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PAPER

Unlocking Visibility and Performance:

The Investment Impact of Joining the FTSE EPRA Nareit Developed Europe Index

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UNLOCKING VISIBILITY AND PERFORMANCE: THE INVESTMENT IMPACT OF JOINING THE FTSE EPRA NAREIT DEVELOPED EUROPE INDEX

EXECUTIVE SUMMARY

The FTSE EPRA Nareit Global Index Series stands as the leading benchmark for listed real estate worldwide, supporting investment decisions across a diverse set of market participants. With approximately EUR 280 billion in total assets under management benchmarked to its indices and over EUR 48 billion allocated through passive mandates, the index series plays a pivotal role in shaping capital flows into real estate securities. Its broad global reach, composed by 477 constituents including 103 across developed Europe, offers comprehensive and standardized exposure to the performance of professionally managed property companies and REITs. As such, the index not only facilitates transparency, comparability, and liquidity in real estate investment, but also serves as an essential reference for product structuring, performance attribution, and strategic asset allocation in institutional portfolios. Therefore, the index represents a natural platform for supporting the growth, liquidity and visibility of all its constituents, as well as wide access to global institutional investors.

This white paper looks at the effects of index composition changes in listed real estate, building up on a previous academic study from 2012. The results confirm that the "index effect" remains powerful for European listed property companies, driving both immediate and lasting changes in returns and liquidity. Companies added to the FTSE EPRA Nareit Developed Europe Index experience strong positive returns ahead of inclusion, with a portion of these gains persisting long after. Conversely, those removed face steep price declines and a permanent drop in liquidity. Key Findings:

- *Additions:* Significant inclusion gains, usually during the two days following the announcement and on the effective date. Cumulative abnormal average returns (CAAR) of +5.7%. Long-term abnormal returns show a sustained positive impact (+2.8% over 120 days).
- Relative trading volume also increases after the addition announcement, showing its peaks on the effective date (8.8 times), and stabilizing shortly after. In average, Turnover Ratio rises +4.7%.
- *Deletions:* Sharp removal price drops (CAAR –15.7%) and relative volume spikes (8.9 times) on the effective date. Long-term (t+120) cumulative returns remain negative (-7.5%), with an average permanent liquidity decline of -9 bps in the Turnover Ratio.
- *Size Effects:* Small-caps exhibit the most pronounced responses, with greater changes in price and liquidity compared to medium and large-cap firms.

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1. INTRODUCTION

Over the last two decades, the listed real estate market in Developed Europe has grown significantly, both in value, visibility and operations. At the centre of this growth is the FTSE EPRA Nareit Developed Europe Index, which has become the leading benchmark for the industry. Its composition has a profound influence on market dynamics. For any listed property company or REIT, being part of the index is a strategic milestone that can significantly enhance visibility, broaden the investor base, and unlock access to global capital. Inclusion often implies greater demand for a company's shares through passive and active mandates alike, reinforcing its position in the global real estate investment landscape, while deletions often lead to pressures on prices and trading activity.

This study builds on the earlier academic study: *The Performance Effects of Index Composition Changes: Empirical Evidence from the European Listed Real Estate Sector* (Brooks, Kappou, Stevenson & Ward, 2012), which analysed abnormal returns and trading volumes around index event dates for additions and deletions, from 1999 to 2011, therefore covering the index launch and its early stages, as well as the GFC in 2008-2009, which significantly impacted market dynamics. This white paper offers a reliable and updated perspective on the index effect in the European listed real estate sector, reflecting a more developed and efficient market environment.

2. METHODOLOGY

This study updates and extends the findings of the earlier research on index composition changes, analysing 64 additions and 20 deletions in the FTSE EPRA Nareit Developed Europe Index from November 2011 to September 2024. The aim is to evaluate the impact of these changes on stock performance and liquidity of European listed real estate companies by incorporating newly available data and explicitly capturing the announcement effect, which precedes the effective date effect, an aspect not accounted for in the previous study. The latter did not distinguish between the effective date and the announcement date (AD), this paper distinguishes between the two of them. By separately analysing the announcement date (t-13) and the effective date (t-0), this study provides insights into when markets price the index changes and whether substantial differences exist between the two periods. The announcement policy follows a structured timeline, with index changes determined quarterly and announced 13 trading days before becoming effective. This predictable lag allows investors sufficient time to adjust their positions.

The study concentrates solely on standard index changes, excluding from the study any corporate events that affect the index composition, such as delisting, mergers, or other similar activities. Additionally, outliers with daily returns greater than 20% or less than -20% were excluded from the analysis to ensure the robustness of results. We used three key metrics to analyse the index effect:

Abnormal Returns: The difference between the daily stock's actual return (R_{it}) and the daily expected return. The expected return is estimated by applying the stock's estimated market sensitivity (b_m) to the market return (R_{mt}).

So, the formulas: $AR_{it} = R_{it} - [\hat{b}_m R_{mt}]$ $CAAR_{I,T} = \sum_{t=I}^{T} AAR_t$

Where AR measures how much the stock's return deviates from what one would predict based on overall market movements, and CAAR accumulates the average of such abnormal returns from the starting date.

Relative Volume Ratios: Daily trading volume of the stock (*Vit*) against its country index volume (*Vmt*) to isolate stock-specific changes, then the Mean Volume Ratio (MVR) is used to identify the average volume activity for all index additions and deletions.

$$\overline{BVR_i} = \frac{1}{60} \sum_{t=AD-65}^{t=AD-5} \left(\frac{V_{it}}{V_{mt}}\right) \qquad VR_{it} = \frac{V_{it}}{V_{mt}} \div \overline{BVR_i} \qquad MVR_t = \frac{1}{N} \sum_{i=1}^{N} VR_{it}$$

We also used the daily share turnover ratio, calculated as traded shares divided by outstanding free float shares.

$$\text{Turnover Ratio}_{it} = \frac{\text{Traded Shares}_{it}}{\text{Outstanding Free Float Shares}_{it}}$$

For abnormal returns, the study examines a window of 15 trading days before (t-15) to 120 trading days after (t+120) the effective date, while for abnormal volume ratios, the timeframe extends from 65 trading days before (t-65) to 120 trading days after (t+120).

Statistical t-tests were applied to abnormal returns and volume ratios to evaluate the magnitude and significance of changes around the effective date. The analysis aimed to determine whether these effects were temporary or permanent and to assess their long-term impact on returns and liquidity The study further breaks down the results into three levels of analysis: aggregated trends across all firms by event type (addition or deletion), differences in CAAR among small, medium, and large firms, and variations across countries.

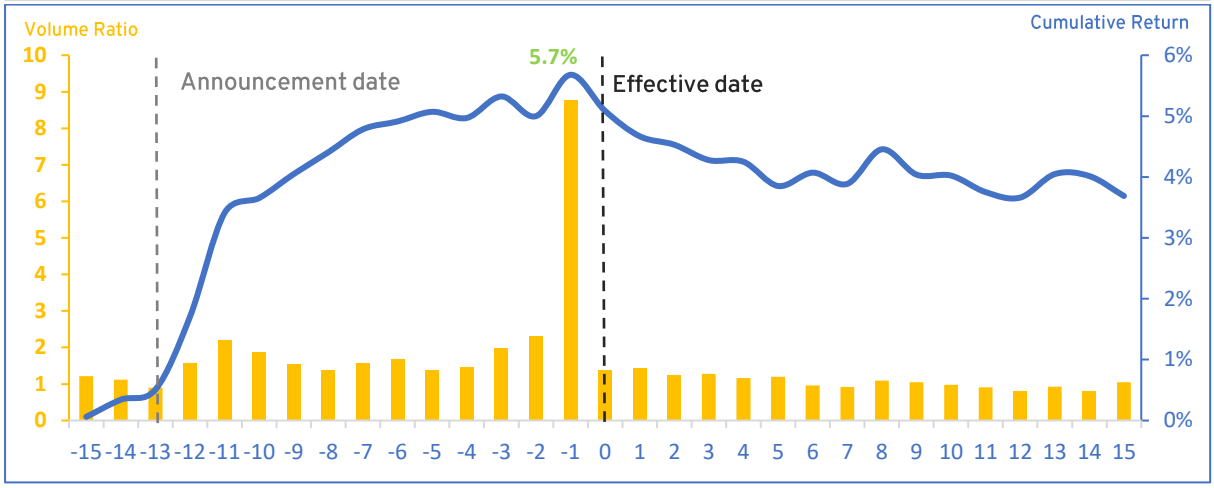
3. RESULTS

KEY FINDINGS: CAAR and Volumes

- Additions: Significant price gains, with both the CAAR (+5.7%) and relative trading volumes (8.78) peaking at t–1, driven by strong pre-inclusion demand. Returns and volumes normalize shortly after the effective date.
- Deletions: Index deletions trigger sharp price drops, with CAAR reaching –15.7% and volume ratios 8.92 both in t-1, reflecting selling by both passive and active investors. Partial recovery occurs post-event but does not offset earlier losses.
- Long-Term Impact: Additions deliver sustained positive returns (+2.8% over 120 days), whereas deletions cause enduring negative returns (-7.5%), highlighting the asymmetry in the long-term effects of index changes.

ADDITIONS

Fig. 1. CAAR (%) and MVR from Day t-15 to t+15 - Additions



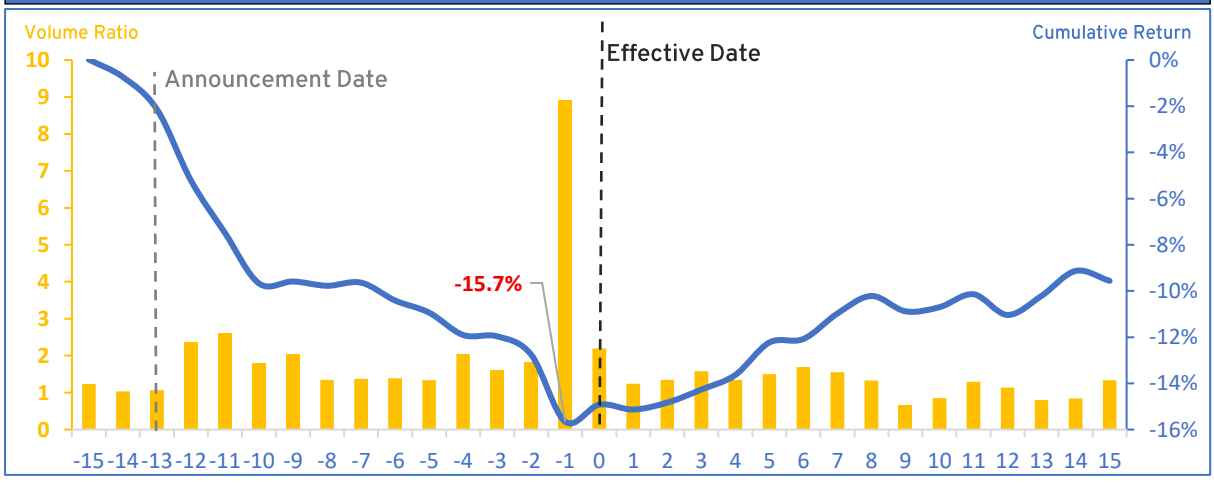
Source: EPRA Research

Index inclusions result in a CAAR peak of +5.7% on t–1, with significant positive returns leading up to the inclusion. A slight dip occurs on t-0 (–0.6%) due to price reversals after passive fund rebalancing, affirming the broader index effect literature, which suggests that pricing adjustments are often completed before the effective date.

Abnormal trading volumes spike post-announcement and peak just before the inclusion date, then normalize shortly after. Volume ratios reach their highest level at t–1 (8.78), reflecting heightened trading activity concentrated closer to the effective date, while a lower but still present increase around the days of announcement.

DELETIONS

Fig. 2. CAAR (%) and MVR from Day t-15 to t+15 - Deletions

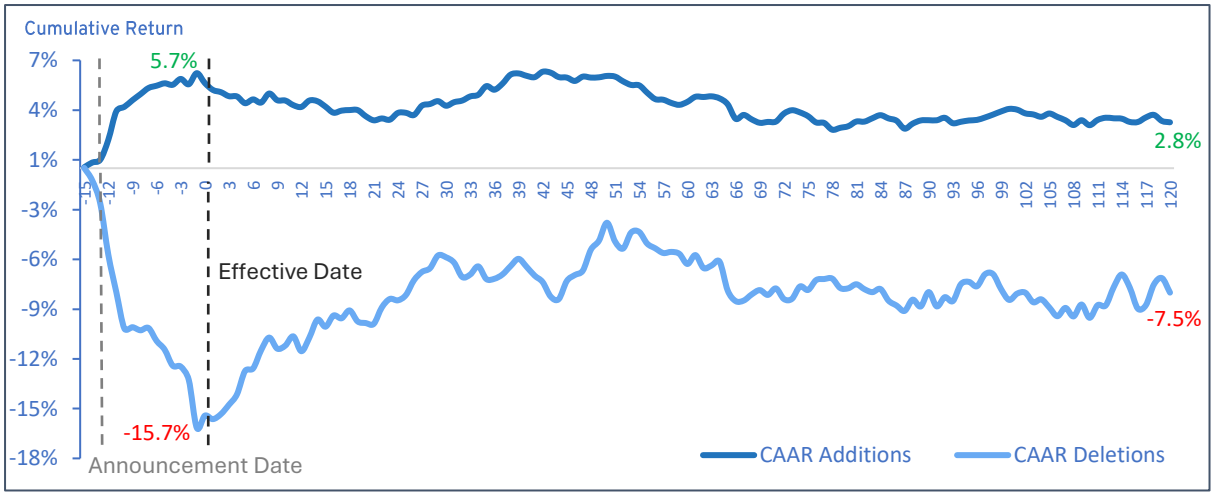


Source: EPRA Research

Deletions cause a steady CAAR decline, reaching –15.7% at t–1 due to strong selloffs before removal. Significant negative daily AARs occur in the weeks leading up to the event, followed by a partial rebound after t0. Abnormal trading volumes peak around t–1, but normalize quickly post-event. Abnormal trading volumes increase post-announcement and peak just before the effective date t-1 (8.92), and then normalize shortly afterward. Additionally, there is a smaller but noticeable increase in trading activity around the days of announcement.

4. LONG-TERM VIEW ON ABNORMAL RETURNS

Fig. 3. CAAR from Day t-15 to t+120 - Additions & Deletions



Source: EPRA Research

Our analysis shows that stocks added to the FTSE EPRA Nareit Developed Europe index experience a temporary surge with peak in t-1 (5.7%) and a sustained abnormal positive return of +2.8% over a 120-day period after the change, reflecting a lasting boost in valuation. In contrast, stocks removed from the index face sharp abnormal negative returns with lowest point in t-1 (-15.7%). While these deletions show some recovery in the short term after the effective date, their overall performance remains negative (-7.5%) in the long run (t+120). These findings underscore the significant and enduring impact of index changes on stock visibility, demand, and pricing.

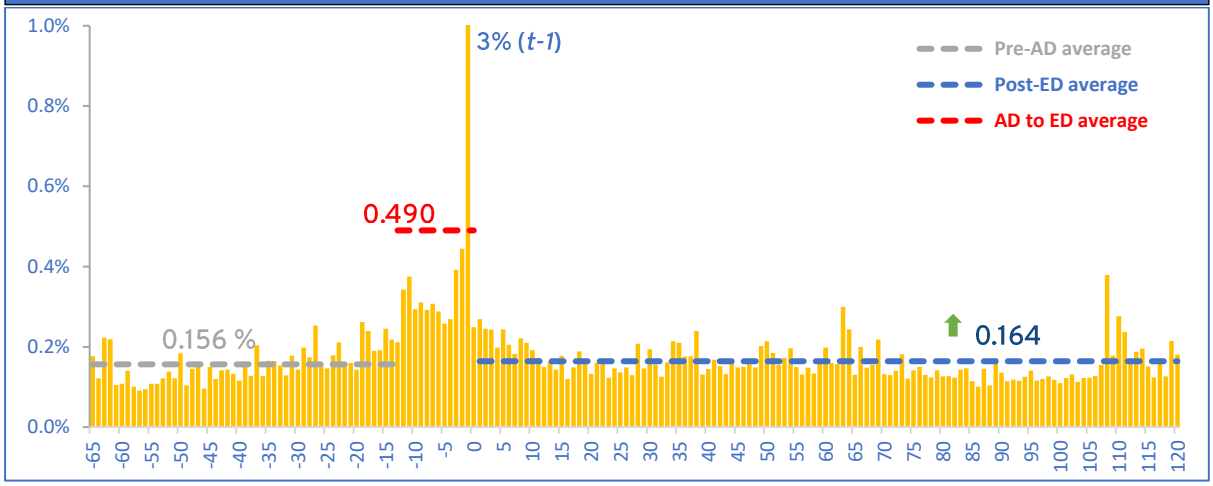
5. LIQUIDITY, SHARE TURNOVER

KEY FINDINGS

- Additions: Short-term liquidity spikes, reaching a peak turnover ratio (3%) at t-1 and then reverts to a stable baseline post-event, with a positive increase from 0.156% pre-AD to 0.164% post-ED (averages).
- Deletions: Deletions experience a significant and permanent liquidity decline post-ED, with average share turnover ratios dropping from 0.221% pre-AD to 0.142% post-ED.

ADDITIONS

Fig. 4. Share Turnover Ratio: Long Term view on Liquidity - Additions

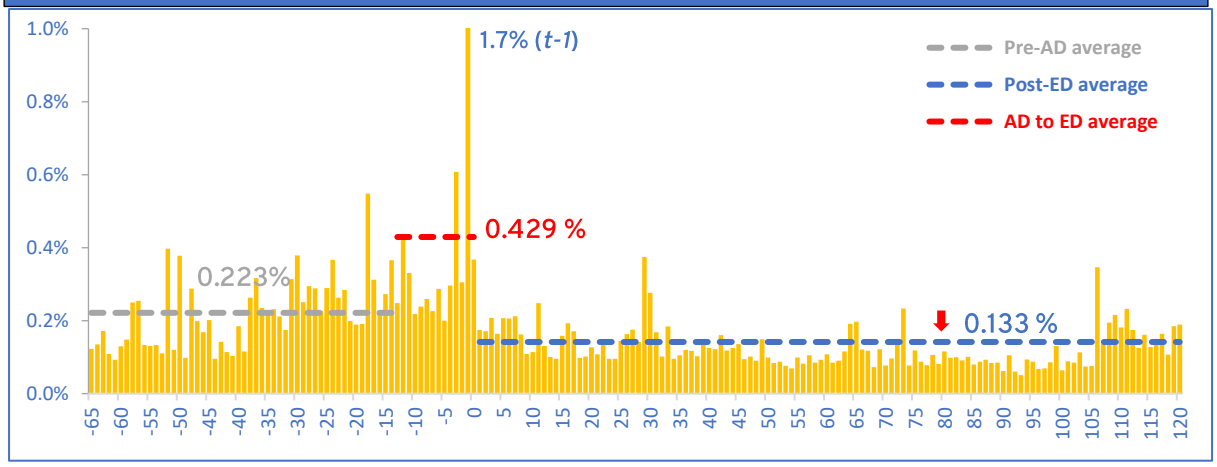


Source: EPRA Research

From a broader liquidity perspective, average traded shares as a percentage of outstanding free float provides a valuable lens for analysing changes in trading activity over longer time horizons (up to t-65 and t+120). Additions show a positive change in this measure, namely 0.156% pre-announcement to 0.164% post-effective (+ 4,97%), indicating that short-term liquidity spikes (0.490% in between AD and ED), slightly improve.

DELETIONS

Fig. 5. Share Turnover Ratio: Long Term view on Liquidity - Deletions



Source: EPRA Research

The most relevant finding from the liquidity analysis is the permanent liquidity erosion for deletions after the effective date, as demonstrated by the difference between average share turnover ratios pre and post-event, showing a statistically significant - 9 bps decrease (- 40.4%). Additionally, we observed strong and persistent statistical significance of share turnover ratios for deletions from t-0 to t+120, which confirms the broader view of liquidity loss following exclusion from the index.

An additional factor contributing to these results is size. Small firms (<500 million market cap) dominate the deletions (58%), compared to medium (36%) and large firms (6%), whereas additions are more evenly distributed, with 43% small, 48% medium, and 9% large. Smaller companies are inherently more responsive to index changes due to lower baseline liquidity and investor coverage, while larger firms show greater stability, making them less affected by the index effect. This overrepresentation of small firms in deletions amplifies their liquidity loss and abnormal return reactions. To address this potential bias, we excluded deletions tied to liquidity rule and found that the results remained consistent. This confirms that the observed liquidity erosion is a broader trend.

6. COUNTRY COMPARISON

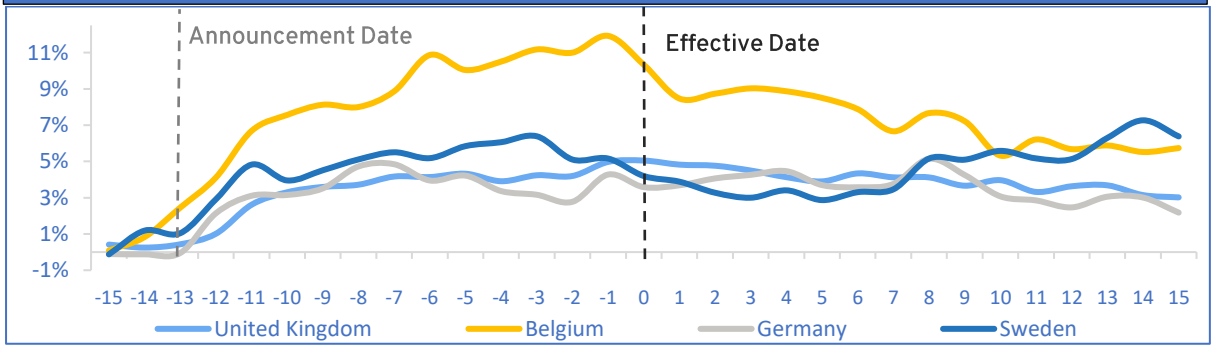
KEY FINDINGS

- Additions: Belgium leads with a CAAR peak of +11.9% at t–1, reflecting heightened demand for its small- to mid-cap stocks, while other countries (UK, Germany, Sweden) show modest gains (3–5%). Returns peak at t–1 and decline post-event, indicating that short-term optimism is largely priced in before the inclusion.
- Deletions: The UK experiences the sharpest CAAR drop (-25% at t–1), driven by forced selling and reduced investor confidence, while Belgium, Germany, and Sweden face moderate losses, with Sweden rebounding slightly post-event. Deletions show sharp pre-effective selloffs and persistent declines in the UK and Germany post-event.

The graph for cumulative average abnormal returns (CAAR) following additions to the EPRA index illustrates significant differences in country-level responses. Belgium shows the strongest positive reaction, with returns peaking sharply before the effective date, reaching 11.9% (t-1). This sustained upward movement may reflect heightened investor demand and market optimism leading up to the addition. In contrast, the United Kingdom, Germany, and Sweden exhibit more subdued increases, with CAAR levelling off at around 3% to 5%. Notably, the United Kingdom's returns remain relatively stable both before and after the effective date, suggesting that additions do not generate prolonged momentum within this market.

ADDITIONS

Fig. 6. CAAR per country (Developed Europe) - Additions

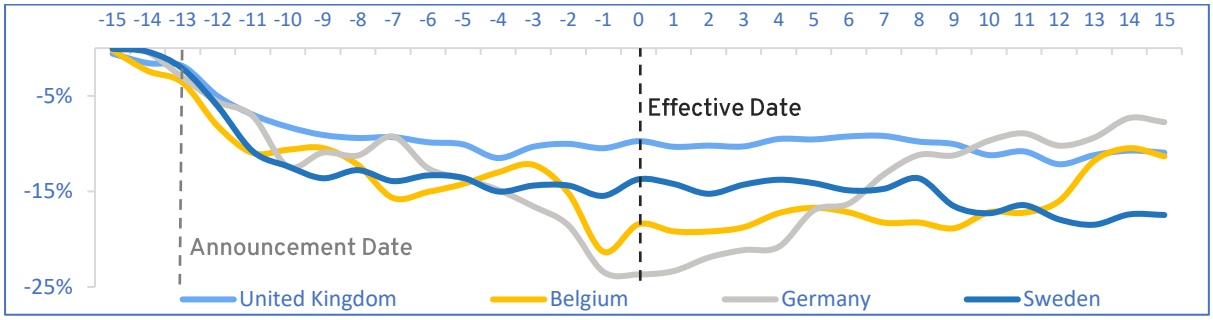


Source: EPRA Research

The announcement date plays a crucial role across all countries, as evident from the CAAR starting to rise in the pre-announcement period and accelerating toward the effective date. Post-effective date, the decline in returns, particularly in Belgium and Sweden, indicates that any optimism tied to index addition may have been priced in beforehand. These dynamics highlight country-specific sensitivities to index inclusion, with Belgium's significant gains potentially driven by a higher concentration of small- to mid-cap stocks, which are more reactive to inclusion due to liquidity improvements and greater visibility.

DELETIONS

Fig. 7. CAAR per country (Developed Europe) - Deletions



Source: EPRA Research

The deletions graph reveals a stark contrast in CAAR by country, with Germany experiencing the most pronounced negative returns, falling nearly 25% by the effective date. This underscores the significant adverse impact of deletions on investor confidence and liquidity. Belgium also endures a steep decline (–21.3% at t–1), while the United Kingdom and Sweden register notable drops but with less severity. The pre-ED period is crucial for deletions, as seen from the sharp negative CAAR starting around the announcement date. This aligns with the downward pressure caused by forced selling from index trackers and reduced investor interest, especially in Belgium and Sweden.

7. SIZE COMPARISION

KEY FINDINGS

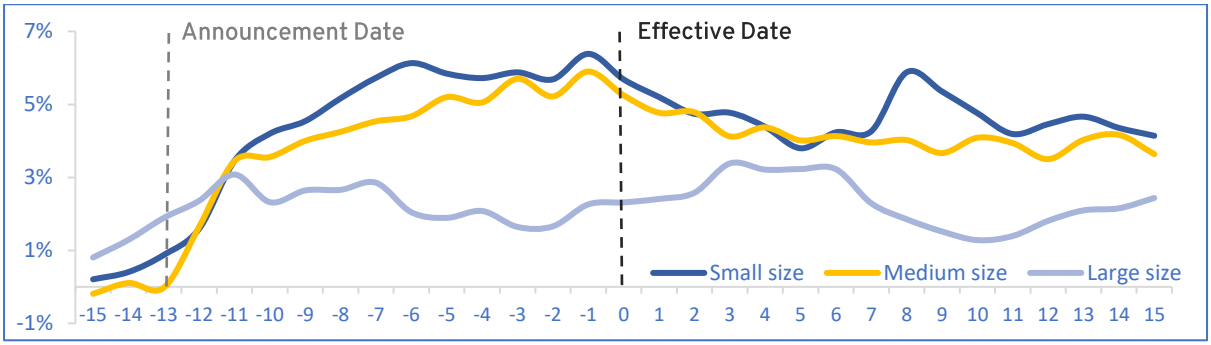
- Additions: Small firms show the strongest response (CAAR +6.4% at t–1), while medium firms peak at +5.9% and large firms exhibit delayed, subdued reactions (+4% at t+3). Smaller firms' heightened sensitivity reflects their greater market volatility.
- Deletions: Small firms suffer the steepest losses (CAAR -16.2% at t+2), while medium firms reach their lowest at t–1 (CAAR -8.2%), highlighting the greater vulnerability of smaller firms to exclusion.

To delve into our analysis of the Index effect, we divided the sample into three categories: small firms with a market cap below €500 million, medium firms with a market cap between €500 million and €2 billion, and large firms with a market cap above €2 billion. The sample includes 23 additions and 12 deletions for small firms, 34 additions and 7 deletions for medium firms, and 8 additions for large

firms corresponding to 12% of the total number of additions. Since there are only 2 deletions for large firms, this category was excluded from the deletion analysis due to insufficient data.

ADDITIONS

Fig. 8. CAAR by market cap from day t-15 to day t+15 - Additions



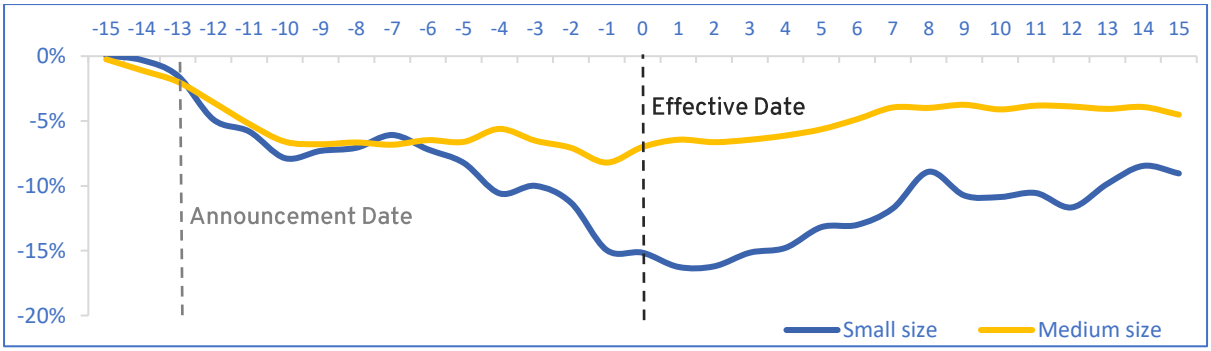
Source: EPRA Research

Regarding the additions, large firms tend to show less pronounced effects from index changes compared to smaller firms. Following the announcement date (t-13), CAAR increases rapidly for all size groups. For small companies, CAAR reaches a peak of +6.4% from t-15 to t-1, the day before the effective date. After the effective date (t=0), the returns decrease slightly but stabilize and remain positive two weeks after the event. The behaviour of medium companies follows a similar trend, with CAAR peaking at +5.9% on t-1. After the event date, there is a modest decline in abnormal returns, but they remain positive.

For large firms, the trend differs slightly. Although CAAR initially increases due to the announcement effect, the peak occurs post-event, reaching +4% on t+3, three days after the event date. Following this peak, CAAR decreases slightly but continues to remain positive throughout the observation period. The data indicates that smaller firms experience a more volatile impact from index additions, likely due to their greater market sensitivity. In contrast, larger firms exhibit a more subdued response, with their peak effect delayed to a period after the event date.

DELETIONS

Fig. 9. CAAR by market cap from day t-15 to day t+15 - Additions



Source: EPRA Research

Regarding deletions, the trends for small and medium-sized firms are similar, but the timing of the lowest point differs. Small firms reach their lowest point at t+2, with a CAAR of -16.2% from t-15, while medium-sized firms hit their bottom earlier at t-1, with a CAAR of -8.2%. This indicates that the impact is less severe for medium-sized firms compared to small ones.

8. *CONCLUSIONS*

This paper reaffirms that the index effect remains a powerful market force in European listed real estate, as evidenced by consistent price and liquidity shifts surrounding changes to the FTSE EPRA Nareit Developed Europe Index. Companies added to the index experience notable price appreciation and liquidity boost prior to inclusion, with gains that remain partially sustained even 120 days after the event, a clear indication of the lasting benefits derived from increased visibility and investor attention. Conversely, deletions trigger significant negative returns and structural liquidity declines, highlighting the real cost of losing index membership.

The magnitude of these effects varies by geography and company size, with Belgium and small-cap firms exhibiting particularly pronounced reactions. This reinforces the benchmark's central role in directing capital flows, guiding both passive and active strategies, and shaping outcomes at the firm level—especially for smaller companies seeking to scale their market presence.

Crucially, inclusion in the index is more than symbolic, it is transformative. Membership in the FTSE EPRA Nareit Developed Europe Index delivers tangible value through enhanced share liquidity, valuation uplift, and broader institutional interest. These outcomes are not incidental, they are the result of entering the investable universe of global real estate capital. Companies aiming for index inclusion should treat it as a strategic objective: aligning investor relations, transparency, governance, and performance reporting with the rigorous standards that define eligibility. In a highly benchmarked investment landscape, index membership is not just a validation, it is a catalyst for growth and market relevance.

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List of abbreviations

AAR (Average Abnormal Return); CAAR (Cumulative Average Abnormal Returns); ED (Effective date of the event); AD (Announcement Date); t (Time, relative to an event, e.g., t-1, t+120); LRE (Listed Real Estate); GFC (Global Financial Crisis); AUM (Assets Under Management).

Summary tables

Samples for Country and Size Comparison

	Additions	Deletions
United Kingdom	26	5
Belgium	7	2
France	4	1*
Spain	3	0
Germany	7	6
Sweden	15	4
Switzerland	2	1*
	64	17

	Additions	Deletions
Small-size	23	12
Medium-size	34	7
Large-size	7	2*
	64	19

**Excluded from sample due to insufficient data*