

A Second Look at Performance Persistence Among Core Open End European Real Estate Funds **2018**

Research

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INREV

Ito Tower, 8th floor
Gustav Mahlerplein 62
1082 MA Amsterdam, The Netherlands
+31 (0)20 235 86 00 | research@inrev.org | www.inrev.org

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Executive summary

- > Most recent estimates confirm that persistent performance is real and significant
- > Persistence in performance can endure for up to 11 years
- > Top half performers exceed average return by 2.2% per annum

Investors often examine past performance of a fund when making investment decisions in the hope that the past can illuminate the future. Despite the familiar caveat that past performance is no guarantee of future performance, there is evidence that persistent performance is real, significant, and should not be ignored. The challenge, however, lies not so much in testing whether performance persistence exists but in recognising under which circumstances it does so and what its implications are.

‘Greater persistency is observed in top half performing funds’

The current study builds on an earlier INREV study called Persistent Performance Among Core Open End European Real Estate Funds published in 2016 by adding two more years of performance data.

The current study confirms that persistent performance is widespread among core open

end European non-listed real estate funds. Top quartile funds tend to retain their star performance for up to four years. On the other hand, bottom quartile funds maintain their position for longer, up to seven years.

More enduring patterns are observed when funds are broken into halves rather than quartiles. Overall, top half funds can maintain their superior position for up to 11 years, with some funds continuing with their remarkable performance for a total of 12 years within their sub-group category. In contrast to the quartiles analysis, the bottom half performers remain below par for an average of 9 years.

Like its predecessor, the current study uses a pathway analysis, that is, it examines whether certain routes are more common over a three-year period (e.g. does a top quartile fund go straight into the third quartile or does it transit through the second quartile). This analysis confirms the earlier findings that some pathways are a lot more travelled than others, and some pathways are not travelled at all. The most common pathway that funds travel is the least favourable one,

‘Top half performers on average earned returns in excess of 2.2% over the peer group average’

where funds hover at the bottom of the pile. This was also the case in the earlier study. The probability of a fund sticking to the bottom quartile for three years in a row is one in ten.

Funds that were “top half performers”,

funds that performed greater than the group average over three years, on average earned excess returns of 2.2% over their peer group average total return of 5.3% . The less fortunate “bottom half performers”, funds that never leave the bottom half, delivered only half the average total return.

Building on INREV’s previous persistent performance investigation, this study arrives at the same two conclusions: first, that European core open end non-listed real estate funds exhibit evidence of persistent performance; second, that it is more rewarding to seek a top half performing fund than a star performer first quartile fund over the longer term.

¹ Returns are measured against the average unweighted returns from a peer group of comparable funds.

Introduction

This research paper builds on the previous INREV investigation into Persistent Performance Among Core Open End European Non-Listed Real Estate Funds published in January 2016. It re-examines whether past performance can be a good predictor of future performance.

The study uses an INREV dataset of 160 core open end funds that have provided at least three years of performance figures. The research covers a period of 16 years from 2001 to 2016 inclusive, adding two years of performance analysis to the previous study.

The study uses the same three-step analytical approach as before. First, all funds are ranked into quartiles and halves based on their annual performance in order to assess the number of funds that are able to maintain their

position over time. Following on from that, performance stickiness is examined. Here, the maximum duration that a fund can maintain its performance ranking over an unbroken number of years is analysed. Finally, 'transition pathways' scrutiny is performed which gauges the trajectory that funds travel.

The analysis considers overall fund performance as well as fund groupings based on some of their key characteristics such as country and sector strategies, domicile, gearing levels, size and vintage year.

The paper is organised as follows: Section 2 presents the data used in the analysis. Methodological set up is discussed in Section 3. Fourth section discusses empirical results with Section 5 concluding this paper and commenting on further areas of research.

Please note that in the report quartile 1 or Q1 refers to the top quartile, while quartile 4 or Q4 refers to the bottom quartile; H1 refers to the top half and H2 refers to the bottom half, where performance is above or below the median value respectively.

INREV would like to thank the focus group members for their support and guidance on this research.

- Martin Laursen, Assistant Manager, Deloitte Financial Advisory
- Jose Pellicier, Partner & Head of Research, Rockspring Property Investments Managers
- Maarten van der Spek, Senior Strategist, Abu Dhabi Investment Authority

2. Data characteristics

The empirical analysis is based on INREV's proprietary dataset of European non-listed real estate funds which comprise the INREV Annual Index universe. The INREV Annual Index measures net asset value (NAV) based annual performance of non-listed real estate funds. Returns are net of all fees and other costs and represent the aggregate investor return. The Index is available from 2001.

The 2017 edition of the index contains 339 funds, an increase of five vehicles compared

'The analysis is based on the INREV Annual Index which comprised 339 funds at the end of 2016'

to the previous year. In total, it represents a gross asset value (GAV) of €213.6 billion as at the end of 2016. The Index universe contains a mixture of funds which differ by style, structure, domicile, vintage, as well as other fund characteristics.

For those 160 core open end European non-listed real estate funds that were used for the analysis, the overall sample return average is 5.3% and the median value is 6.1%. The distribution of fund returns shows that 2008 observed the largest interquartile range in fund performance.

Fund performance heterogeneity is quite pronounced when broken down into various categories. Multi country funds delivered an annualised performance of 2.9%, while single country funds were more generous to their investors. Over the research period from 2001 to 2016 German funds were up 5.7% per annum; Dutch funds generated annual returns of 5.9%; UK targeting funds delivered the best returns of 6.5% per year on average; Other country funds performed the least returning 3.3% p.a., almost half of the group average.

Single sector funds delivered 5.5% on average, 50bps more than multi sector funds. With regards to fund domicile, funds based in the UK performed best among their peers delivering 5.4% per annum on average over the research period.

'There were 160 core open end European non-listed real estate funds in the research sample'

Gearing wise, funds with a lower leverage threshold notably outperformed their higher leveraged peers, 5.8% compared with 3.5% respectively. In terms of size, large funds (6.0%) did better than the average (5.9%) and smaller funds (4.8%). And funds launched pre-crisis (5.3%) outperformed their younger peers (4.0%).

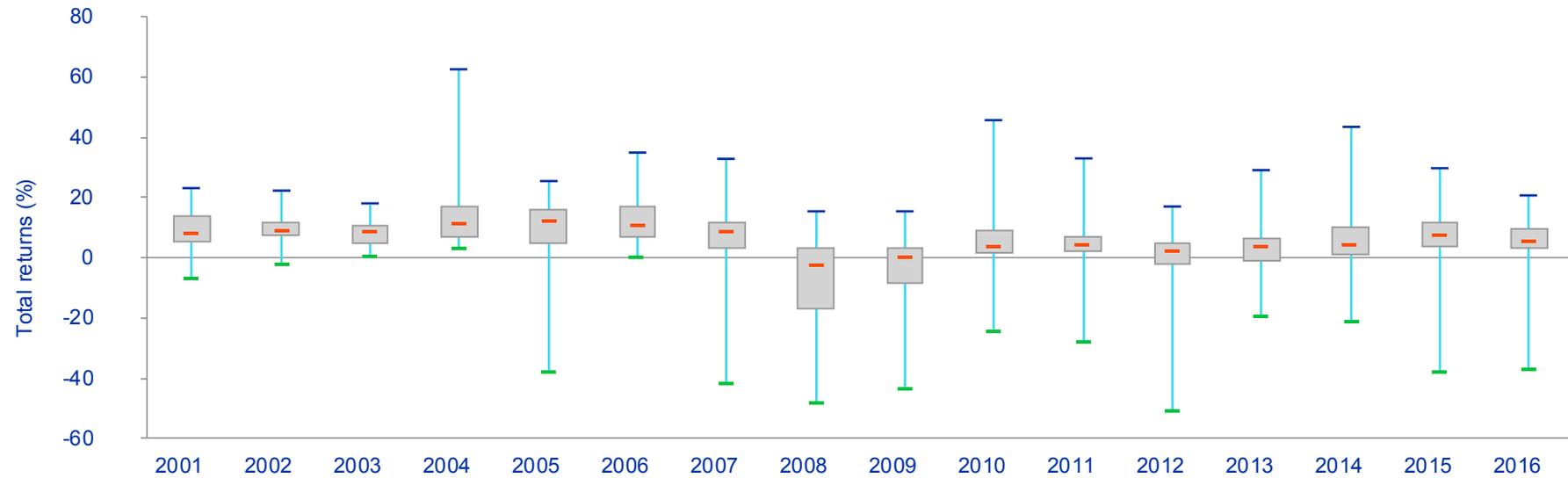
Number wise the sample ranges with every passing year. A 2016 figure contains more single country (63) over multi country funds (52), and a greater number of multi sector (71) over single sector funds (44), as well as smaller (62) over medium (23) or larger vehicles (30).

Detailed sample summary statistics can be found in Appendix 1.

² As measured by geomean.

Figure 1: Distribution of core open end fund returns

- Maximum value
- Median value
- Minimum value



Note: The box in Figure 1 represents the interquartile range - the difference between the upper and lower quartiles.

3. Recap on methodology

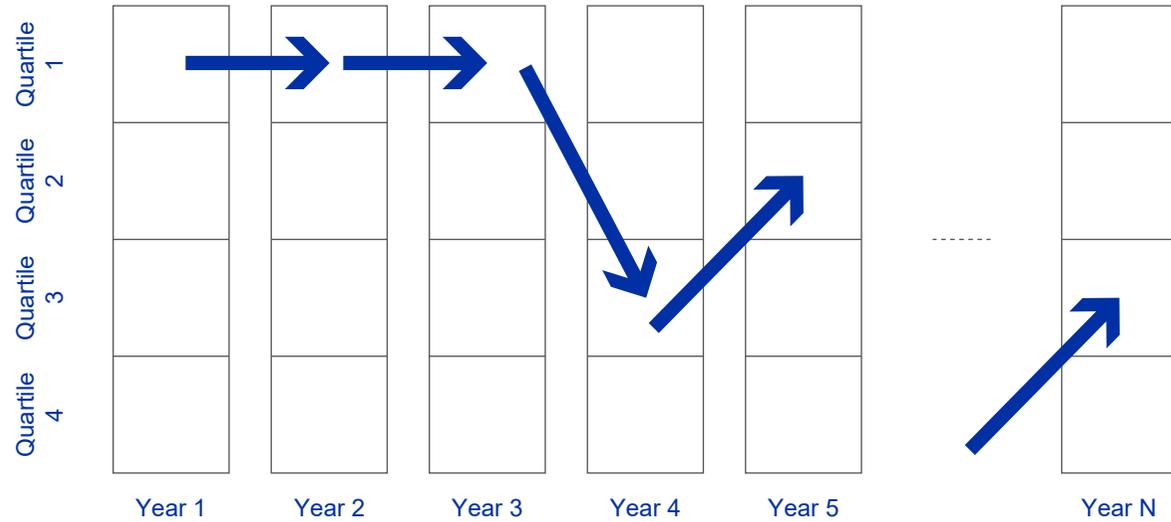
This study adopts the same three-step methodology from the 2016 report.

First, funds are ranked into quartiles and halves, and are tracked over time to assess whether funds can retain their initial rank. Movements in rankings are then tracked over time and compared with random expectations.

Second, performance duration is examined. Here, the maximum amount of time a fund stays in a particular quartile / half is recorded. Duration analysis examines the maximum period of time a fund can endure a ranking.

Finally, a pathway analysis is performed by observing the paths a fund can take as it moves through quartiles. This assessment provides insights into most common paths over time.

Figure 2: An example of a fund's trajectory through quartiles



4. Empirical results

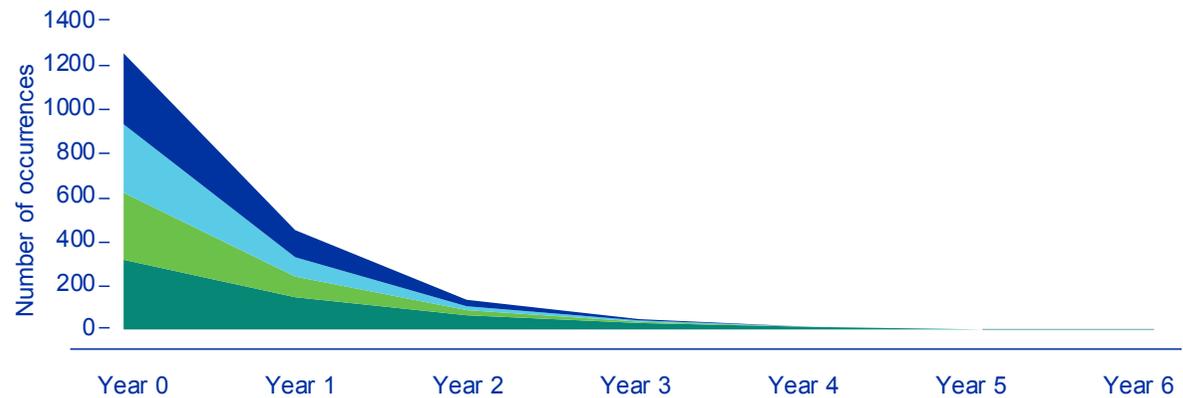
Persistence patterns

This section presents persistent performance estimates for the entire universe as well as for categories of funds which share similar characteristics where the sample size permits. Full results can be found in Appendix 2.

The overall numbers provide some interesting findings. The proportion of funds that remain within a quartile varies depending on their initial quartile position. On average around one-third of funds remain in their starting quartile after one year, although 38.8% of top quartile funds and 46.5% of bottom quartile funds maintain their rankings as the year passes. In year two, persistence drops. Here, 8.4% of top quartile and 20.6% bottom quartile funds maintain their quartile positions, indicating that bottom quartile fund performance is more sticky than top quartile performance. In year three overall persistence numbers decline further. By year six, no fund has retained its ranking.

Figure 3: Persistence in quartiles among core open end funds

- Top quartile
- Second quartile
- Third quartile
- Bottom quartile



These overall persistence numbers are greater than a random selection would suggest. The likelihood of any fund staying in its quartile, based on a random probability is one in four. This means that retaining a quartile position should diminish by a factor of four at each passing year. For example, if there were 100 funds in any quartile, this number would then drop to 6 (6.3%), then 2 (1.6%) and nil by year four, if persistency did not exist.

This is not the case among core open end European real estate funds. The “stickiness” of their performance is greater than a random probability would suggest and this is especially the case among bottom quartile funds. Funds in the bottom quartile tend to stay in the bottom quartile for longer than any other quartile, and the proportion of funds that maintain this position is more than random probability would suggest. This provides some evidence of performance persistence.

This is also the case for top quartile performing funds, though to a lesser extent than bottom quartile funds.

Figure 4: Persistence top quartile versus random

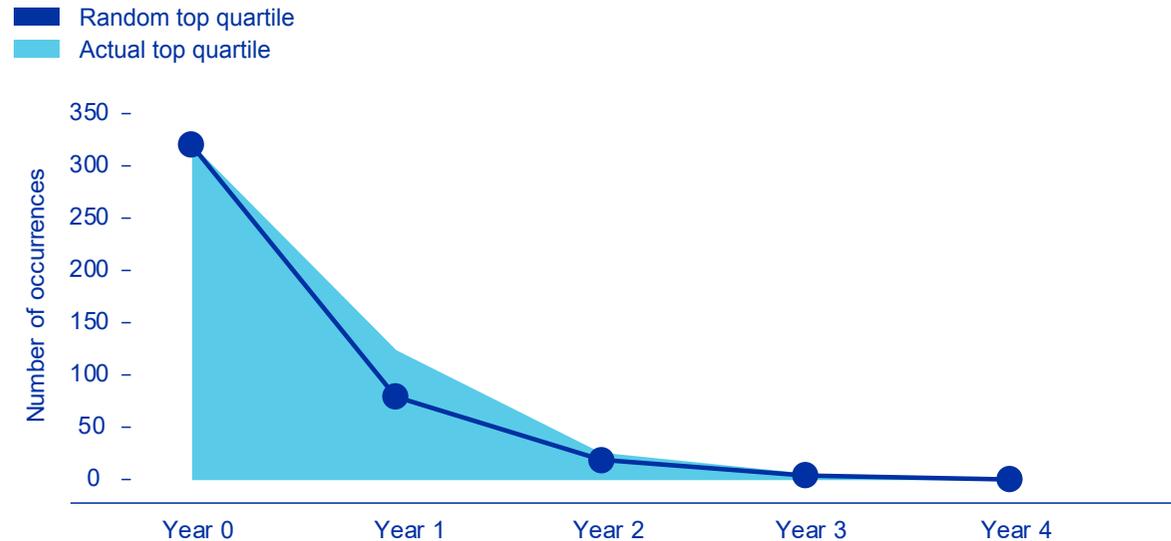
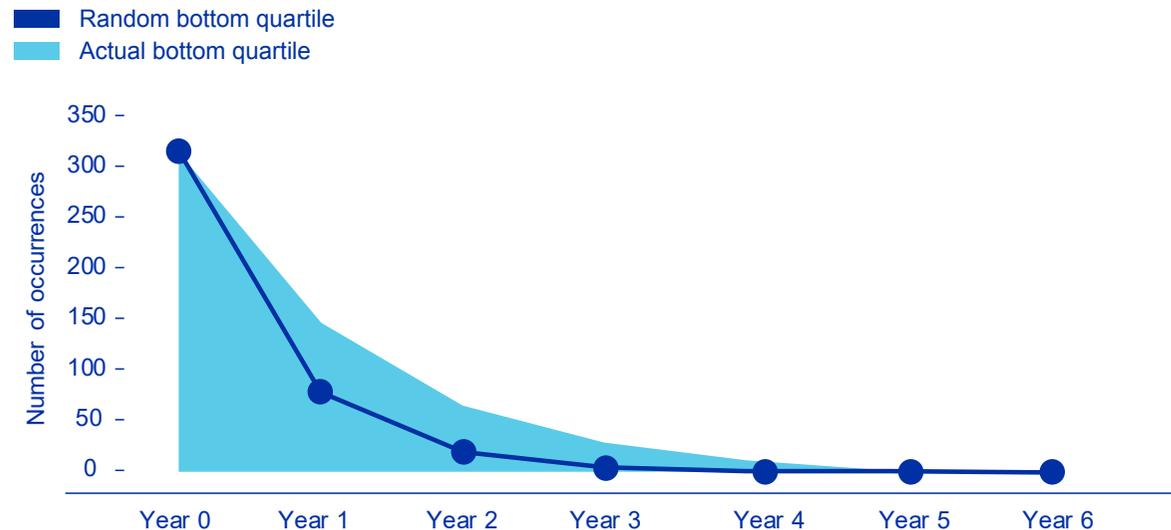


Figure 5: Persistence bottom quartile versus random



Further scrutiny of performance by halves presents similar findings. However, this time the better performing funds steal the spotlight. The overall numbers suggest that over a short term both top and bottom half funds exhibit similar persistence levels. After year one two-thirds of funds remain within their initial half position. If performance was random, the odds would be 50-50.

In year two, proportions move to 33.0% for top half and 36.3% for bottom half performing funds. If performance was random, only one-fourth of the sample of funds would remain in their initial half.

The same pattern continues, with fund stickiness beating the random odds over three years. In each year, funds exhibit greater performance durability than the randomness

test would suggest. By year five top half performing fund stickiness overtakes that of bottom half funds. In terms of duration, top half funds exhibit up to eleven years of performance endurance, while bottom half performers

‘Top half performing funds retain their position for longer than bottom half performing funds’

maintain their position for up to nine years only. Meanwhile random probability suggests that stickiness would disappear by year seven.

Figure 6: Persistence in top half versus random

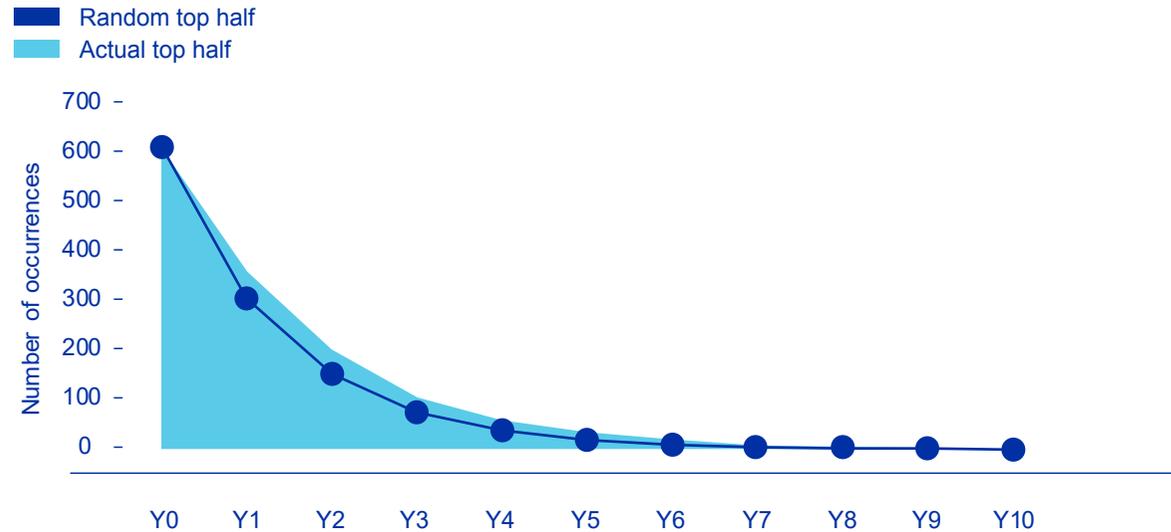
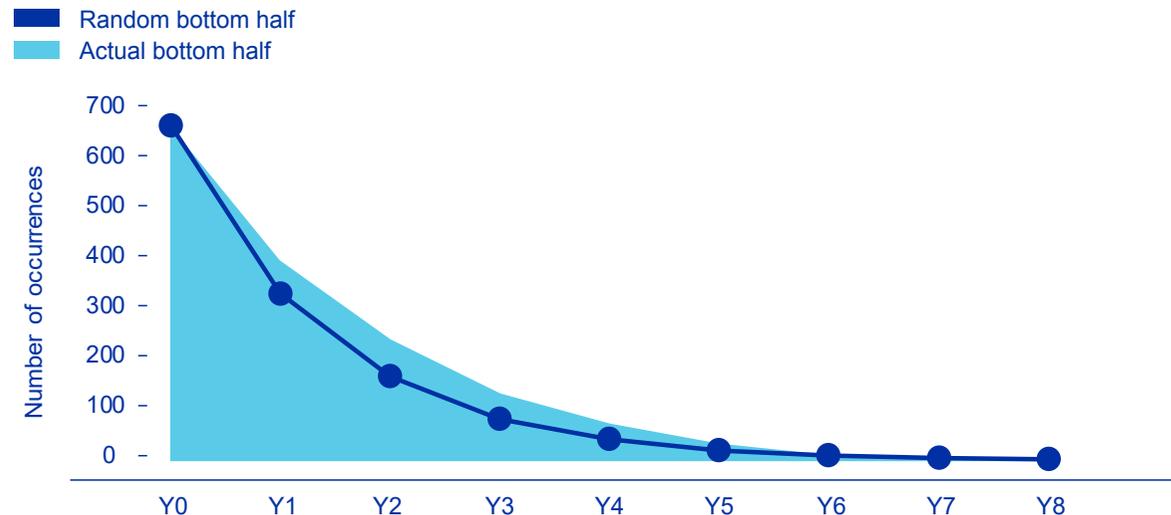


Figure 7: Persistence in bottom half versus random



A deeper dive into persistence

Further analysis into fund persistence considers their performance by sub categories. Here, funds are grouped into seven broad groups, including country strategy (multi country / single country), sector strategy (multi sector / single sector), target single country (Germany, the Netherlands and UK), vehicle domicile (Germany, the Netherlands, Luxembourg and UK), gearing levels ($\leq 40\%$ and $> 40\%$), vehicle size ($< \text{€}500$ million, $\text{€}500 - \text{€}1$ billion, $> \text{€}1$ billion as measured by the last reported GAV), and year of first closing (< 2001 , $2001 - 2007$, > 2007).

As the overall sample findings suggest, performance stickiness is more common among bottom quartile funds than top quartile funds. Within the sub-categories of multi sector, single country and multi country strategies, bottom performing funds tend to retain their rankings for longer than their better performing peers. The former group of funds maintain their ranking between five and seven years while the latter group of funds dissipate from the sample after four years on average. The exception however applies to single sector strategy funds, where one fund continued its notable positive performance for seven years.

Figure 8: Persistence in quartiles among core open end funds by single sector strategy

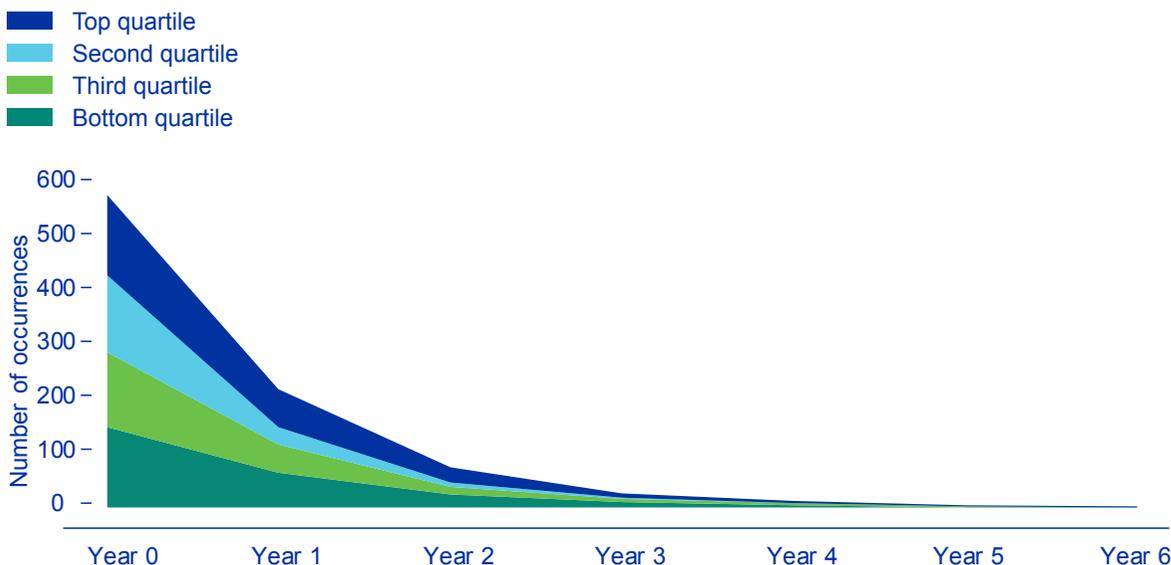
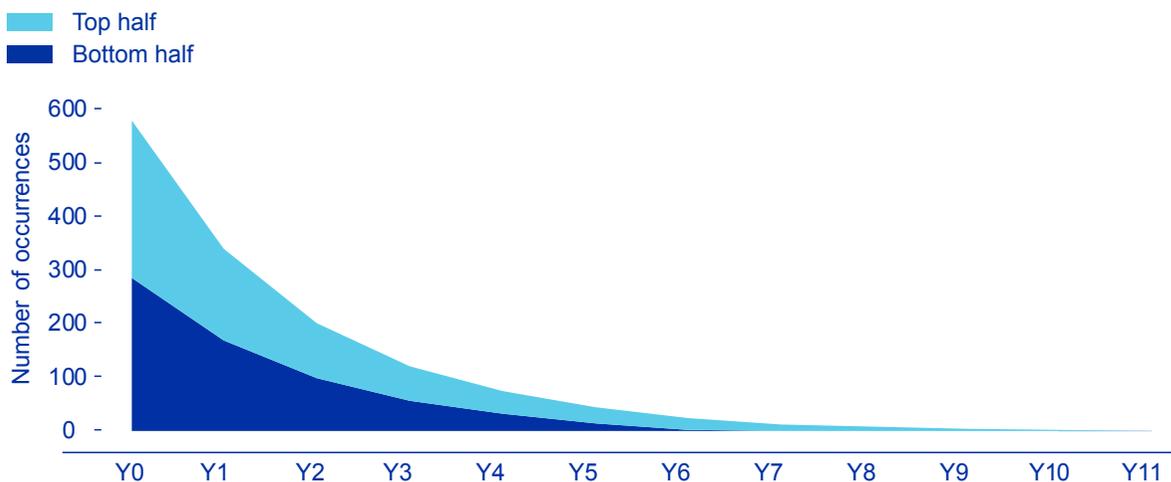


Figure 9: Persistence in halves among core open end funds by single sector strategy



Meanwhile, when dividing the funds into halves rather than quartiles, the picture reverses and top half performing funds exhibit greater levels of stickiness. Bottom performing funds retain their rankings between seven (single sector) and ten years (single county). Top half performing funds stick with their ranking for around nine to ten years with one extreme performing single sector fund outperforming the group average for twelve years.

Considering individual single sector strategies, a somewhat different picture emerges. While German top and bottom quartile funds are on par with their persistence duration, UK and Dutch top quartile funds outpace their less fortunate peers by a significant margin. In the case of funds targeting the UK, some continue with their exceptional performance for up to seven years while underperformance ceases after four years. A top quartile Dutch fund eclipses their bottom quartile peers, eleven years of persistence for the former compared to five years for the latter.

Assessing fund performance by halves by single country strategy, UK and German funds swap places. Top half performing German funds are twice stickier than bottom half performing funds. UK bottom half funds however show endurance of more than two years when compared with their top half peers. Dutch funds on the other hand continue with their exceptional performance with one fund remaining in the top half for 12 years.

Figure 10: Persistence in quartiles among core open end funds targeting the Netherlands

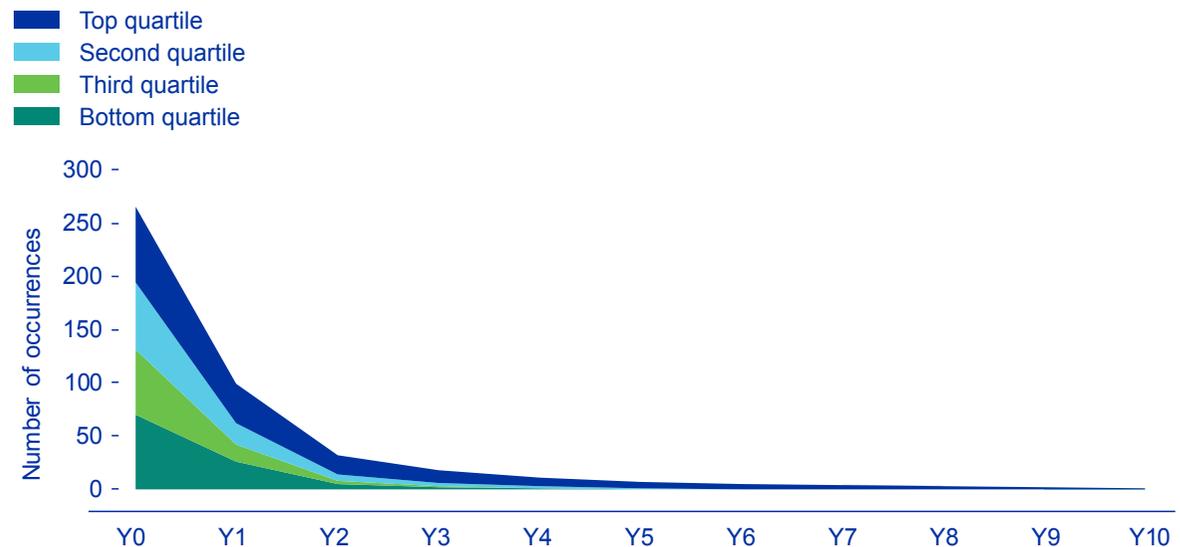
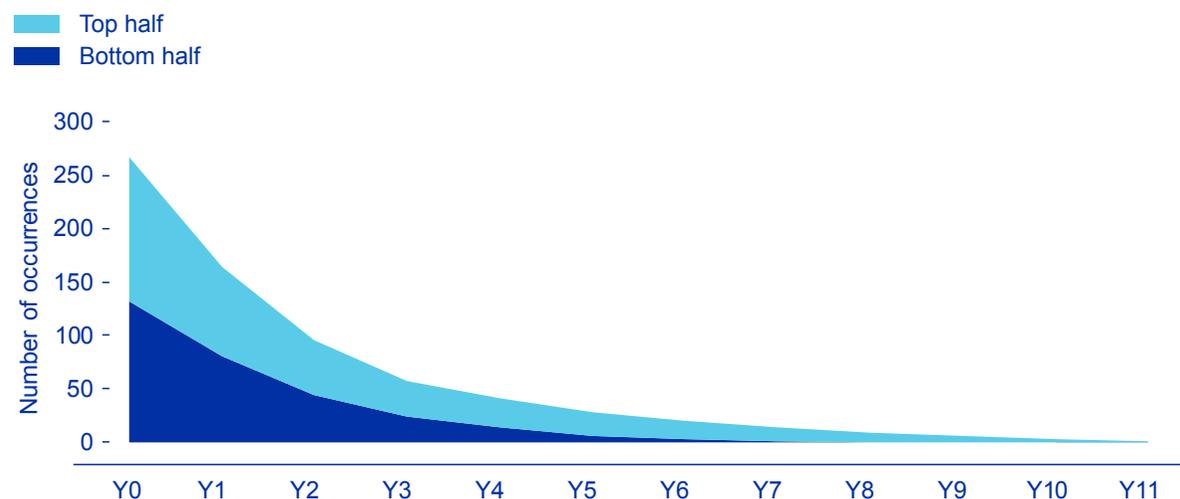


Figure 11: Persistence in halves among core open end funds targeting the Netherlands



When the same numbers are examined by vehicle domicile, a similar picture emerges. Top and bottom quartile funds that are based in Germany have comparable stickiness levels. Bottom quartile funds domiciled in Luxembourg are stickier than their top quartile peers by one year. Within the UK domiciled funds, better performing peers outpace their less fortunate peers by an extra year. Among the funds that are domiciled in the Netherlands, persistency in top quartile fund performance dwarfs that of bottom quartile funds, 12 years compared with just three years for bottom quartile funds.

When the same analysis is performed by grouping funds into halves, the following picture emerges: German and Luxembourg fund over- / under-performance have similar duration; UK top half funds beat their bottom half competitors by one year, while top half Dutch funds outperform bottom half funds by four years.

Considering fund performance by gearing levels, size and vintage, similar findings appear: bottom quartile fund performance endure for longer than the performance of top quartile funds while top half funds outperform bottom half funds.

A summary table of all results on persistency can be found in the Appendix.

Figure 12: Persistence in quartiles among core open end funds domiciled in the UK

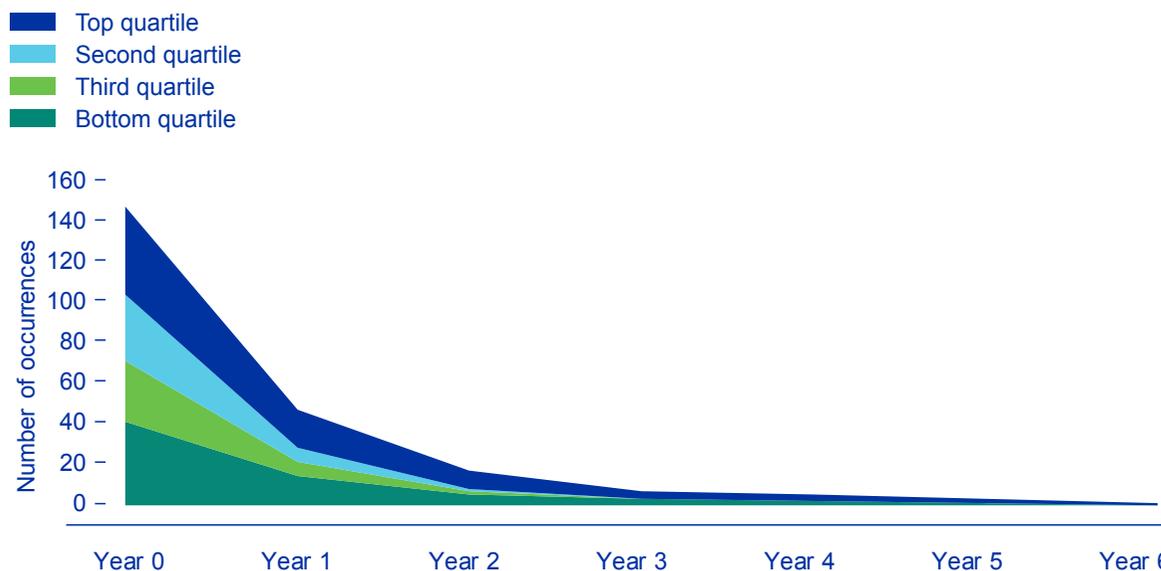
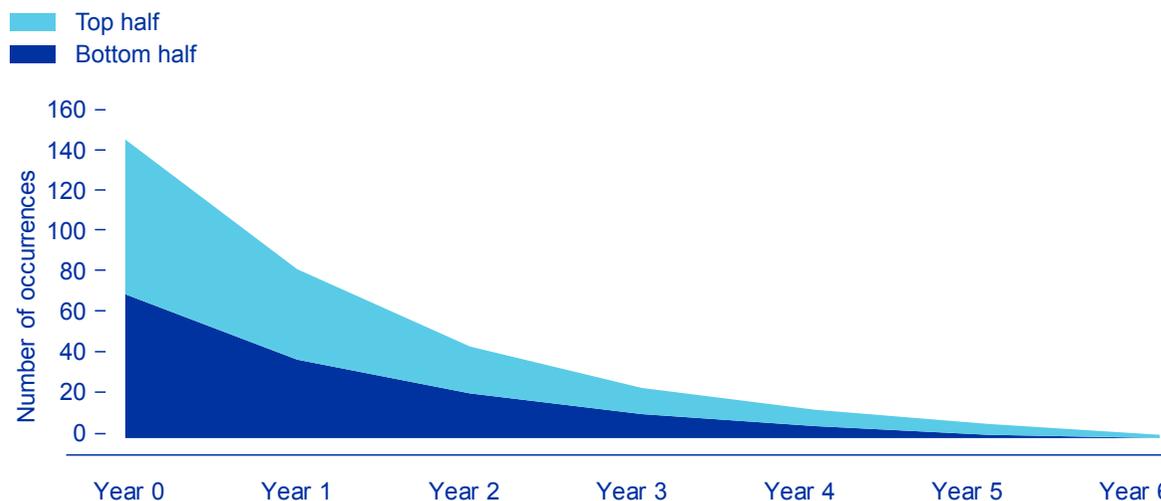


Figure 13: Persistence in halves among core open end funds domiciled in the UK



Proven path

A further way to examine persistent performance is a so-called “pathway” analysis. If fund returns were evenly distributed, each fund would appear in one of the four quartiles in year one. The following year and a year after, the same distribution would apply with funds gravitating between 64

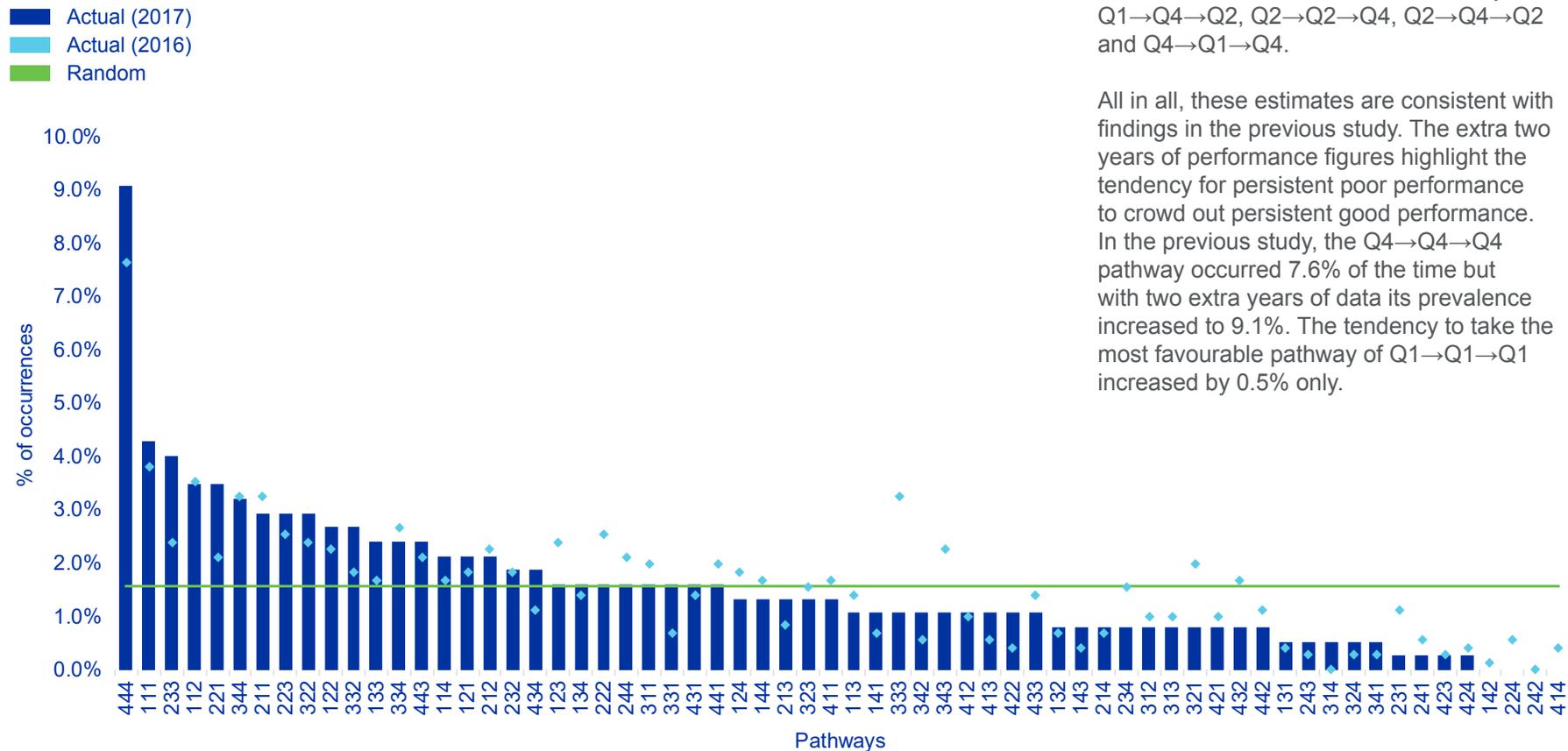
(4 x 4 x 4) quartile pathways. However, as the numbers suggest, actual performance is far from being evenly distributed.

The most popular pathway that funds follow is Q4 to Q4 to Q4. This pathway - where funds hover at the bottom of the sample - appeared 9.1% of the time. The second most travelled

pathway is Q1 to Q1 to Q1, where funds continue with their top quartile performance for three consecutive years, materialises 4.3% of the time. The third most travelled pathway is Q2 to Q3 to Q3 and it occurs 4.0% of the time. There are 64 possible pathways and the top ten of these account for 39% of all the possible pathways, which is double the uniform distribution rate of rate 15.6% (10/64). Likewise, there are four pathways that funds have never travelled, namely: Q1→Q4→Q2, Q2→Q2→Q4, Q2→Q4→Q2 and Q4→Q1→Q4.

All in all, these estimates are consistent with findings in the previous study. The extra two years of performance figures highlight the tendency for persistent poor performance to crowd out persistent good performance. In the previous study, the Q4→Q4→Q4 pathway occurred 7.6% of the time but with two extra years of data its prevalence increased to 9.1%. The tendency to take the most favourable pathway of Q1→Q1→Q1 increased by 0.5% only.

Figure 14: Distribution of return pathways over 64 (4 x 4 x 4) potential pathways



Common returns

The persistent performance analysis above shows that there are observable patterns in returns which suggest performance stickiness is not random. But, by how much is always a question, and therefore the focus now turns to returns.

To compare the average returns of types of fund performance the funds are categorised into four categories as follows:

1. **Pure top half performer** - a fund that retains top half performance over three years.
2. **Pure bottom half performer** - a fund that never leaves the bottom half over three years.
3. **Flip-flop performer** - a fund that fluctuates between top and bottom half rankings.
4. **Extreme performer** - a fund that experiences both pure top half and pure bottom half performance over the entire analysis period.

Figure 15: Pure top half performer

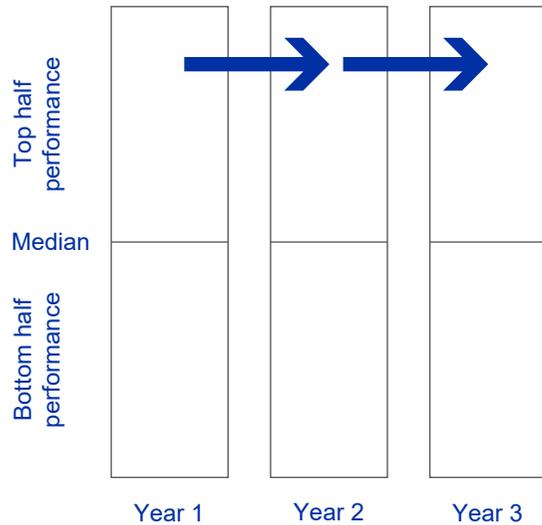


Figure 16: Pure bottom half performer

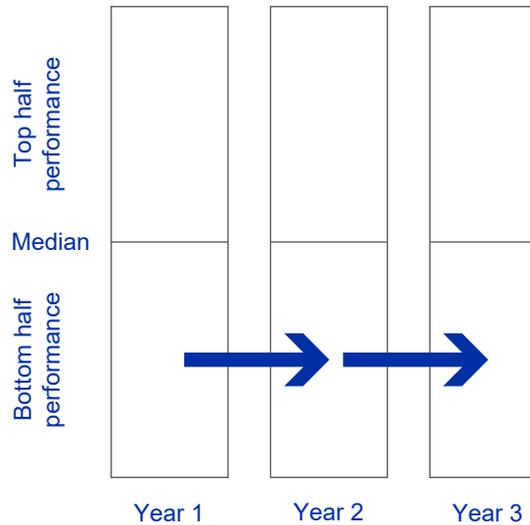
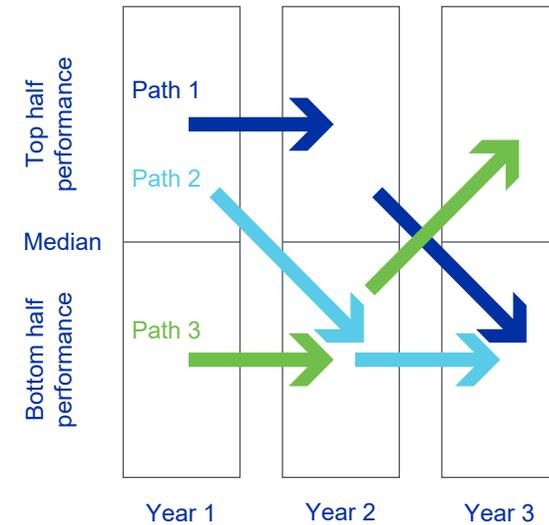


Figure 17: Flip-flop performer



First, as the numbers from Section 2 suggest, there is a notable spread in the performance of the core open end European real estate funds sample that this study is based on.

On average, pure top half performing funds deliver 7.5% per annum, 220 basis points above the unweighted average of 5.3%.

Despite having been top half performers at some point over the analysis period, extreme performers deliver just 5.3% on average, identical performance to the universe average.

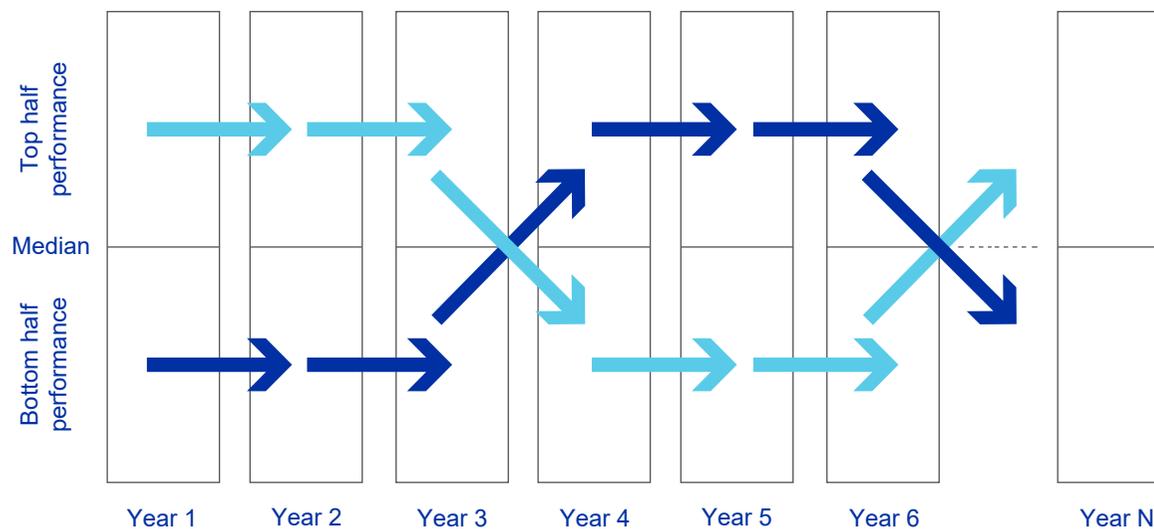
Flip-flop performers are less successful at generating returns with their average of 2.8% being 250 basis points below the

sample average. Pure bottom half performers generated 2.8% per annum, almost half the average returns.

Table 1: Persistent patterns and associated impact on returns among funds

	Number of funds	% of total	Average annual return
Pure top half performers	55	34.4%	7.5%
Pure bottom half performers	56	35.0%	2.8%
Extreme performers	28	17.5%	5.3%
Flip-flop performers	21	13.1%	4.1%
All funds	160	100.0%	5.3%

Figure 18: Extreme performers



Across the sub categories, with the exception of funds targeting Germany and those that were launched post-2007 where the extreme performers category is absent, there are some interesting findings worth noting.

The difference in returns between the pure top half performers and the group average is the largest for single country funds and funds launched after 2007. The range in returns for single country stands at 4.5%. The difference for post-2007 funds is 4.0%. In general, single country pure top half performers exceed their group average by a notable margin. Funds targeting Germany outpace their peers by 2.3%, Dutch funds deliver excess returns of 1.6% and UK funds beat the group average by 0.4%. Interestingly, single country pure bottom half performers and particularly those targeting the UK also achieve traction exceeding their group average by 0.2%. Whether it is extreme performers or flip-flops, most funds are short of the group average performance with the exception being funds targeting the UK which are 3.2% above their 6.5% group average.

Meanwhile the difference between multi sector and single sector fund returns is less observable. Multi sector pure top half performers exceed their group average of 5.0% by 2.6%. Their single sector peers return 1.4% above the average threshold. The remaining three fund sub-categories are all in red.

For the vehicle domicile group, there are three striking features. First, the low average returns from Luxembourg domiciled funds. Pure top half performers are 50 basis points below the group average. This relative underperformance of Luxembourg based funds is the result of a double digit negative return in 2005, -25.8% to be precise compared to -17.1% group average. In subsequent years performance improved and was circa three percent above the all funds average, hence this group of funds was categorised as a pure top half performer. Second, pure bottom half performers domiciled in the Netherlands are 3.8% below the threshold. Third, the wide range in returns between the bottom half and top half

performers domiciled in the UK, -1.2% and 6.1% respectively is worth noting.

Within the size category, funds with GAV less than €500 million produce the highest average return with an excess of 3.4%, following funds sized €500 million to €1 billion which deliver 2.2% above the group average, while pure top-half performing funds sized over €1 billion return a modest 0.1% above the group average.

Considering gearing levels, funds within the lower gearing category perform better on average and had a lower dispersion in returns than funds with higher levels of gearing.

Older funds do better than funds launched between the pre-crisis period 2001 to 2007. Although, younger funds, those launched post crisis outpace their peers by a significant margin.

Table 2: Persistent patterns and associated impact on returns among fund sub-categories

Strategies		Pure top half performers	Pure bottom half performers	Extreme performers	Flip-flop performers	Group average
All funds		7.5%	2.8%	5.3%	4.1%	5.3%
By target country	Multi country	4.8%	0.5%	2.9%	3.6%	4.2%
	Single country	8.4%	4.1%	5.9%	4.9%	3.9%
	Single country - Germany	8.5%	3.1%	-	4.6%	6.2%
	Single country - Netherlands	7.5%	3.8%	5.9%	4.9%	5.9%
	Single country - UK	6.9%	6.7%	5.9%	9.7%	6.5%
By target sector	Multi sector	7.6%	1.8%	5.7%	1.5%	5.0%
	Single sector	6.9%	3.4%	5.3%	3.6%	5.5%
By vehicle domicile	Germany	6.8%	3.8%	3.9%	3.7%	5.6%
	Luxembourg	3.5%	0.2%	3.2%	4.5%	4.0%
	Netherlands	6.7%	2.5%	4.9%	4.9%	4.9%
	UK	6.1%	-1.2%	4.2%	3.8%	5.4%
By gearing levels	<=40%	7.1%	2.9%	5.1%	4.4%	5.1%
	>40%	6.7%	2.5%	3.3%	4.5%	4.8%
By vehicle size	<€500m	8.2%	1.3%	5.0%	3.0%	4.8%
	€500m - 1billion	7.0%	0.5%	6.2%	4.6%	5.8%
	>€1bn	5.7%	5.2%	5.0%	3.3%	5.6%
By vintage year	<2001	7.0%	3.6%	5.5%	3.7%	5.4%
	2001-2007	6.5%	0.8%	3.8%	3.8%	4.0%
	>2007	8.6%	2.1%	-	5.4%	4.6%

5. Concluding remarks and further research

- > The excess returns associated with top half performers are sizeable and worth noting
- > Bottom quartile performance can endure for longer than top quartile performance
- > Duration of top half performance exceeds that of bottom half performance

The results from this year's study support and strengthen the findings from the 2016 study. To recap the 2016 study found that performance persistence lasts longer in bottom quartile funds than top quartile funds, while top half performance lasts longer than bottom half performance, and performance stickiness tends to vary across quartiles.

The findings from this year's study concurs with those of 2016 which suggest that

'Pure top half performing funds deliver returns of 7.7%, exceeding the average of 5.3%'

funds can retain their star positions for a long period of time. Top quartile funds tend to lose

persistent performance can be found among our sample of 160 core open end European non-listed real estate funds.

However, the findings also show that relatively few

their star position after four years, though this is not unexpected as few can maintain "outperformance" for a long period of time. However, a bottom quartile position can last up to seven years.

There are exceptions within certain sub-groups. For example, single sector funds that target the Netherlands and the UK show greater stickiness among top quartile funds. These exceptions notwithstanding, the overall estimates suggest that performance persistence is more common among the poorer performing funds.

However, the picture changes when persistent performance is analysed by grouping funds into halves. This time, stickiness of the top half performing funds is in most cases greater than the persistence of their bottom half performing peers. This leads to the same conclusion as noted in the earlier INREV study: aiming for a top quartile fund is difficult and can be counter-productive and seeking a top half performer might be a better choice. Performance of funds in the top half is far stickier than of the top quartile.

'Performance endurance lasts longer for top half performing funds than top quartile performing funds'

The magnitude of out or under-performance should also be considered. Returns being delivered by pure top-half performing funds are impressive, exceeding the group average of 5.3% by 2.2%. Overall, this study advocates the idea noted in the previous investigation

- there is a real benefit from focusing on top half performers rather than on the top-quartile funds. Firstly, because outperformance can be sustained for a longer period of time, and secondly because the excess return is material.

In terms of directions for future research, there are several ways in which this area of research could be expanded. One potential topic is the link between a fund's total expense ratio and the persistence of its performance. Second, to apply a series of parametric and non-parametric techniques, as seen in the fields of mutual funds, hedge funds and private equity research, for a greater appreciation of distinct patterns in persistent performance. Third is to explore persistency in fund performance with its own target, by comparing its actual versus targeted returns.

Table 1: Number of core open end funds

		2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Core open end		17	21	24	30	38	49	66	83	101	101	110	118	128	132	125	115
By target country																	
	Multi country			4	7	12	18	28	37	42	42	42	49	53	57	55	52
	<i>Single country</i>																
	Germany							5	7	10	10	10	10	15	16	16	16
	Netherlands	8	8	8	10	10	12	13	14	19	19	23	26	28	26	24	18
	United Kingdom	6	10	10	11	11	12	13	17	23	23	25	21	20	21	19	18
	Other					4	6	8	9	8	8	11	13	13	12	11	11
By target sector																	
	Multi sector	7	8	10	13	18	26	36	45	51	52	58	66	69	76	73	71
	Single sector	10	13	14	17	20	23	30	38	50	49	52	52	59	56	52	44
By vehicle domicile																	
	Germany			3	5	11	15	20	26	32	32	32	36	44	48	48	46
	Luxembourg							7	12	13	13	13	14	14	15	15	14
	Netherlands	8	8	9	11	11	14	18	20	25	25	29	30	32	30	28	22
	United Kingdom			3	4	4	5	7	10	14	14	14	15	14	14	13	12
	Other		3	3	3	5	7	8	8	7	7	10	10	10	12	10	10
	Unspecified	3	6	6	6	6	6	6	7	10	10	12	13	14	13	11	11
By gearing levels (% of GAV)																	
	<= 40%	9	14	10	21	21	30	35	41	45	43	47	51	59	63	55	50
	> 40%			4	3	7	11	21	28	39	35	32	33	38	35	32	28
	Unspecified	8	6	10	6	10	8	10	14	17	23	31	34	31	34	38	37
By vehicle size																	
	< €500 million	9	13	15	20	24	33	43	52	61	60	61	66	73	73	71	62
	€500 million - €1 billion	4	4	4	4	7	9	12	14	19	19	22	23	25	29	24	23
	> €1 billion	4	4	5	6	7	7	11	17	21	22	27	29	30	30	30	30
By vintage year																	
	< 2001	17	21	22	23	23	23	23	27	34	34	35	32	33	34	30	26
	2001 - 2007				7	15	26	43	54	61	60	63	60	60	57	54	49
	2008 - 2014									6	7	12	26	35	41	41	40

Table 2: GAV (€ billion) of core open end funds

		2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Core open end		7.8	11.2	13.5	19.5	26.8	36.9	48.3	54.5	57.6	65.5	78.6	86.2	93.0	101.8	109.4	115.1
By target country																	
	Multi country			3.4	5.6	8.2	12.9	23.0	31.4	33.3	34.6	35.5	35.8	37.3	41.8	43.1	43.4
	<i>Single country</i>																
	Germany							1.3	2.7	3.3	3.7	3.7	3.24	4.9	5.4	6.4	7.4
	Netherlands	2.0	2.1	2.2	2.6	3.2	3.8	4.5	5.2	6.8	7.0	10.8	17.29	17.3	17.0	16.7	17.5
	United Kingdom	4.8	7.4	7.6	11.0	14.0	17.9	17.1	12.3	11.7	17.7	21.0	20.69	23.4	27.3	33.7	36.2
	Other					1.3	1.8	2.5	2.9	2.5	2.6	7.6	9.12	10.0	10.2	9.5	10.7
By target sector	Multi sector	5.0	6.5	7.1	10.8	16.1	22.4	29.8	28.8	28.6	35.4	43.7	44.1	49.3	58.7	66.7	70.3
	Single sector	2.8	4.6	6.4	8.7	10.7	14.5	18.4	25.7	29.0	30.2	35.0	42.1	43.6	43.1	42.8	44.8
By vehicle domicile	Germany			2.1	3.3	5.3	7.9	11.5	14.1	16.9	17.2	16.5	15.3	18.5	20.9	20.1	20.4
	Luxembourg							4.9	11.0	10.5	11.6	12.6	13.4	13.8	16.3	19.8	20.9
	Netherlands	2.0	2.1	3.2	4.4	5.2	7.5	10.9	13.4	14.7	15.3	19.7	20.9	20.9	20.1	19.3	19.1
	United Kingdom			3.2	5.5	7.3	9.3	10.2	8.4	8.1	12.8	14.5	14.8	16.1	17.6	21.5	22.7
	Other		1.6	1.8	2.1	3.3	4.3	4.6	3.6	2.8	3.2	8.3	9.2	10.4	11.7	11.9	13.4
	Unspecified	1.8	3.1	3.2	4.0	5.1	6.7	6.2	4.0	4.4	5.5	7.1	12.5	13.3	15.1	16.8	18.7
By gearing levels (% of GAV)	<= 40%	5.7	9.6	6.3	15.3	19.2	27.2	29.4	25.3	26.6	30.3	33.1	44.8	49.2	63.1	55.1	61.0
	> 40%			2.9	2.1	3.1	5.6	13.3	23.7	25.6	22.8	25.3	24.0	23.0	17.3	17.1	16.5
	Unspecified	2.0	1.5	4.3	2.1	4.5	4.1	5.6	5.4	5.4	12.5	20.2	17.5	20.7	21.3	37.2	37.6
By vehicle size	< €500 million	1.6	4.0	4.7	6.5	8.3	12.3	17.4	18.7	19.9	20.0	19.9	18.7	20.0	18.5	17.8	14.9
	€500 million - €1 billion	1.3	1.5	1.5	1.8	3.6	5.1	7.5	7.5	9.4	10.9	13.1	13.7	14.6	18.1	16.3	16.7
	> €1 billion	4.8	5.7	7.3	11.3	14.9	19.5	23.4	28.3	28.3	34.6	45.6	53.8	58.4	65.1	75.3	83.5
By vintage year	< 2001	2.9	4.0	4.0	4.9	5.6	8.0	8.8	13.1	16.3	16.9	18.3	15.0	18.6	16.4	16.3	14.9
	2001 - 2007				2.5	5.3	7.1	11.5	15.2	17.2	17.5	18.1	22.5	21.4	25.2	18.7	16.7
	2008 - 2014									24.0	31.1	42.2	48.7	53.0	60.1	74.5	83.5

Table 3: Total returns (%) of core open end funds

		2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Core open end		8.6%	9.9%	8.0%	13.1%	10.0%	12.5%	6.3%	-7.2%	-3.5%	4.6%	4.4%	0.5%	2.4%	5.3%	6.5%	6.0%
By target country																	
	Multi country			5.4%	15.3%	2.0%	8.6%	6.6%	-6.3%	-6.4%	1.8%	3.2%	-1.4%	1.7%	3.6%	4.5%	4.4%
	<i>Single country</i>																
	Germany							7.2%	6.1%	5.8%	2.3%	6.5%	4.4%	3.6%	5.9%	6.9%	8.1%
	Netherlands	9.4%	10.1%	6.8%	8.5%	11.2%	13.3%	12.6%	0.4%	-2.1%	3.4%	3.2%	-0.4%	-1.6%	2.1%	7.8%	11.6%
	United Kingdom	6.2%	10.1%	10.2%	17.0%	16.6%	16.9%	-2.3%	-19.2%	-2.8%	11.8%	6.3%	1.7%	8.0%	15.3%	11.4%	4.1%
	Other					11.6%	15.3%	8.7%	-8.5%	-6.0%	0.9%	3.4%	2.8%	2.4%	2.2%	4.9%	3.9%
By target sector																	
	Multi sector	3.8%	6.6%	8.0%	17.1%	9.6%	12.5%	5.0%	-8.0%	-4.0%	5.3%	5.6%	1.5%	3.5%	5.8%	6.2%	4.5%
	Single sector	12.0%	11.9%	8.0%	10.1%	10.3%	12.5%	8.0%	-6.2%	-3.1%	3.9%	3.0%	-0.9%	1.2%	4.6%	7.0%	8.2%
By vehicle domicile																	
	Germany			5.8%	17.3%	0.8%	6.8%	7.8%	4.6%	2.8%	-0.2%	4.7%	2.0%	2.0%	2.4%	3.1%	4.1%
	Luxembourg							5.3%	-17.1%	-12.3%	7.0%	5.2%	-0.4%	4.6%	12.9%	12.7%	7.4%
	Netherlands	9.4%	10.1%	7.0%	8.8%	10.6%	13.2%	11.9%	-2.9%	-4.9%	3.1%	4.1%	-1.0%	-2.5%	-0.1%	5.7%	8.7%
	United Kingdom			7.8%	15.2%	16.0%	15.8%	-0.2%	-19.6%	-4.5%	8.7%	5.1%	-0.1%	6.6%	13.8%	10.9%	5.8%
	Other		4.5%	9.1%	14.1%	16.2%	17.6%	3.1%	-15.2%	-7.3%	7.0%	3.2%	3.5%	5.1%	5.7%	8.7%	5.4%
	Unspecified	11.3%	10.9%	10.1%	16.9%	15.8%	17.0%	-2.2%	-18.8%	-5.2%	13.2%	3.3%	-1.0%	6.7%	10.1%	8.0%	7.0%
By gearing levels (% of GAV)																	
	<= 40%	9.7%	10.3%	7.2%	14.5%	10.2%	12.6%	6.0%	-4.4%	-1.5%	4.1%	5.1%	1.5%	2.5%	4.7%	6.3%	6.3%
	> 40%			8.3%	9.4%	8.1%	13.0%	7.7%	-9.3%	-7.0%	3.4%	3.8%	-2.0%	1.4%	3.0%	5.9%	6.0%
	Unspecified	7.3%	8.9%	8.6%	10.2%	10.8%	11.5%	4.6%	-11.1%	-0.9%	7.4%	3.9%	1.3%	3.5%	8.8%	7.3%	5.4%
By vehicle size																	
	< €500 million	10.9%	9.0%	7.6%	13.4%	8.2%	11.0%	6.2%	-4.6%	-2.4%	2.2%	3.8%	-0.1%	1.1%	3.1%	4.4%	5.3%
	€500 million - €1 billion	2.3%	11.9%	9.0%	10.4%	13.7%	15.5%	10.1%	-6.7%	-6.1%	8.0%	4.8%	1.1%	3.3%	7.0%	7.0%	6.7%
	> €1 billion	9.7%	10.9%	8.3%	14.1%	12.2%	15.8%	2.7%	-15.3%	-4.5%	8.2%	5.4%	1.3%	5.0%	9.0%	11.0%	6.7%
By vintage year																	
	< 2001	8.9%	9.4%	6.9%	12.2%	7.1%	10.5%	8.1%	-4.3%	-1.3%	3.1%	4.2%	0.9%	1.3%	3.3%	4.4%	5.3%
	2001 - 2007				16.3%	15.0%	17.5%	4.5%	-10.0%	-6.4%	6.6%	4.5%	-0.2%	3.1%	6.7%	7.7%	6.7%
	2008 - 2014									-9.1%	7.2%	4.6%	-1.2%	5.2%	9.1%	10.9%	6.7%

Note: For confidentiality reasons performance figures are only shown when sample comprises at least three vehicles

Table 4: Persistency in quartiles among core open end funds

		Number of occurrences													
		Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13
All funds	Top quartile	322	125	27	6	0	0	0	0	0	0	0	0	0	0
	Second quartile	311	87	18	3	1	0	0	0	0	0	0	0	0	0
	Third quartile	309	97	25	8	2	0	0	0	0	0	0	0	0	0
	Bottom quartile	316	147	65	29	12	2	1	0	0	0	0	0	0	0
Multi country	Top quartile	132	48	7	1	0	0	0	0	0	0	0	0	0	0
	Second quartile	122	38	4	0	0	0	0	0	0	0	0	0	0	0
	Third quartile	120	38	2	0	0	0	0	0	0	0	0	0	0	0
	Bottom quartile	128	62	26	12	4	2	1	0	0	0	0	0	0	0
Single country	Top quartile	194	74	16	3	0	0	0	0	0	0	0	0	0	0
	Second quartile	189	49	12	4	1	0	0	0	0	0	0	0	0	0
	Third quartile	180	48	8	1	0	0	0	0	0	0	0	0	0	0
	Bottom quartile	193	82	26	6	1	0	0	0	0	0	0	0	0	0
Multi sector	Top quartile	176	60	10	3	0	0	0	0	0	0	0	0	0	0
	Second quartile	167	46	8	3	1	0	0	0	0	0	0	0	0	0
	Third quartile	164	48	4	0	0	0	0	0	0	0	0	0	0	0
	Bottom quartile	172	80	36	18	9	1	0	0	0	0	0	0	0	0
Single sector	Top quartile	150	70	29	9	4	2	1	0	0	0	0	0	0	0
	Second quartile	142	32	7	2	1	0	0	0	0	0	0	0	0	0
	Third quartile	140	52	15	6	3	1	0	0	0	0	0	0	0	0
	Bottom quartile	147	64	23	9	4	0	0	0	0	0	0	0	0	0

Table 5: Persistency in halves among core open end funds

		Number of occurrences													
		Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13
All funds	H1	633	372	209	110	62	37	21	10	6	3	1	0	0	0
	H2	625	373	227	126	70	32	10	3	1	0	0	0	0	0
Multi country	H1	254	129	85	49	26	14	6	2	1	0	0	0	0	0
	H2	248	130	83	52	31	17	8	3	1	0	0	0	0	0
Single country	H1	383	225	121	63	35	20	11	6	4	2	1	0	0	0
	H2	373	216	131	75	44	22	7	3	2	1	0	0	0	0
Multi sector	H1	343	188	95	44	23	12	6	2	0	0	0	0	0	0
	H2	336	189	108	57	30	16	9	3	1	0	0	0	0	0
Single sector	H1	292	171	103	64	42	31	21	13	8	4	2	1	0	0
	H2	287	170	99	58	33	14	3	0	0	0	0	0	0	0

Table 6: Persistency in quartiles among core open end funds by target single country

		Number of occurrences													
		Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13
Germany	Top quartile	34	12	6	1	0	0	0	0	0	0	0	0	0	0
	Second quartile	27	5	0	0	0	0	0	0	0	0	0	0	0	0
	Third quartile	25	5	2	1	0	0	0	0	0	0	0	0	0	0
	Bottom quartile	32	11	5	2	0	0	0	0	0	0	0	0	0	0
Netherlands	Top quartile	71	37	18	12	8	6	5	4	3	2	1	0	0	0
	Second quartile	64	20	6	3	2	1	0	0	0	0	0	0	0	0
	Third quartile	61	16	3	1	0	0	0	0	0	0	0	0	0	0
	Bottom quartile	70	26	5	2	1	0	0	0	0	0	0	0	0	0
UK	Top quartile	72	26	9	4	3	2	1	0	0	0	0	0	0	0
	Second quartile	63	19	5	1	0	0	0	0	0	0	0	0	0	0
	Third quartile	58	18	9	2	1	0	0	0	0	0	0	0	0	0
	Bottom quartile	67	20	6	1	0	0	0	0	0	0	0	0	0	0

Table 7: Persistency in halves among core open end funds by target single country

		Number of occurrences														
		Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	
Germany	H1	61	30	17	10	7	5	4	3	2	1	0	0	0	0	
	H2	57	27	12	6	2	0	0	0	0	0	0	0	0	0	
Netherlands	H1	135	83	51	33	27	22	17	13	9	6	3	1	0	0	
	H2	131	80	44	24	14	6	3	1	0	0	0	0	0	0	
UK	H1	135	77	40	19	10	6	3	0	0	0	0	0	0	0	
	H2	125	67	37	19	11	7	3	2	1	0	0	0	0	0	

Table 6: Persistency in quartiles among core open end funds by target single country

		Number of occurrences													
		Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13
Germany	Top quartile	104	42	13	3	1	0	0	0	0	0	0	0	0	0
	Second quartile	99	34	10	4	2	1	0	0	0	0	0	0	0	0
	Third quartile	96	33	8	4	1	0	0	0	0	0	0	0	0	0
	Bottom quartile	103	51	23	12	3	0	0	0	0	0	0	0	0	0
Netherlands	Top quartile	86	44	21	13	9	7	6	5	4	3	2	1	0	0
	Second quartile	77	23	3	1	0	0	0	0	0	0	0	0	0	0
	Third quartile	75	19	1	0	0	0	0	0	0	0	0	0	0	0
	Bottom quartile	82	32	9	0	0	0	0	0	0	0	0	0	0	0
Luxembourg	Top quartile	40	14	2	0	0	0	0	0	0	0	0	0	0	0
	Second quartile	31	7	2	1	0	0	0	0	0	0	0	0	0	0
	Third quartile	28	7	2	0	0	0	0	0	0	0	0	0	0	0
	Bottom quartile	35	10	4	2	0	0	0	0	0	0	0	0	0	0
UK	Top quartile	43	19	9	4	3	2	1	0	0	0	0	0	0	0
	Second quartile	33	7	1	0	0	0	0	0	0	0	0	0	0	0
	Third quartile	30	7	2	0	0	0	0	0	0	0	0	0	0	0
	Bottom quartile	41	14	5	3	2	1	0	0	0	0	0	0	0	0

Table 9: Persistency in halves among core open end funds by vehicle domicile

		Number of occurrences													
		Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13
Germany	H1	203	118	66	36	20	12	8	5	3	1	0	0	0	0
	H2	199	120	74	44	27	17	11	6	3	1	0	0	0	0
Netherlands	H1	163	93	55	33	27	22	18	14	10	7	4	2	0	0
	H2	157	87	41	18	9	3	2	1	0	0	0	0	0	0
Luxembourg	H1	71	37	17	9	5	2	1	0	0	0	0	0	0	0
	H2	63	30	16	8	4	2	1	0	0	0	0	0	0	0
UK	H1	76	44	23	13	8	5	2	0	0	0	0	0	0	0
	H2	71	39	22	12	6	2	0	0	0	0	0	0	0	0

Table 10: Persistency in quartiles among core open end funds by gearing level

		Number of occurrences													
		Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13
<= 40%	Top quartile	242	98	24	7	1	0	0	0	0	0	0	0	0	0
	Second quartile	236	65	16	5	2	0	0	0	0	0	0	0	0	0
	Third quartile	231	70	18	4	1	0	0	0	0	0	0	0	0	0
	Bottom quartile	239	113	49	26	12	2	1	0	0	0	0	0	0	0
> 40%	Top quartile	141	50	14	3	1	0	0	0	0	0	0	0	0	0
	Second quartile	133	39	10	3	1	0	0	0	0	0	0	0	0	0
	Third quartile	129	51	17	6	1	0	0	0	0	0	0	0	0	0
	Bottom quartile	136	68	36	18	9	3	1	0	0	0	0	0	0	0

Table 11: Persistency in halves among core open end funds by gearing level

		Number of occurrences													
		Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13
<= 40%	H1	478	283	162	89	53	34	22	11	6	3	1	0	0	0
	H2	470	280	161	90	50	23	6	1	0	0	0	0	0	0
> 40%	H1	274	161	95	58	32	18	11	5	3	1	0	0	0	0
	H2	265	157	95	56	33	16	6	1	0	0	0	0	0	0

Table 12: Persistency in quartiles among core open end funds by vehicles size

		Number of occurrences													
		Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13
< €500 million	Top quartile	191	79	29	7	3	0	0	0	0	0	0	0	0	0
	Second quartile	182	45	9	1	0	0	0	0	0	0	0	0	0	0
	Third quartile	179	59	18	9	4	1	0	0	0	0	0	0	0	0
	Bottom quartile	184	92	38	18	7	2	1	0	0	0	0	0	0	0
€500 - €1 billion	Top quartile	65	26	6	1	0	0	0	0	0	0	0	0	0	0
	Second quartile	60	22	6	0	0	0	0	0	0	0	0	0	0	0
	Third quartile	55	16	4	2	0	0	0	0	0	0	0	0	0	0
	Bottom quartile	62	21	7	3	1	0	0	0	0	0	0	0	0	0
> €1 billion	Top quartile	77	30	7	2	1	0	0	0	0	0	0	0	0	0
	Second quartile	67	13	2	0	0	0	0	0	0	0	0	0	0	0
	Third quartile	63	9	1	0	0	0	0	0	0	0	0	0	0	0
	Bottom quartile	73	28	6	3	1	0	0	0	0	0	0	0	0	0

Table 13: Persistency in halves among core open end funds by vehicles size

		Number of occurrences													
		Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13
< €500 million	H1	373	223	130	77	44	26	15	7	4	1	0	0	0	0
	H2	363	222	133	76	46	26	13	7	4	2	1	0	0	0
€500 - €1 billion	H1	125	73	41	21	13	8	6	4	2	1	0	0	0	0
	H2	117	70	41	23	11	2	0	0	0	0	0	0	0	0
> €1 billion	H1	144	80	36	19	9	5	2	0	0	0	0	0	0	0
	H2	136	72	35	14	8	4	2	0	0	0	0	0	0	0

Table 14: Persistency in quartiles among core open end funds by vintage year

		Number of occurrences													
		Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13
< 2001	Top quartile	116	47	16	6	3	0	0	0	0	0	0	0	0	0
	Second quartile	107	30	9	1	0	0	0	0	0	0	0	0	0	0
	Third quartile	101	24	6	2	0	0	0	0	0	0	0	0	0	0
	Bottom quartile	113	53	22	6	2	0	0	0	0	0	0	0	0	0
2001 - 2007	Top quartile	158	64	22	8	2	0	0	0	0	0	0	0	0	0
	Second quartile	151	48	14	4	1	0	0	0	0	0	0	0	0	0
	Third quartile	147	55	21	9	4	2	0	0	0	0	0	0	0	0
	Bottom quartile	155	73	41	20	9	4	2	0	0	0	0	0	0	0
> 2007	Top quartile	56	23	8	1	0	0	0	0	0	0	0	0	0	0
	Second quartile	51	12	3	0	0	0	0	0	0	0	0	0	0	0
	Third quartile	49	9	2	1	0	0	0	0	0	0	0	0	0	0
	Bottom quartile	54	22	7	1	0	0	0	0	0	0	0	0	0	0

Table 15: Persistency in halves among core open end funds by vintage year

		Number of occurrences													
		Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13
< 2001	H1	223	137	79	44	28	18	12	6	4	3	2	1	0	0
	H2	214	129	78	42	22	7	1	0	0	0	0	0	0	0
2001 - 2007	H1	309	188	114	75	46	30	18	9	4	1	0	0	0	0
	H2	302	178	103	58	34	18	8	3	1	0	0	0	0	0
> 2007	H1	107	54	28	11	3	0	0	0	0	0	0	0	0	0
	H2	103	55	33	19	7	2	1	0	0	0	0	0	0	0

Table 16. Summary of excess returns

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Average
Pure top half performers	-2.4%	8.5%	12.0%	17.3%	13.6%	15.6%	9.9%	-7.2%	1.8%	7.5%	6.2%	4.1%	7.1%	11.1%	10.4%	7.3%	7.5%
Pure bottom half performers	13.3%	10.9%	4.1%	12.6%	3.1%	7.9%	7.1%	-4.1%	-5.7%	-0.3%	2.6%	-3.4%	-2.7%	-0.9%	-0.1%	3.3%	2.8%
Flip-flop performers	8.5%	9.8%	8.5%	12.7%	12.5%	14.4%	3.8%	-11.0%	-6.6%	6.6%	3.8%	-0.9%	2.6%	5.6%	10.5%	7.2%	5.3%
Extreme performers								1.3%	-3.6%	8.1%	6.0%	4.2%	3.8%	4.2%	6.4%	7.4%	4.1%
All funds	8.6%	9.9%	8.0%	13.1%	10.0%	12.5%	6.3%	-7.2%	-3.5%	4.6%	4.4%	0.5%	2.4%	5.3%	6.5%	6.0%	5.3%

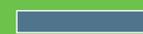
Note: For a summary of all the sub categories please contact INREV



CORPORATE



RESEARCH



INDUSTRY
DATA



PUBLIC
AFFAIRS



PROFESSIONAL
STANDARDS