
- Faber, M., 2007. A quantitative approach to tactical asset allocation. *The Journal of Wealth Management*, Spring.
- Farrelly, K. and Moss, A., 2021. Re-examining the Real Estate Quadrants. *The Journal of Portfolio Management*, 47(10), pp.62-74.
- Habbab, F.Z., Kampouridis, M. and Voudouris, A.A. (2022) 'Optimizing Mixed-Asset Portfolios Involving REITs', in 2022 IEEE Symposium on Computational Intelligence for Financial Engineering and Economics (CIFEr). *2022 IEEE Symposium on Computational Intelligence for Financial Engineering and Economics (CIFEr)*, pp. 1–8.
- Hoesli, M. and Oikarinen, E. (2012) 'Are REITs real estate? Evidence from international sector level data', *Journal of International Money and Finance*, 31(7), pp. 1823–1850.
- Hoesli, M. and Oikarinen, E. (2016) 'Are Public and Private Asset Returns and Risks the Same? Evidence from Real Estate Data', *Journal of Real Estate Portfolio Management [Preprint]*.
- Hoesli, M. and Oikarinen, E. (2021) 'Does listed real estate behave like direct real estate? Updated and broader evidence', *Applied Economics [Preprint]*.
- Jalil, R.A. and Ali, H.M. (2015) 'Performance Determinants of Malaysian Real Estate Investment Trusts', *Jurnal Teknologi (Sciences & Engineering)*, 73(5).
- Lee, S. (2010) 'The Changing Benefit of REITs to the Mixed-Asset Portfolio', *Journal of Real Estate Portfolio Management*.
- Lee, S. and Moss, A. (2018) 'REIT asset allocation', in *The Routledge REITs Research Handbook*. Routledge.
- Lesame, K. et al. (2021) 'On the Dynamics of International Real Estate-Investment Trust-Propagation Mechanisms: Evidence from Time-Varying Return and Volatility Connectedness Measures', *Entropy*, 23(8), p. 1048.
- Marzuki, M.J. and Newell, G. (2018) 'The emergence of Spanish REITs', *Journal of Property Investment & Finance*, 36(5), pp. 495–508.
- Marzuki, M.J. and Newell, G. (2020) 'The investment attributes of Mexico REITs as a listed property investment vehicle', *Journal of Property Investment & Finance*, 39(4), pp. 408–421.
- Morri, G. and Romito, F. (2017) 'An international analysis of time varying beta risk in listed real estate securities', *Journal of Property Investment & Finance*, 35(2), pp. 116–134.
- Moss, A. and Farrelly, K., 2024. *Global Real Estate Capital Markets: Theory and Practice*. Taylor & Francis.
- Moss, A. and Farrelly, K., 2015. The performance of a blended real estate portfolio for UK DC investors. *Journal of Property Investment & Finance*, 33(2), pp.156-168.



Moss, A. and Farrelly, K. (2015) 'The Performance Implications of Adding Global Listed Real Estate to an Unlisted Real Estate Portfolio: A Case Study for UK Defined Contribution Funds'. EPRA Paper.

Moss, A., Clare, A., Thomas, S. and Seaton, J., 2015. Trend following and momentum strategies for global REITs. *Journal of Real Estate Portfolio Management*, 21(1), pp.21-31.

Muckenhaupt, J., Hoesli, M. and Zhu, B. (2023) 'Listed Real Estate as an Inflation Hedge Across Regimes', *The Journal of Real Estate Finance and Economics* [Preprint].

Newell, G., Adair, A. and Nguyen, T.K. (2013) 'The significance and performance of French REITs (SIICs) in a mixed-asset portfolio', *Journal of Property Investment & Finance*, 31(6), pp. 575–588. Available at: <https://doi.org/10.1108/JPIF-01-2011-0004>.

Newell, G. and Marzuki, M.J. (2018) 'The emergence and performance of German REITs', *Journal of Property Investment & Finance*, 36(1), pp. 91–103.

Newell, G. and Peng, H.W. (2012) 'The Significance and Performance of Japan REITs in a Mixed-Asset Portfolio', *Pacific Rim Property Research Journal* [Preprint].

Newell, G., Pham, A.K. and Ooi, J. (2015) 'The significance and performance of Singapore REITs in a mixed-asset portfolio', *Journal of Property Investment & Finance*, 33(1), pp. 45–65.

Niskanen, J. and Falkenbach, H. (2010) 'REITs and Correlations with Other Asset Classes: A European Perspective', *Journal of Real Estate Portfolio Management* [Preprint].

Ntuli, M. and Akinsomi, O. (2017) 'An Overview of the Initial Performance of the South African REIT Market', *Journal of Real Estate Literature* [Preprint].

Oikarinen, E., Hoesli, M. and Serrano, C. (2011) 'The Long-Run Dynamics between Direct and Securitized Real Estate', *The Journal of Real Estate Research*, 33(1), pp. 73–104.

Pham, A.K. (2011a) 'The Performance of Thai-Reits in A Mixed-Asset Portfolio', *Pacific Rim Property Research Journal* [Preprint].

Pham, A.K. (2011b) 'The Significance and Performance of South Korean Reits in a Mixed-Asset Portfolio', *Journal of Real Estate Literature*, 19(2), pp. 373–390.

Razak, M.Z. (2023) 'The dynamic role of the Japanese property sector REITs in mixed-assets portfolio', *Journal of Property Investment & Finance*, 41(2), pp. 208–238.





## About EPRA

EPRA's mission is to promote, develop and represent the European public real estate sector. We achieve this through the provision of better information to investors and stakeholders, active involvement in the public and political debate, promotion of best practices and the cohesion and strengthening of the industry.

With more than 280 members, covering the whole spectrum of the listed real estate industry (companies, investors and other sector participants), EPRA represents over EUR 880 billion of real estate assets and over 95% of the market capitalisation of the FTSE EPRA Nareit Europe Index.

### FOR MORE INFORMATION, PLEASE CONTACT:

EPRA Indexes and Research Team

 +32 (0)2 739 1010

 [research@epra.com](mailto:research@epra.com)

 @EPRA

 Square de Meeus 23  
B-1000 Brussels, Belgium

 [www.epra.com](http://www.epra.com)

