**Index Insights | Real Estate**

# Beyond traditional market cap: Building better real estate benchmarks with Target Diversification™

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**AUTHOR**

**Ethan Lai**
Senior Research Analyst, Real Assets
ethan.lai@lseg.com


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# Executive summary: The FTSE EPRA Nareit Developed Target Diversification™ Index

Addressing concentration in listed real estate benchmarks

This paper applies FTSE Russell's Target Diversification™ methodology to the FTSE EPRA Nareit Developed Index to address increasing concentration within listed real estate benchmarks. Since 2019, the index's top 10 holdings have grown from 20% to 33% of total weight, while the Diversification Factor™ has declined from 120 to around 60. Although the number of constituents has increased to 361, the index's effective diversification is now equivalent to holding just 61 equally weighted stocks. Higher concentration amplifies idiosyncratic risk and undermines the risk-mitigation benefits investors expect from a broad-based benchmark. Over the same period, US exposure has risen from 50% to 66%, despite a reduction in the number of US-listed REITs.

Restoring diversification though power-weighted index design

Target Diversification™ recalibrates index weights using a power transformation of market capitalisation, allowing precise targeting of diversification levels while maintaining market representation and liquidity. In the TD100 configuration, the top 10 weight falls to 24%, the Diversification Factor™ returns to 100, and US exposure declines to 57%. These adjustments are achieved with a tracking error of only 0.64% relative to the market cap-weighted benchmark.

Improved performance and income profile across TD configurations

Performance back tests of TD100, TD150, and TD200 variants demonstrate consistent outperformance. This can be attributed to real estate's unique structure: returns are income-driven, not growth-dominated; smaller, operationally efficient REITs (for example those in the self-storage sector) often deliver stronger fundamentals, so market cap is weakly correlated with operational quality; and large-cap crowding often distorts valuation. Dividend yield also improves meaningfully, rising from 3.93% in the benchmark to 4.29% in TD200, with greater yield stability over time.

Maintaining liquidity and turnover within institutional thresholds

Despite increased allocations to smaller REITs, liquidity remains robust. Assuming a one billion US dollar portfolio trading 20% of 30-day average daily trading volume, TD200 can complete more than 99% rebalancing within 6 days. Two-way turnover of the most recent rebalance stays moderate at 4.21%, well within the range for alternatively weighted strategies.

Lower volatility under normal conditions with controlled drawdowns

This approach also reduces portfolio volatility in normal market conditions. During the Global Financial Crisis, TD portfolios experienced slightly higher volatility due to small-cap selloffs but stayed within tracking error bounds, preserving benchmark alignment.

Flexible framework tailored for clients and regulatory alignment

Target Diversification™ is particularly relevant for ETF sponsors, institutional asset owners, and asset managers seeking to enhance diversification, improve yield profiles, and reduce concentration risk within their real estate allocations. The framework supports multiple configurations including TD100, TD150, and TD200, and lets client calibrate diversification levels to match their portfolio objectives and risk-tolerance preferences. As established in our earlier publication, portfolios constructed with a diversification target of 100 or higher inherently satisfy key regulatory constraints under UCITS, the US RIC 25% rule and the 40 Act diversification thresholds. This removes the need for additional capping mechanisms. Target Diversification™ therefore offers a practical and scalable solution for building resilient, regulation-aware REIT strategies while maintaining transparency, liquidity and market representativeness.

# Contents

# The growing concentration in developed REITs

## Top-heavy dynamics in listed Real Estate

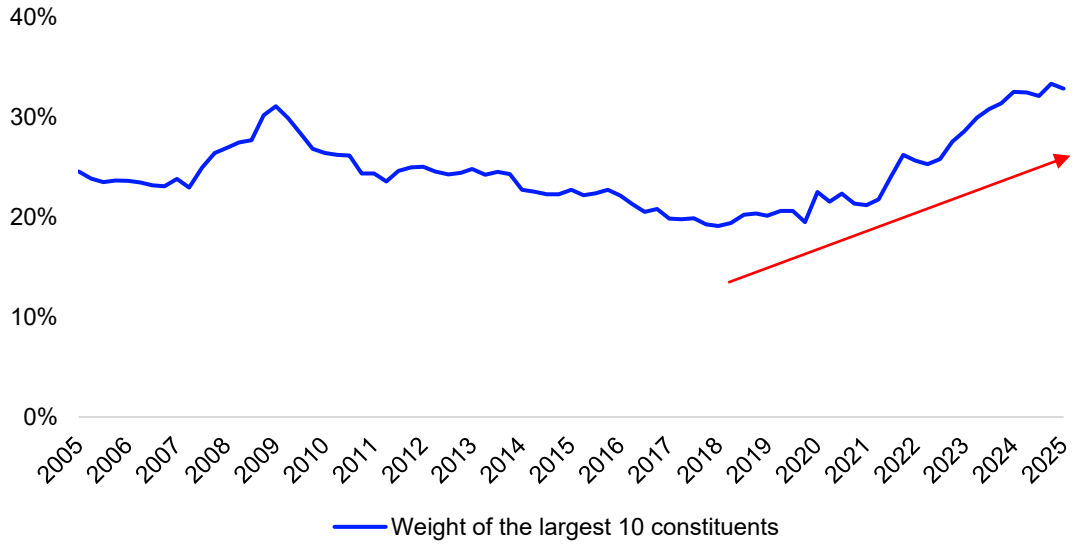
Top 10 holdings drive increasing concentration

Since 2005, the FTSE EPRA Nareit Developed Index has shown a persistent trend toward greater concentration at the top. The cumulative weight of the ten largest constituents remained relatively stable for much of the 2000s but began to climb sharply post-2020, rising from approximately 20% to 33% by March 2025. This shift has accelerated particularly during the post-pandemic recovery and into the rising rate environment, as a handful of large-cap REITs, particularly those in industrial and data centre segments, outperformed the broader universe due to strong earnings resilience and investor preference for scale and liquidity.

Large-cap REITs now dominate index performance

This top-heavy tilt has reshaped the risk profile of the index, as fewer names now account for a disproportionate share of returns. During the global financial crisis (GFC), the index exhibited modest dispersion, with large-cap REITs not yet dominating overall structure. In contrast, recent years have seen sharp divergence, highlighting the growing need for structural diversification.

**Figure 1: Cumulative weight of the top 10 constituents in the FTSE EPRA Nareit Developed Index**




The weight of the largest 10 REITs remained steady after the GFC until the early 2020s, after which it increased rapidly, reflecting growing concentration and investor preference for scale and liquidity.

Source: FTSE Russell. March 2005 to March 2025.

## Effective diversification declines despite broader membership

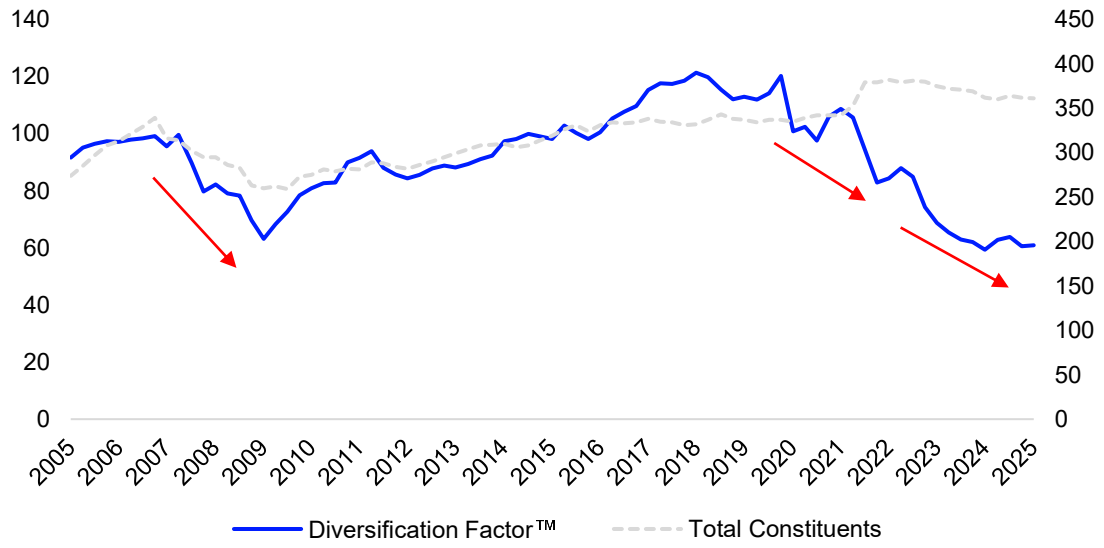
Effective diversification declines despite stable breadth

Although the number of constituents in the index remained above 350 throughout the period, the effective diversification has deteriorated significantly. As shown in Figure 2, the Diversification Factor™ reached a peak of approximately 120 around 2019 but has since declined to just above 60 by the end of March 2025. This divergence between nominal breadth and effective diversification suggests that while more companies are present in the index, the actual distribution of weight has become increasingly uneven.

Market stress accelerates capital concentration

This pattern is particularly evident during periods of macroeconomic stress. For instance, a sharp drop in the Diversification Factor™ can be observed following the 2008 global financial crisis, the 2020 pandemic onset, and again after 2022 as monetary tightening accelerated. In each of these periods, investor preference appears to have shifted toward the most liquid and largest REITs, leading to further concentration at the top of the index.

**Figure 2: Diversification Factor™ and total number of constituents**




Despite a stable or growing number of index constituents, the Diversification Factor™ has declined sharply in recent years, indicating effective diversification erosion.

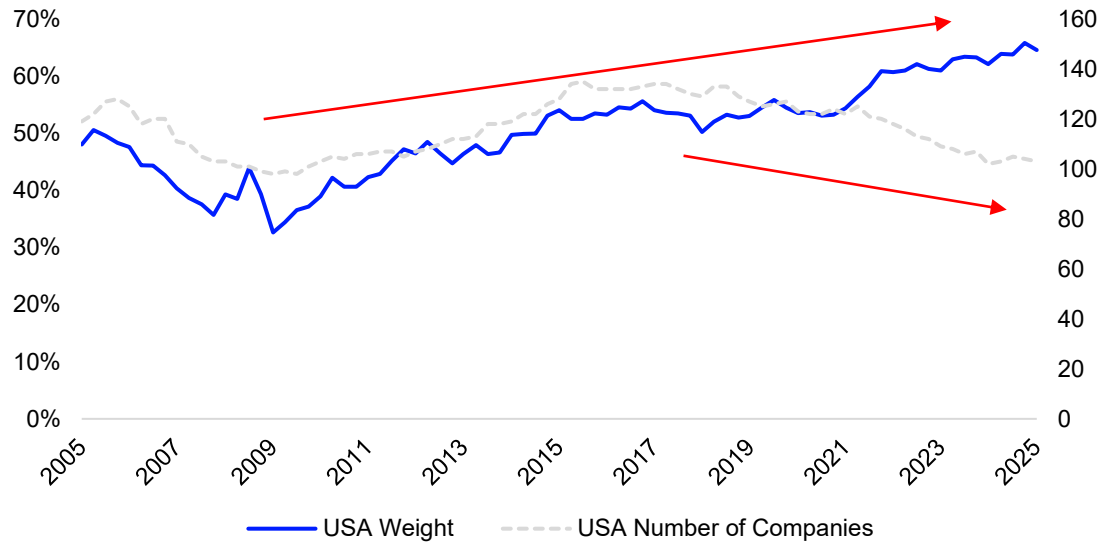
Source: FTSE Russell. March 2005 to March 2025.

## Regional imbalance: The growing dominance of the United States

US REITs gain weight as others falls behind

The regional composition of the index also reveals significant imbalance. Figure 3 shows that while the number of US-listed REITs has declined over the past decade, the total index weight attributed to the United States has risen steadily. From a base of approximately 45% in 2005, the US share grew to 66% by March 2025, a rise amplified by the US dollar's appreciation against most other developed-market currencies over the same period. This increase occurred even as the number of US constituents fell from 119 to 103, indicating that the remaining names have become larger and more dominant in index representation.

**Figure 3: US Weight and number of US-listed REITs**




While the number of US REITs has declined, the US share of index weight has steadily increased, underscoring rising geographic concentration within the index.

Source: FTSE Russell. March 2005 to March 2025.

Regional balance deteriorates despite constituent stability

This pattern reflects a combination of performance concentration, capital inflows into US assets, and a relatively stronger recovery of the US REIT sector compared to other regions. As a result, markets such as Japan, Australia, and Europe have seen their relative index weights shrink despite stable or even growing constituent counts, raising concerns about geographic concentration within passive allocations.

## The implications for strategic allocation

Passive portfolios face structural concentration risk

Collectively, these trends present a challenge for asset owners seeking global diversified real estate exposure. The index's nominal breadth no longer guarantees risk diversification. Without intervention, portfolios tracking the benchmark may face increased exposure to idiosyncratic risk from a shrinking number of dominant issuers and from a single geography. These structural imbalances create a timely case for rethinking index design and reinforce the value of approaches such as Target Diversification™, which offer controlled and transparent mechanisms to restore balance.

# Introducing Target Diversification™

Strategic management of concentration risk

FTSE Russell's Target Diversification™ framework offers investors a transparent and scalable approach to managing concentration risk while preserving key characteristics of market-cap-based exposure. Within the context of listed real estate, where both top-heavy structures and regional imbalances are increasingly evident, this methodology provides a timely solution. The framework is built upon two core components:

The Diversification Factor™

1. **The FTSE Russell Diversification Factor™** – This metric quantifies portfolio diversification by expressing it in terms of an equivalent number of equally weighted securities. For instance, a Diversification Factor™ of 100 implies that the index has the same dispersion of risk as a portfolio of 100 equally weighted REITs. This approach allows for a consistent and intuitive measure of concentration, which is particularly helpful when assessing listed property markets that are often shaped by uneven capital flows and market-cap skew.

The Target Diversification™ Algorithm

2. **The Target Diversification™ Algorithm** – This component applies a mathematical transformation to adjust constituent weights, with the goal of achieving a specific diversification target. The adjustment is made directly on index weights using a functional form derived through empirical testing, designed to minimise distortions while maintaining index continuity. The algorithm enables a smooth transition across diversification levels and avoids the need for ad hoc capping or optimisation routines, making it well suited for listed real estate strategies.

Together, these elements provide a practical and rules-based path to reshape index weight distribution. In the sections that follow, we apply this framework to the FTSE EPRA Nareit Developed Index and demonstrate how different diversification targets can improve concentration metrics, enhance income characteristics, and optimise implementation without sacrificing representativeness.

**Figure 4: FTSE Russell Target Diversification™**

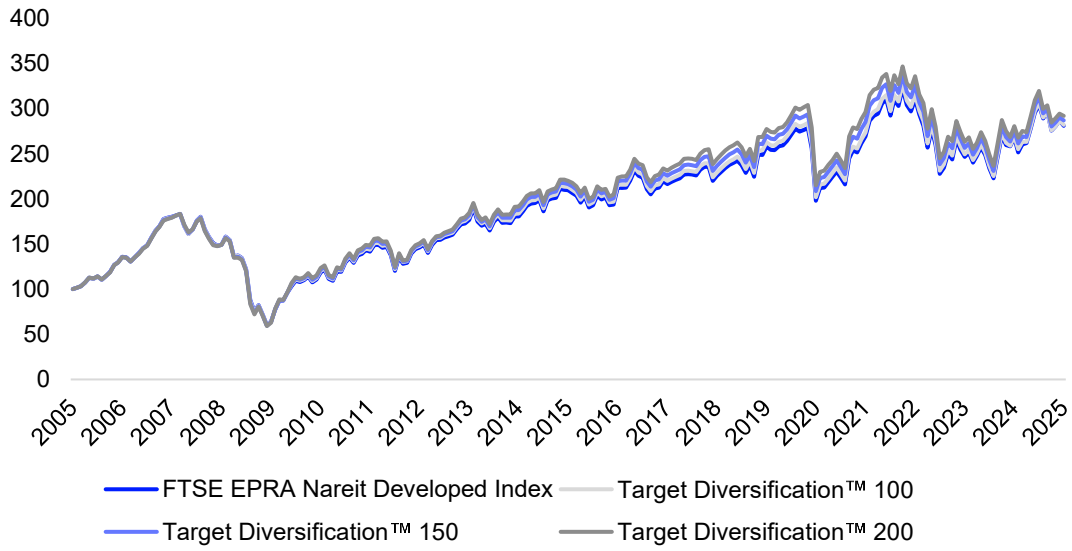
# Empirical results: Improved diversification and return characteristics

## Performance comparison across target levels

The FTSE Developed Target Diversification™ portfolios outperform the benchmark

Figure 5 and Table 6 present the performance comparison between the market-cap weighted FTSE EPRA Nareit Developed Index and its Target Diversification™ counterparts, including TD100, TD150, and TD200. All three Target Diversification™ variants achieved higher cumulative and annualised returns over the full period from March 2005 to March 2025. The benchmark reached a cumulative return of 180.74%, while TD200 delivered 191.97%. Annualised returns increased from 5.11% in the benchmark to 5.30% in TD200.

**Figure 5: Cumulative performance of the benchmark and Target Diversification™ portfolios**




All Target Diversification™ variants outperform the market-cap weighted benchmark over the full period.

Source: FTSE Russell. March 2005 to March 2025. The data includes back test, hypothetical performance. Please see the end for important legal disclosures.

Return enhancement comes with lower risk

These return improvements occurred alongside a modest decline in volatility. Annualised volatility dropped slightly from 18.32% in the benchmark to 18.15% in TD200. As a result, the risk-adjusted return improved. The maximum drawdown remained comparable across portfolios. These metrics suggest that enhancing diversification through the Target Diversification™ framework can modestly improve return efficiency without introducing significant risk.

**Table 6: Risk and return metrics comparison**

| | FTSE EPRA Nareit Developed Index | Target Diversification™ 100 | Target Diversification™ 150 | Target Diversification™ 200 |
|---|---|---|---|---|
| Cumulative Return | 180.74% | 181.96% | 186.77% | 191.97% |
| Annualised Return | 5.11% | 5.13% | 5.21% | 5.30% |
| Annualised Volatility | 18.32% | 18.32% | 18.23% | 18.15% |
| Risk Adjusted Return | 0.28 | 0.28 | 0.29 | 0.29 |
| Max Drawdown | -71.71% | -71.79% | -71.95% | -72.09% |
| Tracking Error | | 0.64% | 1.53% | 2.33% |
| Information Ratio | | 0.03 | 0.07 | 0.08 |
| Beta | | 1.00 | 1.00 | 0.99 |

Key performance statistics including return, volatility, drawdown, and tracking error. Target Diversification™ portfolios show improved return efficiency and maintain low implementation cost.

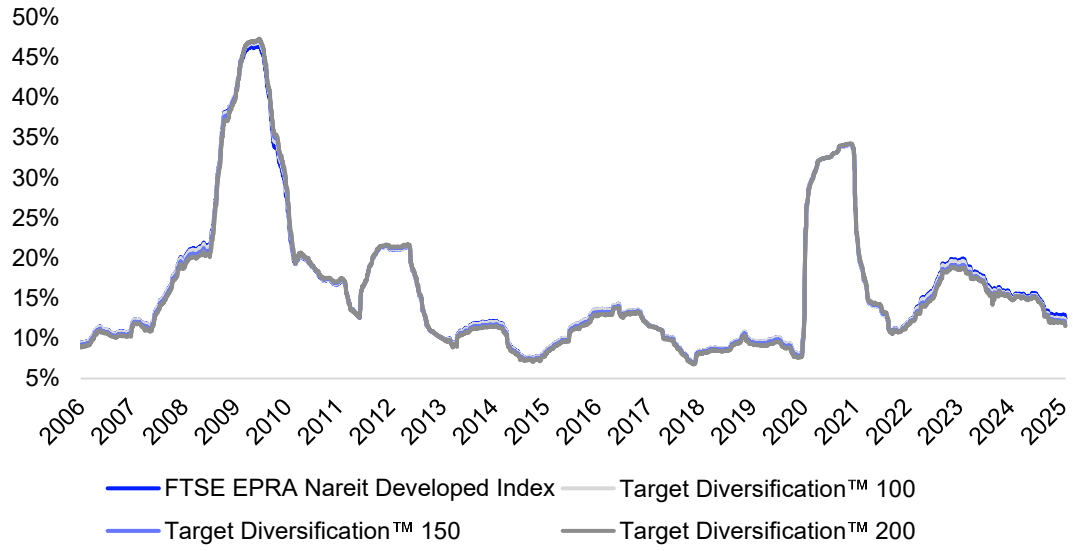
Source: FTSE Russell. March 2005 to March 2025. The data includes back test, hypothetical performance. Please see the end for important legal disclosures.

# Volatility remains controlled across cycles

Volatility remains anchored across diversified portfolios

Figure 7 presents the 252-day rolling volatility of the benchmark and Target Diversification™ portfolios. Over the long term, all Target Diversification™ configurations exhibit slightly lower volatility compared to the market-cap weighted benchmark. For example, average volatility from 2005 to 2025 was 18.32% in the benchmark and ranged from 18.32% to 18.15% in the Target Diversification™ portfolios, driven mainly by the smoother weight distribution. This confirms that diversification improvements do not compromise stability.

**Figure 7: 252-days Rolling volatility of the benchmark and Target Diversification™ portfolios**




Target Diversification™ portfolios exhibit lower long-term volatility compared to the benchmark, with only a temporary increase during the Global Financial Crisis due to heightened sensitivity among smaller REITs.

Source: FTSE Russell. March 2005 to March 2025. The data includes back test, hypothetical performance. Please see the end for important legal disclosures.

One exception appears during the Global Financial Crisis, where Target Diversification™ portfolios experienced temporarily higher volatility. This effect can be attributed to small and mid-sized REITs facing larger price swings relative to larger REITs, particularly in a distressed funding environment.

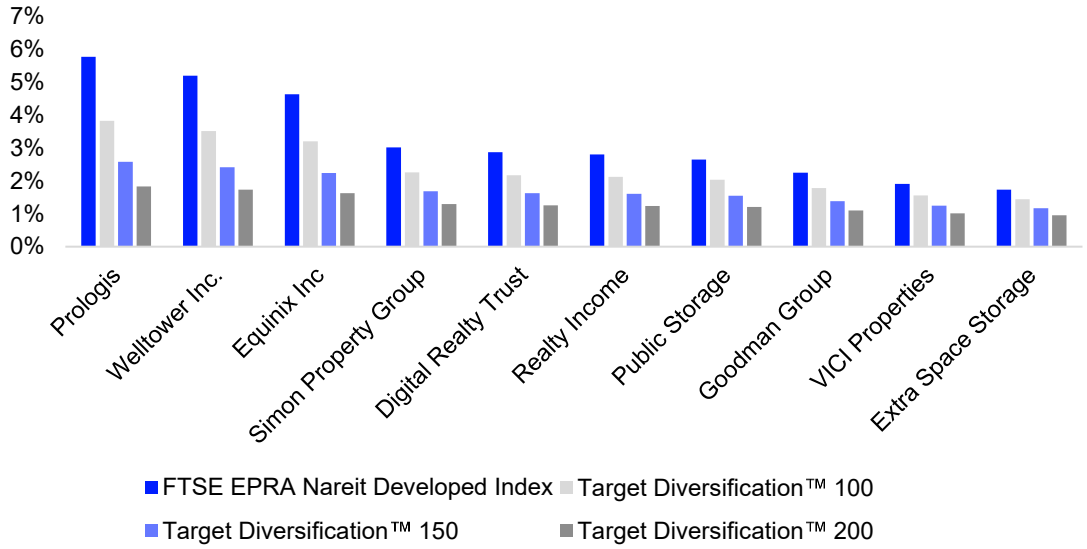
Despite this short-term divergence, the volatility gap between the Target Diversification™ portfolios and the benchmark remained narrow. This reflects the controlled nature of the reweighting mechanism, which avoids extreme shifts in constituent weights. The portfolios had tracking errors below 2.33% in all cases, supporting investor expectations for benchmark alignment even during periods of elevated market stress.

# Reduction in top-heavy exposure

Top ten weights reduced, representation preserved

Figure 8 demonstrates how the Target Diversification™ approach reduces concentration among the largest constituents. In the benchmark, the top ten REITs occupy dominant positions. The largest name holds a weight of 5.77%, and the tenth largest holds 1.73%. In the Target Diversification™ portfolios, particularly in TD200, these weights are notably reduced. The resulting profile resembles a more natural market-weight curve, where larger companies still retain higher rankings than smaller ones, ensuring that the overall economic representation remains intact.

**Figure 8: Index weight of the 10 largest constituents (as of March 2025 rebalance)**




Top 10 constituent's weights under each index version. The Target Diversification™ methodology reduces concentration while preserving proportional representation of large REITs.

Source: FTSE Russell. As of March 2025. The data includes back test, hypothetical performance. Please see the end for important legal disclosures.

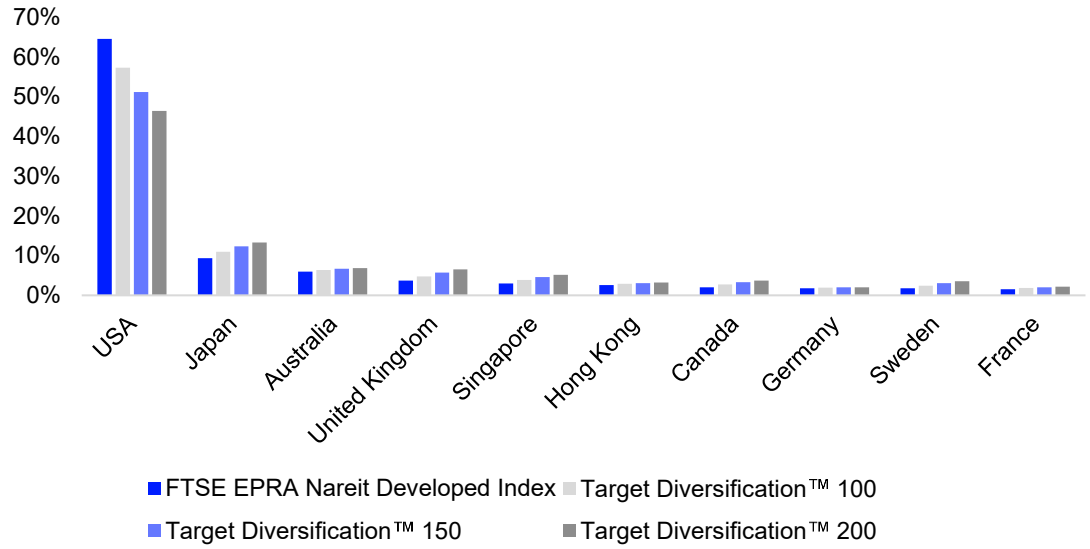
The model achieves this outcome through proportional reweighting. Companies with larger initial weights experience greater reductions, while smaller names see smaller changes. This preserves the intuitive structure of the index while significantly improving diversification.

## Improved geographic balance

US weight declines, global balance improves

Target Diversification™ also adjusts regional exposure. As shown in Figure 9, the weight of US-listed REITs declines from 65% in the benchmark to 46% in TD200. This reduction is distributed to other regions, with Japan, Australia, and the United Kingdom all showing increases. The result is a more balanced geographic profile, reducing overreliance on a single market and improving global representation.

**Figure 9: Regional allocation by country (as of March 2025 rebalance)**




Country-level weights across the benchmark and Target Diversification™ portfolios. US exposure declines in Target Diversification™ configurations, with increased representation from other developed REITs markets.

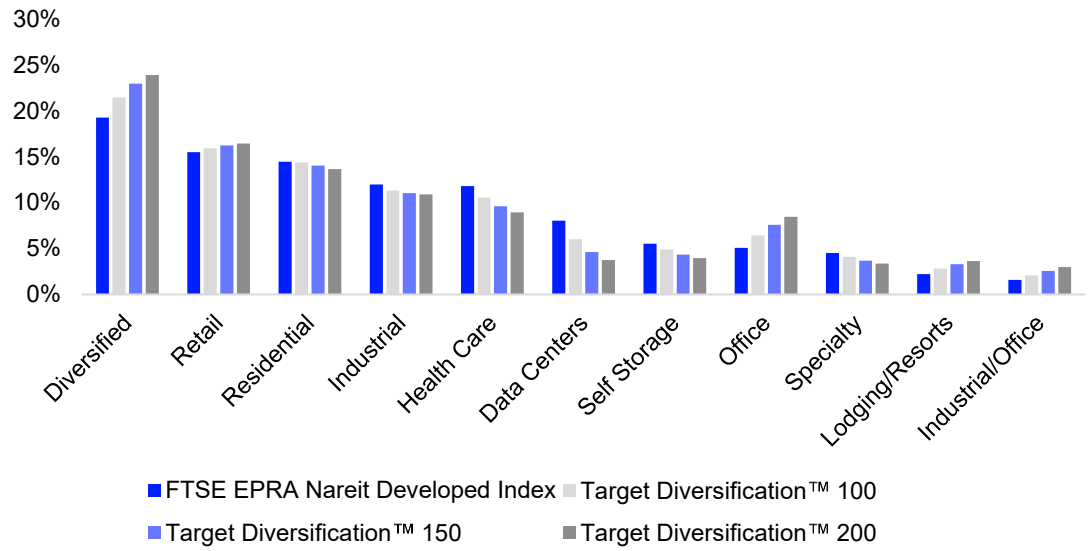
Source: FTSE Russell. As of March 2025. The data includes back test, hypothetical performance. Please see the end for important legal disclosures.

## Sector-level allocation changes

Sectors led by large REITs are de-emphasised

Figure 10 highlights how sector allocations shift under the Target Diversification™ methodology. Sectors led by large-cap REITs such as Industrial, Health Care and Data Centres experience a reduction in weight. In contrast, sectors with more equally distributed company sizes, such as Diversified and Office, show relative increases.

**Figure 10: Sector allocation breakdown (as of March 2025 rebalance)**




Property sector weights across portfolios. Sectors dominated by large REITs such Industrial, Health Care and Data Centres experience the largest relative declines under the TD framework.

Source: FTSE Russell. As of March 2025. The data includes back test, hypothetical performance. Please see the end for important legal disclosures.

Sector-neutral extensions are a future opportunity

This shift is a natural outcome of the diversification process. While the current application focuses on issuer-level reweighting, future extensions of this methodology could apply diversification targets within sectors as well. A sector-neutral version would maintain proportional exposure across property types while still improving concentration within each category. This remains a potential direction for further research.

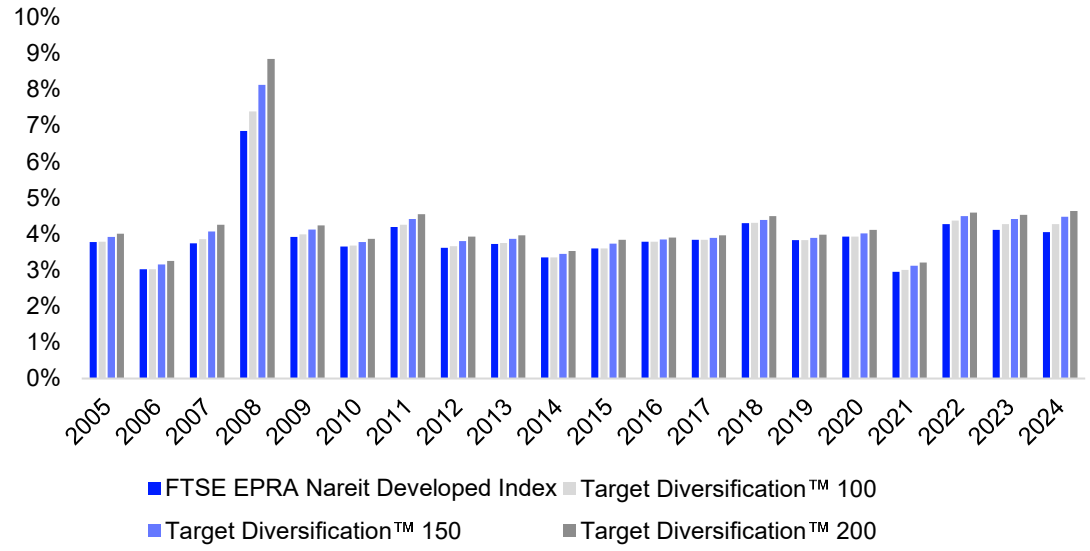
## Dividend yield enhancement through diversification

Higher dividend yield from smaller REITs

Figure 11 compares the annual dividend yields across the benchmark and Target Diversification™ portfolios. One defining characteristic of REITs is their obligation to distribute at least 90% of taxable income as dividends, making yield a central element in REIT investment strategies. In the benchmark, REITs account for roughly 83% of index weight, with the remaining 17% in real estate operating companies that typically pay lower dividends. Across nearly every year in the sample, the Target Diversification™ portfolios deliver higher yields than the benchmark. On average over the back test period, the benchmark yield was 3.93%, while TD200 delivered 4.29%

This pattern can be partially explained by the positive relationship between smaller REIT size and higher dividend yields. Our analysis found a rank correlation of 29.34% between constituent size and yield. This aligns with sector fundamentals, as smaller REITs often specialise in niche property types or operate in higher-yielding secondary markets. These firms may offer elevated distributions as compensation for relatively lower liquidity or scale. By allocating slightly more capital to this segment, Target Diversification™ portfolios capture a broader range of income opportunities while preserving structure and liquidity thresholds.

**Figure 11: Annual dividend yield of benchmark and Target Diversification™ portfolios**




Target Diversification™ portfolios consistently deliver higher yields, supported by increased allocation to smaller REITs with stronger income payout characteristics.

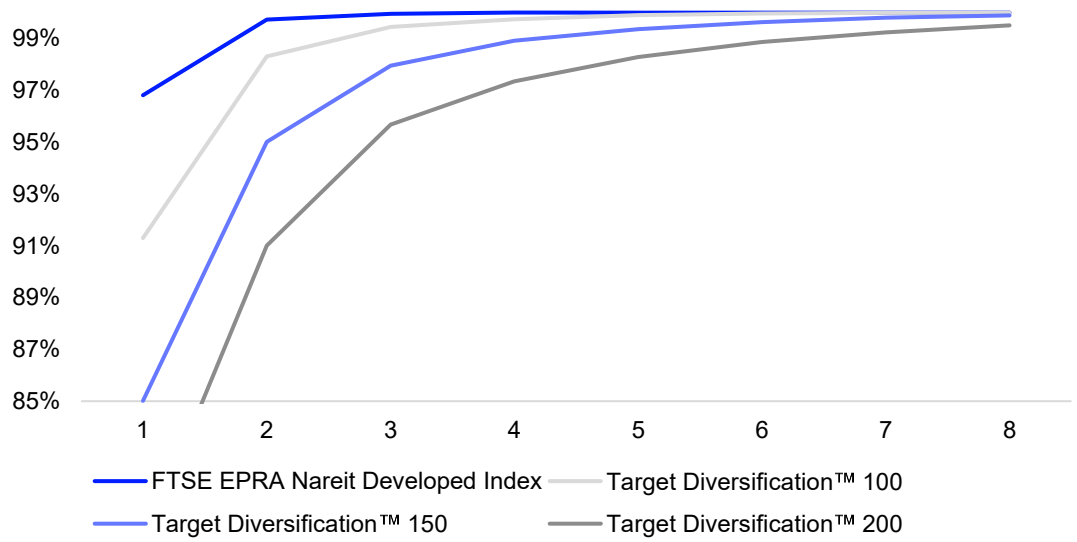
Source: FTSE Russell. March 2005 to March 2025. The data includes back test, hypothetical performance. Please see the end for important legal disclosures.

# Liquidity and Turnover Characteristics

Efficient implementation even under diversified structures

Target Diversification™ portfolios are designed to improve diversification without compromising implementation efficiency. Figure 12 and Figure 13 illustrate liquidity dynamics based on the March 2025 index review. The analysis simulates a USD 1 billion portfolio trading 20% of each constituent's 30-day average daily trading volume.

**Figure 12: Portfolio implementation days by liquidity profile**

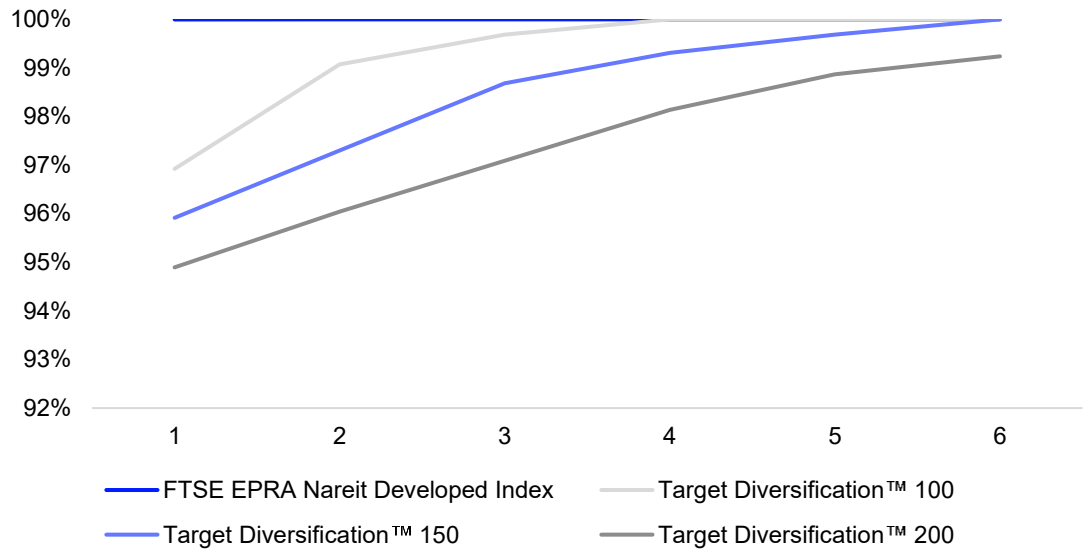



Simulated trading of a USD 1 billion portfolio using 20% of each constituent's 30-day average daily trading volume. Target Diversification™ portfolios can be implemented efficiently, with 99% of weights traded within 7 days under standard liquidity assumptions.

Source: FTSE Russell. As of March 2025. The data includes back test, hypothetical performance. Please see the end for important legal disclosures.

In terms of portfolio implementation, 99% of the benchmark's weights can be traded within 2 days. For Target Diversification™ portfolios, TD100 and TD150 achieve the 99% coverage within 3-4 days, while TD200 reaches this threshold in 7 days. This result demonstrates that even the most diversified configuration can be executed with minimal delay under typical liquidity assumptions.

**Figure 13: Portfolio rebalancing days by liquidity profile**




Estimated days required to complete a full rebalance. Even under the most diversified configuration (TD200), 99% of weights are rebalanced within 6 days, supporting routine index maintenance without undue liquidity stress.

Source: FTSE Russell. As of March 2025. The data includes back test, hypothetical performance. Please see the end for important legal disclosures.

Low turnover supports cost-effective rebalancing

For ongoing rebalancing, results are similarly manageable. Figure 13 shows that 99% of weights in the benchmark portfolio can be adjusted in 1 day. TD100 and TD150 require 2 and 4 days respectively, while TD200 reaches full rebalance within 6 days. These figures suggest that the Target Diversification methodology can be implemented efficiently on a periodic basis, without generating material stress on underlying REIT market liquidity.

While turnover naturally increases with higher diversification levels, it remains moderate in absolute terms. For the March 2025 rebalance, the two-way turnover was 0.47% for the benchmark, rising to 1.91% for TD100, 3.18% for TD150, and 4.21% for TD200. These levels are considered low relative to other alternatively weighted strategies, indicating that Target Diversification™ maintains a practical balance between diversification benefits and operational costs.

# Conclusion

The Target Diversification™ methodology presents a compelling alternative to traditional market-cap weighted construction in the context of global listed real estate. By systematically reweighting constituents based on targeted diversification levels, the approach addresses key structural challenges including stock concentration, regional imbalance, and sector crowding. This is achieved without compromising liquidity, representativeness, or implementation feasibility.

Back tested results demonstrate that higher diversification levels can modestly improve return efficiency, enhance dividend yield, and reduce volatility over time. Although turnover increases with more aggressive configurations, it remains within manageable bounds and supports periodic rebalancing without material disruption. These attributes make the framework particularly well suited for institutional mandates, index linked products, and long-term real asset strategies.

While this research focuses on issuer level diversification, the framework is readily extensible. Future applications may explore sector neutral or region neutral diversification targets, offering asset owners more tailored solutions to align with specific portfolio constraints or thematic exposures. As passive strategies continue to grow in prominence, Target Diversification™ offers a scalable and transparent tool for rethinking index construction. It restores balance while preserving the core strengths of index-based investing.

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**EMEA** +44 (0) 20 7866 1810

**North America** +1 877 503 6437

**Asia-Pacific**

**Hong Kong** +852 2164 3333

**Tokyo** +81 3 6441 1430

**Sydney** +61 (0) 2 7228 5659

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