

Successful real estate investment strategies

A STUDY INTO REAL ESTATE INVESTMENT STRATEGIES OF 42 DUTCH PENSION FUNDS OVER THE PERIOD 2005-2024

Jan-Willem Dijkhuis¹

INTRODUCTION

Real estate investments have been part of the investment portfolio of most Dutch pension funds for decades (IVBN, 2013). Originally, these pension funds invested in Dutch real estate, including many residential properties. Since 2000, pension funds have started investing more internationally, predominantly through real estate funds, and have developed diverse real estate investment strategies.

At the same time, the share of direct investments in pension funds fell from over 90% in 1980, 81% in 1995 to less than 15% in 2014 (Teuben, 2016). In recent years, that percentage has decreased further.

This article examines the performance of real estate strategies of 42 pension funds over the period 2005–2024 based on the annual reports published by the pension funds.

Partly using the Capital Asset Pricing Model, an attempt is made to find explanations for why some pension funds achieve good results while others lag behind in the performance of their real estate portfolios.

The research attempts to answer the question of which real estate investment strategies are successful and which are not.

This involves examining the size of the portfolio, the allocation to listed companies, the geographical allocation, and the degree of risk aversion.

KEY CONCLUSIONS REGARDING THE PERIOD 2005-2024

1. Pension funds with large real estate investment portfolios have shown predominantly good performance and yielded better returns than pension funds with small real estate investment portfolios.
2. Most pension funds have been unable to beat the market over a 20-year period. The (unweighted) average net return of the 42 pension fund real estate portfolios was 5.13%. The international real estate investment market performed approximately 5.7% on a comparable basis during that period.
3. Pension funds with a high allocation to the Netherlands, remarkably often achieved a high alpha (outperformance) with a low beta. For pension funds that invested predominantly in real estate within Europe, the results were even slightly more favorable. These were mostly relatively small pension funds with a strong allocation within Europe towards the Netherlands, and specifically towards residential properties.²

4. Exceptions prove the rule. The pension fund with the highest average return predominantly pursued a globally listed real estate strategy.
5. The importance of listed real estate investments as part of the real estate investment strategy has decreased. This strategy is increasingly viewed as part of a pension fund's general equity portfolio.
6. The average allocation to real estate at 42 pension-funds amounted to 9.9%. At the end of 2024, that percentage was 9.3%.
7. The growth of real estate investments in America, Asia and Pacific has come to a standstill and declined in favor of European real estate.

REAL ESTATE INVESTMENT STRATEGIES OF PENSION FUNDS 3

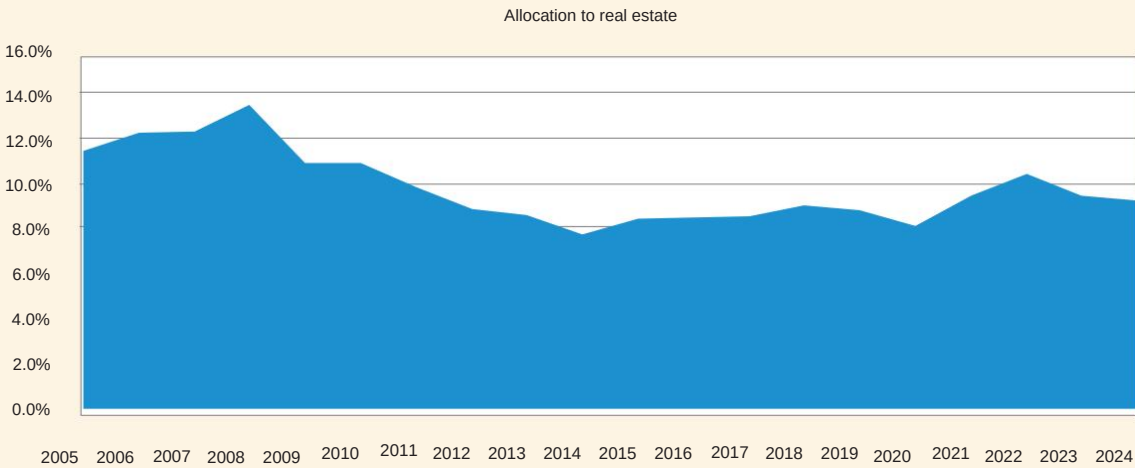
Pension funds can choose between a Dutch or an international real estate strategy. Additionally, pension funds can opt for a strategy that allows for investments in both listed and unlisted real estate. Pension funds can also set preconditions regarding the risk to be taken within the real estate investment strategy. These strategic choices will be briefly discussed below.

Jan-Willem Dijkhuis
Managing Director at Lymos



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Figure 1
Average allocation to real estate by Dutch pension funds for the period 2005-2024



discussed. Sector allocation (housing, retail, offices, etc.) remains outside the scope of this study.

ALLOCATION OF REAL ESTATE WITHIN THE INVESTMENT PORTFOLIO

The 42 pension funds had assets under management of €1,554 billion at the end of 2024, of which €184 billion was invested in real estate. In 2005, the assets under management of the 42 pension funds examined amounted to €491 billion, of which €57 billion was invested in real estate.

The allocation to real estate over the period 2005-2024 shows a varied picture, as shown in Figure 1. The average allocation to real estate amounts to 9.9% over the period 2005-2024.

The (unweighted) average allocation of the 42 pension funds to real estate has decreased from 11.6% to 9.3% (see Figure 1). In particular, funds that were in the past heavily invested in Dutch direct real estate (and within that primarily in residential properties) have reduced their allocation to real estate.

reduced. Several large funds, including ABP and PFZW, have actually started investing more in real estate.

The allocation peaks at the end of 2008 and 2022 are striking. These are the years in which large losses were incurred in the other investments of pension funds (equities and fixed income, respectively) and the denominator effect plays a significant role.

The observed allocation fits the picture of previous studies showing that the average allocation to real estate by Dutch pension funds is decreasing and has been at approximately 9% in recent years (Arslanagic, 2017).

ALLOCATION OF REAL ESTATE NATIONAL OR INTERNATIONAL

The real estate investment strategies of Dutch pension funds have taken on a more international dimension (see Figure 2). The allocation to European investments averaged 84% in 2005. In 2024, that average had fallen to 66%. For North America, the average allocation rose from 6% to 16%. For Asia-Pacific, there was also almost a threefold increase in the average allocation of

Figure 2
Allocation of global real estate investments 2005 vs 2024

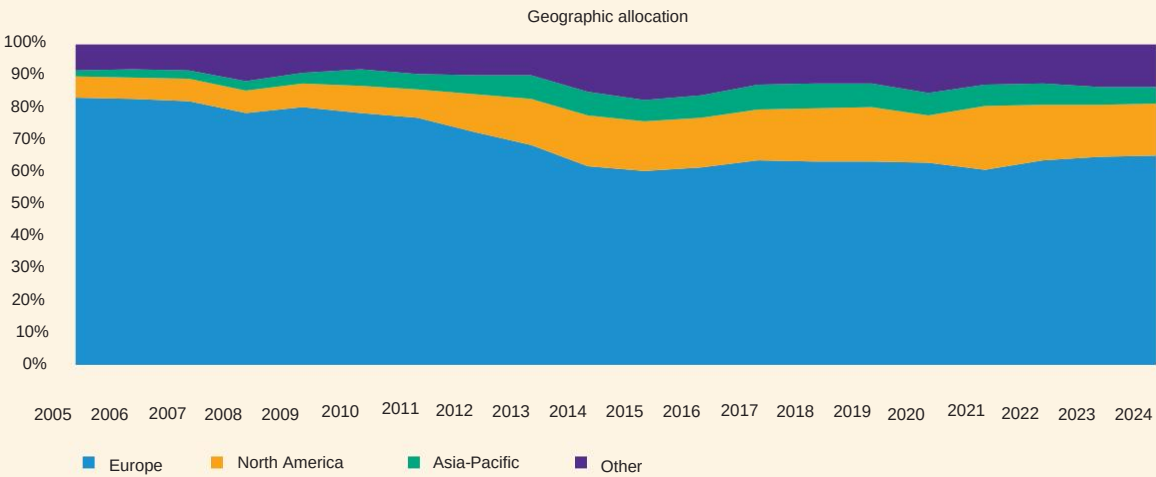
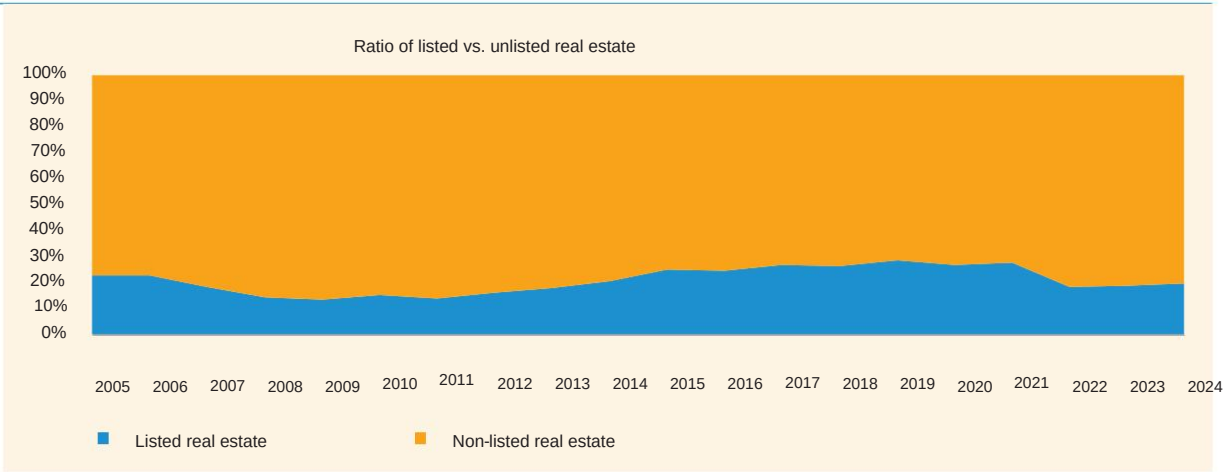


Figure 3
Allocation of
listed versus unlisted
real estate



2% in 2005 to 5.2% in 2024. The unspecified part of the allocation (“Other”) increased from 8% in 2005 to 13% in 2024. This involved, on the one hand, investments in other regions of the world or unspecified portfolios.

The conclusion here is that the need for international diversification initially led to increased interest in American and Pacific Asian real estate investments. In recent years, the allocation to these areas has stabilized and is declining. The majority of pension funds made their real estate investments predominantly in Europe.

Of the 42 funds, three invested exclusively in Dutch real estate.

ALLOCATION OF REAL ESTATE, LISTED OR NON-LISTED
LISTED

A change has been observed in the average allocation to listed or unlisted real estate since 2005. In 2005, there was an average (unweighted) allocation of 23% to listed real estate. By 2024, that percentage had decreased to 20% (see Figure 3). This is partly due to the fact that various pension funds have transferred their listed real estate portfolios within their regular equity portfolios.

Furthermore, it can be partly explained by cyclical factors. The devaluation of listed real estate during times of crisis is faster than the devaluation of unlisted real estate. In 2024, many listed real estate funds traded at substantial discounts relative to their NAV, while unlisted real estate was valued at NAV.

In 2005, 25 funds were wholly or partially invested in listed real estate; in 2024, that number was 27, an insignificant difference. The peak for listed real estate was in 2019, when 36 pension funds still viewed listed real estate as part of their real estate investment strategy.

RETURNS AND PERFORMANCE OF
DUTCH PENSION FUNDS 2005-2024

The returns are calculated based on geometric yield. Furthermore, an unweighted yield is involved. As a result, every investment strategy carries equal weight, regardless of the size of the assets under management. Below, the average annual return of the 42 pension funds will first be compared against the Dutch and MSCI Global benchmarks. Subsequently, a peer group comparison and a market comparison will be made for the individual pension funds.

AVERAGE PERFORMANCE OVER THE PERIOD 2005-2024

Figure 4 provides an overview of the annual returns of the real estate investment strategies of the 42 Dutch pension funds examined, compared against several relevant benchmarks.

The average annual net return achieved by pension funds on real estate over the period 2005-2024 amounts to 5.1%. The highest-scoring pension fund achieved an average return of 7.0%, and the lowest-scoring pension fund achieved an average return of 1.8%.

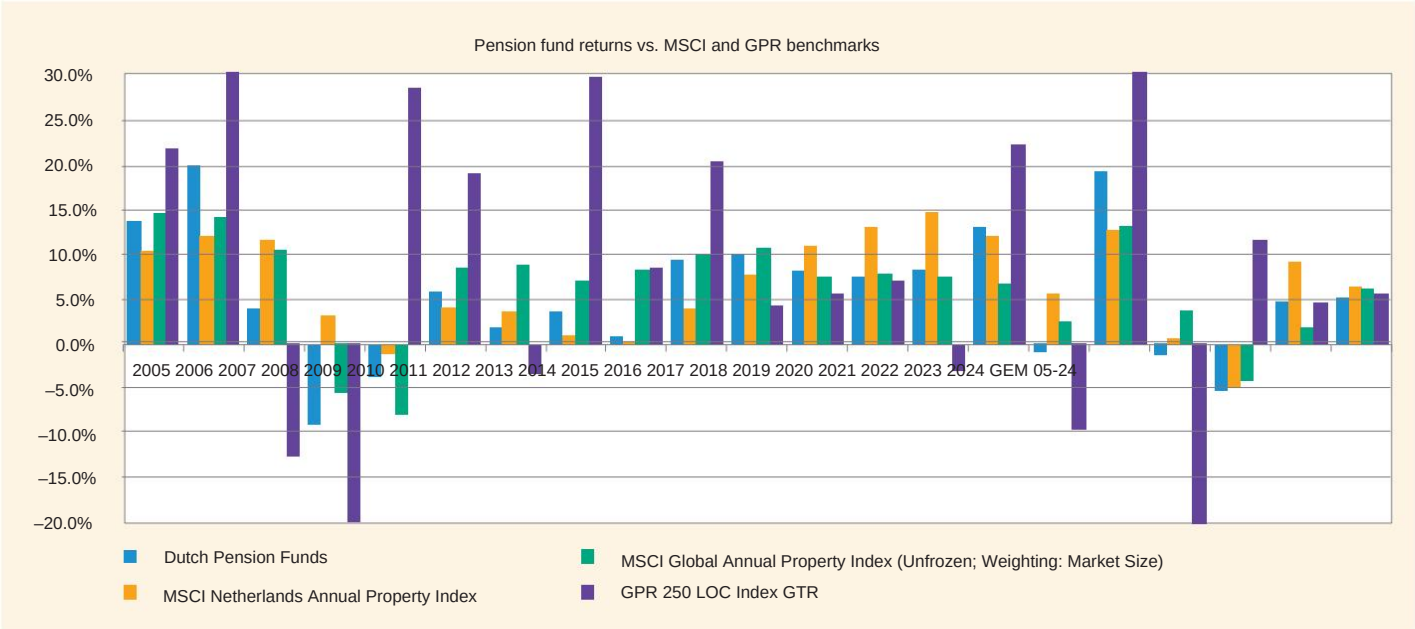
Global investing in listed real estate yielded an average return of 5.7% during that period according to the GPR 250 LOC Index GTR series (Solactive, 2026).

An investment in Dutch institutional real estate yielded an average of 6.4% per year over the same period according to the MSCI Netherlands Annual Property Index used (MSCI, 2005–2024). The MSCI Global Annual Property Index recorded an average return of 6.2% during that period (MSCI, 2005–2024).

The returns measured by MSCI are before deduction of management fees. Based on a 2021 study by Carlo, Eichholtz, and Kok, an estimate can be made of the management costs in European funds (Carlo, 2021). The costs amount to 75 basis points for unlisted real estate and 8 basis points for listed real estate. Based on the average allocation over 20 years, the weighted average would

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Figure 4
Real estate returns of Dutch pension funds compared to the GPR 250 and MSCI benchmarks period 2005-2024



costs amount to 51 basis points. Even when looking at the reporting in pension fund annual reports, 50 basis points appear justified as an estimate of the weighted average costs. This brings the market-consistent return to 5.7% over this period. On that basis, the average net return of the real estate investments of Dutch pension funds can be considered less than market-consistent.

The above observations are consistent with other observations in the real estate sector that the net return on real estate amounts to approximately 6.0% over the years (Brounen, 2023).

THE PEER GROUP COMPARISON: THE RISK-WEIGHTED PERFORMANCE OVER THE PERIOD 2005-2024

The investment strategies of the 42 pension funds were assessed in this study based on risk-weighted return. This utilizes the Security Market Line (SML). The SML is the visualization of the Capital Asset Pricing Model, which makes it possible to assign a correlation to a portfolio with the market (universe) based on beta. In this study, the totality of 42 pension funds serves as a separate universe, and the performance of the funds relative to one another is examined.

Figure 5 shows the beta of the real estate portfolios of each of the 42 pension funds versus their average return (5.13%).

Based on these observations, it can be determined which pension funds achieved a (very) good performance or a moderate to poor performance over the period 2005–2024.

The orange dot in Figure 5 is the market portfolio (beta=1) and is effectively the benchmark in the peer group comparison. The correlation of the real estate returns of the individual pension funds leads to the security market line, as visually represented in Figure 5.

$$E[R_x] = 2.0 + b_x * (5.13 - 2.0)$$

The average risk-free interest rate over the period is set at 2%.

Based on this approach, the performance of the individual real estate investment strategies of the pension funds can be better interpreted.

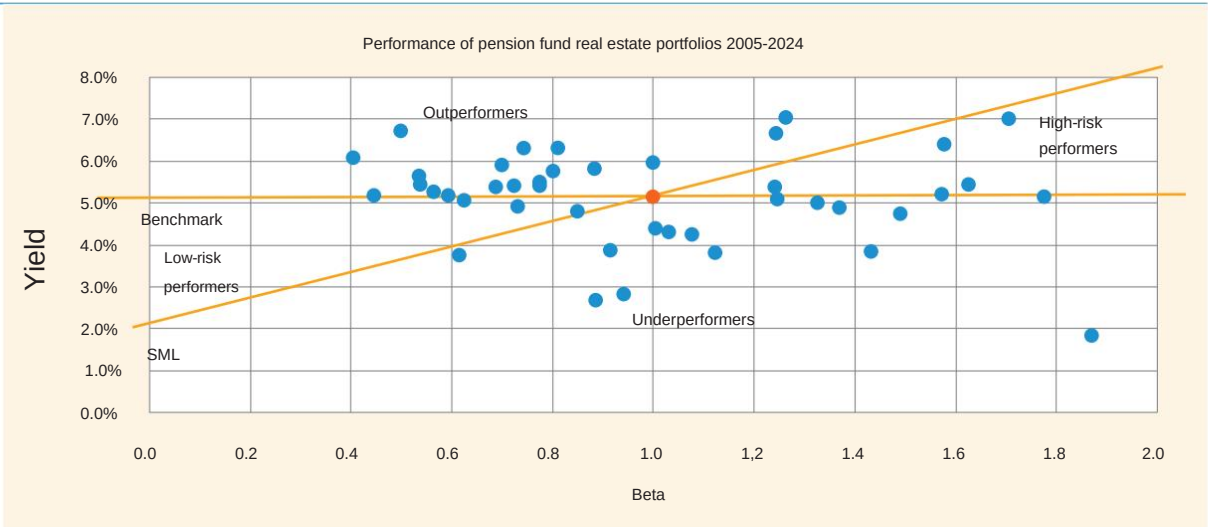
Pension funds with a position above the SML have achieved good performance in relation to the risk taken. These pension funds have been adequately rewarded for the risk they have taken. However, sometimes this results in a mediocre return of 4-5% that lags behind the sector average.

Pension funds falling under the SML have in relation to the risk taken achieved a moderate to poor performance. These funds are not adequately rewarded for the market risk they have taken. Sometimes, however, there is a good return of 6-7%, higher than the sector average.

The best-performing funds in this figure are above the benchmark and above the SML.

For the purpose of the further analysis of pension funds with successful and less successful real estate investment strategies, a distinction is made between four performance typologies:

Figure 5
Peer group comparison:
risk-weighted
performance of
pension
fund real estate
portfolios



- **Outperformers (54%).** These pension funds achieve a return higher than the benchmark (5.13%) and generate positive alpha.
- **Underperformers (34%).** These are pension funds that have achieved a return lower than the benchmark and also realize negative alpha.
- **Low-risk performers (7%).** These are the pension funds that achieve a lower return than the benchmark but generate positive alpha.
- **High return performers (14%).** They achieve a return higher than the benchmark but have a negative alpha.4

Since the p-values of most alphas do not deviate significantly from zero, no firm conclusions can be drawn, but these results lead to the following observations.

Over the past twenty years, 59% of pension funds have pursued an adequate real estate investment policy in relation to their peers (the outperformers and the high-return performers). Three funds (7%, the low-risk performers) can state that they have generated an appropriate return based on weighted risk, but that the average return has lagged behind the benchmark.

Table 1 provides an overview of the average outcomes of the different typologies.

In this peer group comparison, many funds were able to achieve an adequate to good performance because one fund performed very poorly, thereby dragging down the group average. A market comparison in the following paragraph therefore presents a different picture.

THE MARKET COMPARISON: THE RISK-WEIGHTED PERFORMANCE OVER THE PERIOD 2005-2024

Compared to the previous paragraph, the market is defined differently for the SML. The market in this paragraph is not determined by the peer group's investment universe, but is derived from the benchmarks of GPR, MSCI, and the literature. On that basis, a long-term average market return of 5.7% is assumed here.

The correlation of the real estate results of the individual pension funds leads to the security market line as visually represented in Figure 9:

$$E[R_x] = 2.0 + b_x \cdot (5.7 - 2.0)$$

The average risk-free interest rate over the period is set at 2%.

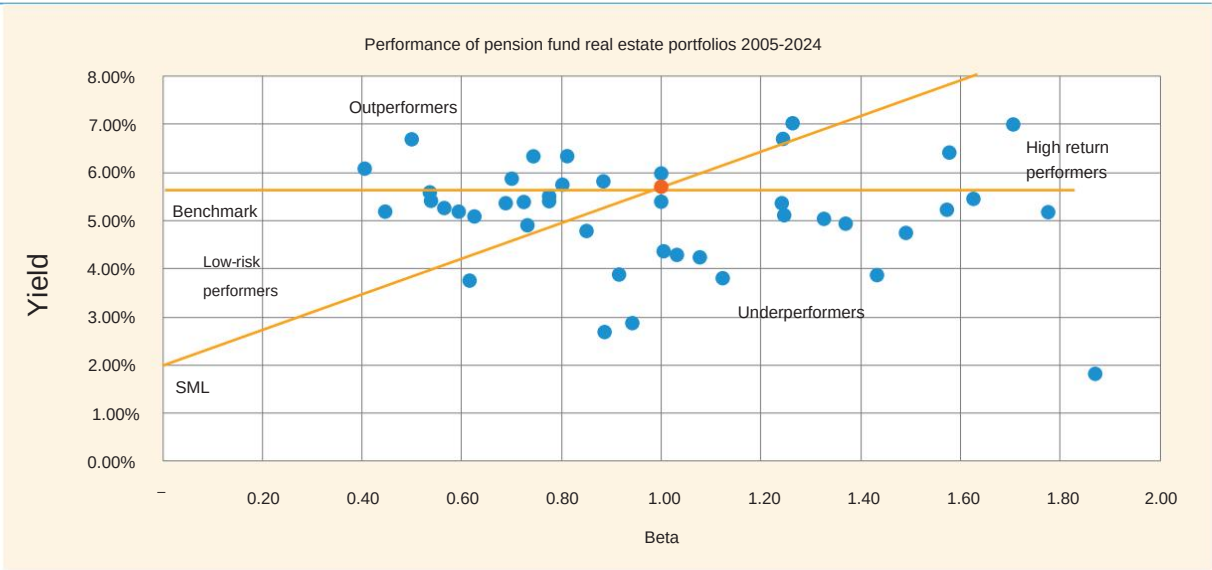
Based on a market return of 5.7%, the number of pension funds achieving adequate performance on the real estate portfolio is decreasing (see Figure 6).

Table 1
Key figures (average) for the different typologies (peer group comparison)

Typology	Share (%) Beta		Band- Performance		Median	Demanded	Alpha	Gem. AuM	Risk =	Band-
				width (R)		yield		2005-2024	STDV	width
										Risk
Outperformers	45%	0.74	5.8%	5.2-7.0%	5.8%	4.3%	1.5%	2,222	7.5%	6.8-16.8%
Underperformers	33%	1.17	3.9%	1.8-5.1%	4.1%	5.6%	-1.70%	660	10.6%	5.0-12.1%
High return performers 14%		1.58	5.8%	5.1-7.0%	5.4%	7.0%	-1.19%	8,288	14.8%	10.6-20.7%
Low-risk performers	7%	0.74	4.9%	5.1-4.8%	4.9%	4.3%	0.6%	942	7.1%	6.0-8.5%

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Figure 6
Market comparison:
risk-weighted
performance of
pension fund real estate
portfolios



This analysis reveals that there are significantly more underperforming funds.

It can be established that 45% of pension funds do not achieve market returns and do not realize positive alpha (underperformers). The share of outperformers decreases from 45% to 24%. The number of high-return performers decreases from 14% to 5%. Of the pension funds, 26% can be classified as low-risk performers (previously 7%).

Table 2 provides an overview of the average outcomes of the different typologies.

One observation is that 71% of pension funds do not beat the market (benchmark).

Analysis of the characteristics of the real estate portfolios of the outperformers and the high-return performers reveals the following. The outperformers were able to achieve their results with a low beta. Many of these funds had a high allocation to Dutch real estate over the 20-year period. The high-return performers realized their performance by taking above-average risk during this period with a predominantly international real estate strategy.

EXPLANATORY FACTORS FOR ACHIEVING OUT- AND UNDERPERFORMANCE

To better understand why certain pension funds structurally perform better or worse than their peers, four factors were investigated: size, international allocation, listed versus unlisted real estate, and the risk taken.

For each factor, the ten highest and ten lowest-scoring funds were analyzed, looking at return, risk, and the degree to which the two groups differ from each other.

The analysis is based on the results of the peer group comparison. The market comparison does not lead to substantially different conclusions; only the levels of beta and alpha differ slightly.

SCOPE: WHY LARGE FUNDS OFTEN HAVE THE WIND IN ITS TAIL
When pension funds with the smallest real estate portfolios are compared to pension funds with the largest real estate portfolios, the following picture emerges (Table 3).

The small funds achieved an average return of 4.5% with an average beta of 1.08 and an average alpha of -0.9%. The largest funds performed significantly better: an average return of 5.9% with an average beta of 0.98 and an average alpha of 0.8%.

Table 2
Key figures (average) for the different typologies (market comparison)

Typology	Share (%) Beta		Band- Performance width (R)		Median	Demanded yield	Alpha	Gem. AuM 2005-2024	Risk = STDV	Band- width Risk
Outperformers	24%	0.83	6.3%	5.8-7.0%	6.2%	5.1%	1.2%	2,876	8.5%	6.2-12.1%
Underperformers	45%	1.23	4.3%	1.8-5.4%	4.4%	6.6%	-2.3% 892		11.0%	6.8-16.8%
High return performers 5%		1.64	6.7%	6.4-7.0%	6.7%	9.7%	-3.0%	21,146	17.9%	15.1-20.7%
Low-risk performers	26%	0.64	5.3%	4.9-5.6%	5.4%	4.4%	1.0%	1,456	6.5%	5.0- 8.1%

Table 3
Performance by Size factor

Factor	Beta	Efficiency Bandwidth (R)		Median	Demanded yield	Alpha	Gem. AuM 2005-2024	Risk = STDV	Bandwidth Risk
Small	1.08	4.5%	1.8-6.3%	5.0%	5.4%	−0.9%	224	9.9%	6.1-16.8%
Big	0.98	5.9%	5.0-7.0%	5.7%	5.1%	0.8%	8,693	9.3%	5.3-15.1%

The two data sets (large vs. small) were also tested using the two-sample t-test, which determines whether the two groups differ significantly from each other. The test yields a P-value of 0.021. This result is less than 0.05, indicating a statistically significant difference between the average return of small and large funds.⁵

In short: large funds clearly benefit from economies of scale, and this is visible in their performance. Moreover, small funds face greater risk but do not receive a higher reward for it.
for.

Other observations also point in the same direction. The worst-performing funds had invested only €0.5 billion in real estate on average, while the best-performing funds managed an average of €6.9 billion. Of the fourteen weakest-performing real estate portfolios, only one had a size exceeding €1 billion.

The literature also confirms that size matters. Research by Andonov, Eichholtz, and Kok, among others, shows that large pension funds have lower costs, manage internally more often, and have a stronger negotiating position vis-à-vis external managers—all factors that contribute to better performance (Andonov, 2013).

However, there are exceptions: there are small funds that have performed excellently despite these disadvantages.

It can be concluded that the Size factor is a factor that can significantly contribute to achieving outperformance.

NATIONAL OR INTERNATIONAL: THE ROLE OF GEOGRAPHICAL ALLOCATION

The ten pension funds with the highest allocation to Dutch real estate achieved an average return of 5.5% with an average beta of 0.68 and an average alpha of 0.9%.

The ten pension funds with the highest allocation to global real estate achieved an average return of 5.4% with an average beta of 1.37 and an average alpha of −0.9% (see Table 4).

Based on the two-sample t-test, there is no significant difference in return regarding geographical allocation (p-value = 0.4346). The difference in risk is significant based on the two-sample t-test (p=0.007).

If only the pension funds with the highest allocation to Europe are considered, these funds performed slightly better on a risk-weighted basis than the pension funds that invested only in Dutch real estate. It appears that 70% of the pension funds with a high allocation to Europe also had a high allocation to the Netherlands. This is an indication that expanding the allocation to Europe has led to a better return-risk profile. Allocation to Europe also appears to have been rewarding for small pension funds. Furthermore, it can be established that the pension funds with the highest allocation to Europe invested predominantly in unlisted real estate funds.

In short, based on the risk taken, the return on a global real estate investment strategy appears to have been insufficient. Here, too, the nuance applies that for large pension funds such as ABP and PFZW, a global strategy has indeed been rewarding in absolute terms. They managed to beat the benchmark. The Size factor presumably contributes to this.

The analysis of the issue of geographical allocation leads to the observation that pension funds are expected to be better off investing in the Netherlands or Europe, unless there is a substantial real estate portfolio. In such a situation, investing in real estate globally can certainly be rewarding.

Table 4
Performance by (inter)national factor

Factor	Beta	Efficiency Bandwidth (R)		Median	Demanded yield	Alpha	Gem. AuM 2005-2024	Risk = STDV	Bandwidth Risk
The Netherlands	0.68	5.5%	4.3-6.7%	5.4%	4.6%	0.9%	1,832	7.0%	5.3- 9.5%
Europe	0.71	5.6%	4.7-6.7%	5.5%	4.2%	1.4%	673	7.4%	5.0-13.3%
Worldwide	1.37	5.4%	1.8-7.0%	5.3%	6.3%	−0.9%	2,778	12.8%	7.2-20.7%

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Table 5
Performance by factor (non-)listed strategy

Factor	Beta	Efficiency Bandwidth (R)		Median	Demanded yield	Alpha	Gem. AuM 2005-2024	Risk = STDV	Bandwidth Risk
Listed	1.54	5.2%	1.8-7.0%	5.2%	6.8%	−1.7%	6,772	14.4%	11.5-20.7%
Non-listed	0.63	5.4%	2.7-6.7%	5.4%	4.0%	1.4%	1,289	6.8%	5.0-8.4%

THE ROLE OF LISTED VERSUS NON-LISTED
PROPERTY

The ten funds that invested the most in listed real estate realized an average return of 5.2% with an average beta of 1.54 and an average alpha of −1.7%.

The ten pension funds with the smallest allocation to listed real estate achieved an average return of 5.4% with an average beta of 0.63 and an average alpha of 1.4% (see Table 5).

In other words, pension funds with a non-listed real estate strategy achieved a slightly better return (but not significantly, p-value = 0.2968) with positive alpha. As with geographical allocation, there is a significant difference in risk taken (p-value = 6.81175E-06).

In short, pension funds with a higher allocation to listed real estate took much more risk but were insufficiently rewarded for it. It can be stated that, based on the risk taken, the reward for a listed real estate investment strategy has been too low.

Nevertheless, a listed real estate investment strategy can be rewarding. The best-performing pension fund over a twenty-year period predominantly pursued a listed real estate strategy.

RISK: MORE RISK DOES NOT PAYS OFF

The level of risk (volatility) has not led to significantly divergent returns (p-value = 0.2782).

The ten funds that took the lowest risk achieved a return of 5.3% with an average beta of 0.6 and an average alpha of 1.5%.

The ten funds that took the most risk achieved a return of 5.0% with an average beta of 1.56 and an average alpha of −1.9% (see Table 6).

Pension funds that took high risks lagged behind pension funds that took lower risks in terms of return. However, the difference in return is not significant (p-value 0.2782). In terms of risk, the difference is significant (p-value 4.12985E-06). In short, based on a risk-weighted assessment of the return, pension funds are not adequately rewarded for taking high risks.

EPILOGUE

Big is beautiful. Large pension funds are generally better real estate investors than small pension funds. Economies of scale often lead to access to better propositions, professional and highly educated staff, a better network, and more knowledge. However, that is no reason not to invest in real estate.

Several pension funds with small real estate portfolios have shown good risk-weighted performance, and the best-performing pension fund over the past 20 years had a small real estate portfolio.

An eye-opener during the comparison within the peer group is that investing in Dutch or European real estate has resulted in a relatively good return-risk profile. Many funds that have followed this strategy have presumably benefited from the returns on the Dutch housing market. The Dutch unlisted funds in which participation took place are often not financed by debt, or only to a limited extent, as a result of which the risk of these investments is low and the returns are very commensurate with the risk taken.

Those who invested in listed assets generated virtually the same return as those who invested in unlisted assets. The high volatility of listed assets did not translate into an appropriate (risk-weighted) return. Particularly for pension funds with small real estate portfolios, it seems more logical to invest in unlisted real estate. Here, the exception proves the rule. The best-performing pension fund over a 20-year period had a small real estate portfolio and invested predominantly in listed real estate within it.

Table 6
Performance based on the Volatility factor

Factor	Beta	Efficiency Bandwidth (R)		Median	Demanded yield	Alpha	Gem. AuM 2005-2024	Risk = STDV	Bandwidth Risk
Low risk	0.60	5.3%	3.8-6.7%	5.3%	3.9%	1.5%	1,059	6.2%	5.0-6.8%
High risk	1.56	5.0%	1.8-7.0%	5.1%	6.9%	−1.9%	4,811	14.6%	12.3-20.7%

Furthermore, it can be established that taking more risk, in the sense of accepting more volatility, has not led to better results unless it concerns large pension funds.

Looking at the past, the best real estate investment strategy for many smaller pension funds seems to be to invest in Dutch real estate with occasional forays into European real estate, and subsequently in unlisted funds.

Those seeking flexibility and liquidity might consider venturing into a small portion of listed companies. However, that comes at a price in terms of risk, because the probability of risk-weighted negative performance is then high.

Finally, it is also appropriate to note here that past results offer no guarantee for the future.⁶

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Notes

- 1 Drs. Jan-Willem Dijkhuis MRE MRICS has been Director of Lymos since 2005 and advises institutional investors, family offices, corporations, and government institutions on real estate matters. He is also a member of the Real Estate Committee of the CFA Society Netherlands and was a lecturer in Real Estate Investment at the University of Applied Sciences between 2011 and 2022. Rotterdam.
- 2 It should be noted that statistically speaking, many alphas do not deviated significantly from zero, such that this conclusion must therefore be considered indicative. See also remark at endnote iv.
- 3 Data used for this study. For the purposes of the research
- Over the period 2005–2024, 42 Dutch pension funds with at least €100 million in invested assets in real estate were analyzed. Pension funds ABNAMRO, IBM, and Shell were not included because these pension funds were not always invested in real estate during the period 2005–2024.

This study examines the real estate investment strategies of pension funds and the results realized thereon.

Most funds disclose the realized annual return on real estate in their annual report. If this is mentioned in the annual report, those returns have been adopted. These returns are considered reliable. A few pension funds do not disclose their return on real estate. For these funds, the notes to the financial statements were examined, and the annually reported profits from rental income, dividends, and capital growth were divided by the assumed average assets invested in real estate.

The assumed average assets under management were determined based on the balances as of January 1 and December 31 of each year. Two pension funds distinguish between returns on listed real estate and returns on unlisted real estate and do not state the total return on real estate. For these funds, the weighted average return was determined based on the assets under management as of January 1 and December 31 of each year. Finally, three funds were merged in the period 2005–2024. These are the three KLM pension funds, which have all employed the same investment strategies over the long term with comparable results. Only in recent years is some non-significant variation observable. By taking the annual returns, there are 20 data points per pension fund.

Based on calculated t-values and p-values, most contain

- series of sufficient data points to calculate significant alphas and betas and therefore be able to draw conclusions.
- The allocation of invested assets was also examined. With regard to the allocation between listed and unlisted entities, the percentages stated in the annual report or notes to the financial statements were adopted. Where these were not stated, the valuation method in the financial statements was consulted.
- Where quoted market prices apply, it is assumed that the portfolio is listed on the stock exchange. The remainder of the assets invested in real estate is then assumed to be unlisted.
- That can be either the direct real estate category or the category of unlisted real estate funds.
- Some pension funds have allocated their listed real estate portfolio to the generic equity portfolio for the duration of the investment. From that point on, the return on that listed real estate portfolio no longer forms part of the real estate investment portfolio. As a result, the allocation to real estate decreases.
- For the purposes of this study, such a pension fund is assumed no longer to invest in listed real estate.
- For the geographical allocation, the disclosure in the annual report or notes to the financial statements was also taken as a starting point. However, a number of remarks can be made in this regard. The disclosure of the allocation to the Netherlands decreased between 2005 and 2024. In 2005, 34 funds disclosed their allocation to the Netherlands, and in 2024, this number had fallen to just 15. One pension fund does not disclose a geographical allocation in the annual report.
- 4 Alpha here is Jensen's alpha. Due to the limited number of observations (20 per fund), the p-values for most funds are higher than 0.05, and consequently, most alphas do not deviate significantly from zero. In this sense, the classification into typologies is indicative and must be nuanced against this background. An alternative approach involving halving the annual returns and thereby creating 40 data points resulted in more alphas that deviated significantly from zero.
- 5 For connoisseurs, Cohen's d is -1.173. In absolute value (1.17), this is a large security size according to the usual rules of thumb (0.2 small, 0.5 medium, 0.8 large). The sign is negative because small funds yield lower returns on average than large funds.
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