Mind the Gap 2016 — Europe

The effects of behavior on European fund investors' returns

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Contents

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Executive Summary

This study explores how investors use mutual funds by analyzing the differences between open-end funds' reported returns and the actual money-weighted returns that investors receive. Echoing the results of Morningstar's "Mind the Gap" studies in the United States, investor-returns in European-domiciled funds tend to be lower than their reported returns because of the unfortunate timing of investor cash flows. The largest gaps between time- and money-weighted returns are found in the more volatile types of funds such as those in single-country emerging-markets equity categories. Within equity funds, investors have had better outcomes in index funds compared to active offerings. Equity funds with high fees and high standard deviations have been especially difficult to use for investors.

Key Takeaways

- The gap between total returns (time-weighted returns) and investor returns (money-weighted returns) of European open-end funds' in the five-year period through 31 July 2016 was widest in alternative funds (58 basis points per year on an asset-weighted basis). The asset-weighted average gap was also higher than the average in equity categories (39 basis points).
- For all funds, the returns gap came in at 34 basis points.
- The phenomenon of bad timing is widespread. Within equity funds, timing has done the most damage within concentrated funds, such as single-country emerging-markets funds and sector funds, which tend not to be used as core holdings.
- Within equity, investors have done clearly better in index funds than in nonindex funds, especially compared with high-cost active funds or those with high standard deviations.
- In allocation and fixed income, investors have been best off investing with parent companies that are positively rated by Morningstar analysts.
- For allocation and equity funds, those with smaller average assets under management in the last five years have generally had below-average total returns and investor returns.

Introduction: Are European Investors Different?

In 2005, Morningstar's director of manager research Russel Kinnel published the first "Mind the Gap" study[1]. By comparing funds' investor returns (money-weighted returns) and total returns (time-weighted returns), Kinnel displayed how poorly investors tended to fair in timing their investments. While a fund's total return tells us how a lump-sum investment placed at the beginning of a period has performed, investor returns measure the growth of the average euro in a fund over the period by taking into account cash flows in and out of the fund. The study found that timing was poor across all types of funds, but investors seemed to do worst in relatively volatile categories. Subsequent updates of "Mind The Gap" have corroborated these results.

This report is our first attempt at analyzing similar data from European funds. We might expect that investors behave similarly regardless of their home country, but it's not obvious that the results play out that way as there are differences in market structures and investment cultures between the U.S. and Europe.

At a broad level, it seems realistic to presume that the basic behavioral traits discovered by financial researchers are universal. Investors are short-sighted and risk-averse, and they focus too much on relative returns. They panic in down markets and sell out of their positions after a drawdown. When the market turns back up, investors feel beaten and disappointed, and tend to hesitate before jumping back in. When it comes to "hot" asset classes, investors typically recognize the opportunities only after the securities in question have already been going up for some time. Both phenomena lead to investors coming in late, or entering just before or while the market is at its peak. And then the cycle starts again. More-experienced investors may be better able to cope with well-known behavioral biases. In Europe, mutual funds have been widely used in some countries, such as the Netherlands, Sweden, and the United Kingdom for decades, while in others they have only become popular investment tools more recently.

There are also major differences in how funds are distributed, both between the U.S. and Europe, and within Europe. Whereas the U.S. mutual fund market is largely driven by advisors and independent asset managers, retail fund markets in many European countries continue to be dominated by banks and insurance companies selling their captive funds. As many of these funds are only on sale in a few countries, Europe has a much larger number of funds (for example, 10,474 equity funds compared with 3,951 in the U.S. at the end of August 2016) with many housing only a small asset base. (However, in terms of assets under management, Europe is centered on the cross-border markets of Luxembourg and Ireland.) Pushing down the average fund size is the tendency of European fund companies to constantly open, merge, and liquidate funds. This will most likely shrink the observed return gaps, because poorly performing funds are more likely to be liquidated or merged. We'll dive deeper into the implications of these differences later.

At the data level, complicating the comparison between the U.S. and Europe is the lack of cash flow data at the share-class level, which is required for investor-returns calculations. As only a minority of European funds have investor returns calculated for the past 10-year periods, this study focuses on five-year numbers, while our U.S. "Mind The Gap" study is based on 10-year trends. We therefore miss the effect of the financial crisis of 2008 and the subsequent "relief" rally in 2009. This will most likely

1 Kinnel, Russel: Mind the Gap: How Good Funds Can Yield Bad Results. Morningstar FundInvestor, July 2005.

diminish the return gaps discussed in this report, as evidence from our U.S. studies tells us that investors tend to do better in trending markets, such as those in the period after the euro crisis of 2011.

Approach

What are investor returns? For a simplified example, consider a fund with a one-year total return of 0%. However, during the year investors experienced a 100% rise in the first six months, followed by a 50% fallback in the second half of the year. An investor, who had all of his investments in the fund at the beginning of the year, and kept all those assets in the fund for the whole period had 0% returns that year. But for investors, who came in later, or added or withdrew assets during the year, the experienced return was different. An investor who jumped in half-way had negative returns of 50% (annualized negative 75%). It is the cash flow adjusted return of all investors combined that we measure by using investor return. If we assume that EUR 1,000 was invested in the fund at the start of the period and another EUR 1,000 after six months, investors saw negative investor returns of 32% during the year.

In this study, we calculate investor returns for each share class of a fund by weighting its monthly base-currency total returns with assets in each share class at each month-end.[2] After calculating investor returns for all share classes, we sum up the results at the fund level by weighting share classes with their average assets in euros for the calculation period. We then analyze fund-level investor returns by comparing the average fund-level total returns and investor returns across asset classes, category groups, and by factors.

The exhibits in the study show two different gaps: "Returns Gap" refers to the difference between asset-weighted average investor returns and equal-weighted total returns for each group. This is the primary measure used in our U.S study. It shows the difference between the average investor-dollar and the average fund.

In this paper, however, our primary measure is "Asset-Weighted Gap" (also shortened as "Weighted Gap"), which shows the difference between asset-weighted averages of investor returns and total returns. We prefer to use this measure for the European universe because the plethora of small funds in Europe dominates the calculation of equal-weighted returns. Most of these funds are only available in one or a few countries. In addition, these small funds tend to underperform their larger peers.

A further difference from our U.S. study is the inclusion of funds and share classes in multiple currencies in Europe. We've calculated both investor returns and total returns at the base currency level for each share class. Fund sizes are in euros. To display the potential currency effect, we show a separate table for euro-denominated share classes (Exhibit 15) in the Data Appendix.

Data

This study includes European-domiciled open-end funds for which we had comprehensive five-year share-class level total net asset data and full return data in Morningstar's database through 31 July 2016. Share classes involved in mergers over the period under analysis have been left out, as the reliability of their estimated investor returns suffers from the abnormal cash flows. We have excluded money-market funds from the study to focus only on long-term funds. A total of 49,647 share classes

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2 For further detail on Morningstar's Investor Return methodology see the methodology document here: corporate.morningstar.com/us/documents/MethodologyDocuments/MethodologyPapers/InvestorReturnMethodology.pdf

had a five-year total return at the end of July, and 31,914 of these displayed an investor return (64%). The dataset includes 15,649 funds (74% of total funds with a five-year track record). We cover 73% of total assets for funds that display a five-year total return. (See Data Appendix.)

Sweden-domiciled funds were not included in Morningstar Investor Return database at the time of the publication of this study. We have only recently started gathering comprehensive monthly share-class level total net asset data from Swedish companies, who have traditionally filed their total net assets quarterly at the fund level. Nevertheless, we find the data set to be large enough to represent well the European fund market. (See Data Appendix for data by domiciles and asset classes.)

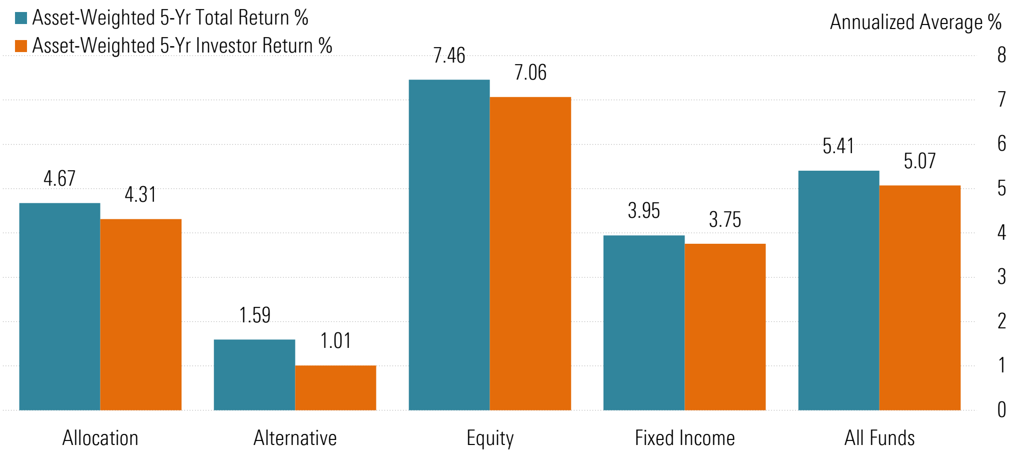
To have reasonably large asset class groups, we merged commodity (75 with five-year investor returns), convertibles (149), and property (46) funds into the alternative asset class. This brings the number of funds at the asset-class level to a minimum of 778 funds (in alternatives), which allows fairly fine-tuned statistical inferences. A big chunk of funds (26%) included in the study are registered in Luxembourg, Europe’s fund capital. It’s comforting to see that Luxembourg's funds are spread over asset classes fairly proportionally. Whereas Luxembourg-domiciled funds tend to be from the larger end of the scale, Spanish fund companies have a tradition of continuously launching asset allocation products, which raises the proportion of Spanish funds to 45% among allocation funds, while only representing 7% of assets in the asset class among funds with five-year investor returns. Thus, while equally weighted averages are dominated by small Spanish allocation funds, they have only a small effect on asset-weighted numbers.

Apart from asset classes we also drill down into category groupings designed for the purposes of this study. We break equity funds into five groups (concentrated and diversified funds for both developed- and emerging-markets funds as well as sector funds) and fixed-income categories into two (European and global). We refer to data at the Morningstar Category level only rarely, as the limited coverage in many categories limits the usability of that data. (See Data Appendix for category group definitions.)

Gaps by Asset Class and Category Group

Let’s first look at the five-year results by broad asset class groups in Exhibit 1. Investor returns have been highest in equities with a five-year average of 7.06%. Allocation and fixed-income come next at 4.31% and 3.75%. Alternatives—which are a very diverse group—have seen annualized investor returns of just 1.01% on average in base-currency terms. The asset-weighted average for all funds—that is, the compound annualized growth rate in a European long-term fund—has been 5.07%.

Exhibit 1 Asset-Weighted 5-Year Averages of Investor and Total Returns by Asset Class



Source: Morningstar Direct. Data as of 31/07/2016.

At the level of broad asset classes, investors have suffered from poor timing without exception. The gap is widest in the alternative asset class (58 basis points), and is also slightly higher than average (39 basis points) in equity. For all funds the average gap comes in at 34 basis points in a comparison of asset-weighted total returns and investor returns. (If we use simple averages for total returns in comparison to asset-weighted investor returns, investors seem better off, but this is largely due to Europe's small funds doing generally a worse job than larger peers. Exhibit 6 shows the phenomenon clearly.)

Are these gaps large or small? One way to assess this is to calculate the proportion of total returns lost to poor timing of cash flow. The 58-basis-point gap in alternatives is a big performance loss for investors, corresponding to 36% of total annualized returns. In allocation, investors have surrendered 8% of total returns to poor timing, while in fixed income the figure is 6%. For equity funds, the gap corresponds to 5% of returns that could have been accrued with a buy-and-hold strategy.

The five-year period between August 2011 and July 2016 saw some volatility spikes, such as those at the height of the eurozone crisis in the third quarter of 2011, the sudden oil-price decline in 2014, and the nervousness from global macroeconomic picture in the beginning of 2016. But overall, the investment environment has been fairly benign. Central banks have pumped liquidity into the global economy, and this has kept equity markets from turning into a bear market.

To compare European gaps with our U.S. findings, we must turn to 10-year numbers, which include the financial crisis, the market turnaround in 2009, and the full euro-crisis related swing in 2011. Our European data does not reveal much larger gaps for the most recent 10-year period compared with five-year gaps, as show in Exhibit 2 and 3. As in the most recent five-year period, the gaps have been negative for all asset classes during the past decade, but not more than in the trailing five-year period, with an average asset-weighted returns gap of 0.41 percentage points, whereas our 2016 U.S. "Mind The Gap" showed a returns gap of 91 basis points for all funds between Jan. 1, 2006, and Dec. 31, 2015.

Exhibit 2 5-Year Returns Gaps for Equal- and Asset-Weighted Averages

	5-Year Asset-Weighted %		5-Year Average Return %				
Asset Class	Total Return	Investor Return %	Total Return	Investor Return	Returns Gap	Asset-Weighted Gap	Number of Funds
Allocation	4,67	4,31	3,65	3,42	0,67	-0,36	6,053
Alternative	1,59	1,01	0,86	0,34	0,14	-0,58	778
Equity	7,46	7,06	6,76	6,00	0,31	-0,39	5,644
Fixed Income	3,95	3,75	3,97	3,85	-0,22	-0,19	3,143
All Funds	5,41	5,07	4,70	4,28	0,37	-0,34	15,618

Source: Morningstar Direct. Data as of 31/07/2016.

Exhibit 3 10-Year Returns Gaps for Equal- And Asset-Weighted Averages

	10-Year Asset-Weighted %		10-Year Average Return %				
Asset Class	Total Return	Investor Return	Total Return	Investor Return	Returns Gap	Asset-Weighted Gap	Number of Funds
Allocation	3,52	2,95	1,95	2,35	0,6	-0,57	1,071
Alternative	2,83	2,51	1,05	1,62	0,89	-0,32	156
Equity	4,93	4,53	2,81	3,45	1,08	-0,41	1,927
Fixed Income	3,91	3,59	3,30	3,57	0,01	-0,32	1,017
All Funds	4,25	3,84	2,64	3,13	0,71	-0,41	4,171

Source: Morningstar Direct. Data as of 31/07/2016.

Returns Gap = 5-Year Asset-Weighted Investor Return – 5-Year Average Total Return
Asset-Weighted Gap = 5-Year Asset-Weighted Investor Return – 5-Year Asset-Weighted Total Return

Why have the gaps been smaller in Europe than in the U.S.? Two factors may play a role here: (1) Survivorship bias: The sample in this study includes only live funds, and European fund companies are notorious for merging and liquidating poorly performing funds. Poorly returning funds tend to be liquidated or merged more often than better ones, and we can speculate that investors may have been led to invest with poor timing (proving this hypothesis is outside the scope of this paper); and (2) The sample for 10-year returns is smaller, and may be biased in Europe, as have 10-year investor returns for 4,171 funds—just 34% of all funds with a 10-year track record. Funds are lacking investor returns typically either because of missing share-class level cash flow data or because all of its share classes have been involved in a fund merger.

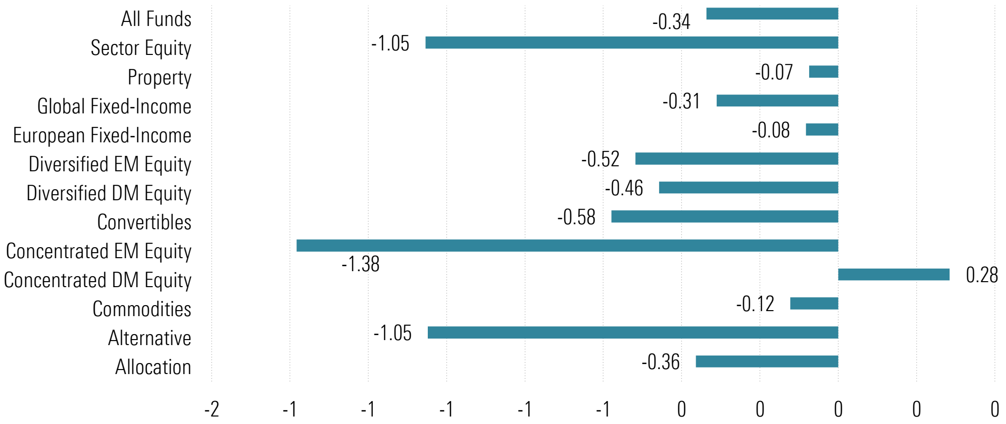
Category Groups

A closer look reveals interesting differences within asset classes. We have divided equity funds into five groups: diversified funds within developed and emerging markets, concentrated funds within developed and emerging markets, as well as sector funds. Fixed-income funds have been divided into European and global fixed-income funds, and property, commodity funds, and convertible allocation funds are their own groups (instead of being grouped into alternatives as elsewhere in this study).

Exhibits 4 and 5 show the results, which echo the findings of our U.S. study: Riskier categories such as sector equity and concentrated emerging-markets equity exhibit the largest gaps (negative 1.05 and 1.38 percentage points for asset-weighted averages, respectively, in the last five years). These funds typically begin to tease investors' interest when performance has been strong and they start to pop up in the news and marketing brochures of fund companies. They are typically held as satellites, which investors use from time to time, and not as long-time core holdings. While investors tend to do better in broadly diversifying equity funds, even their five-year investor returns are lower than reported returns on an asset-weighted basis.

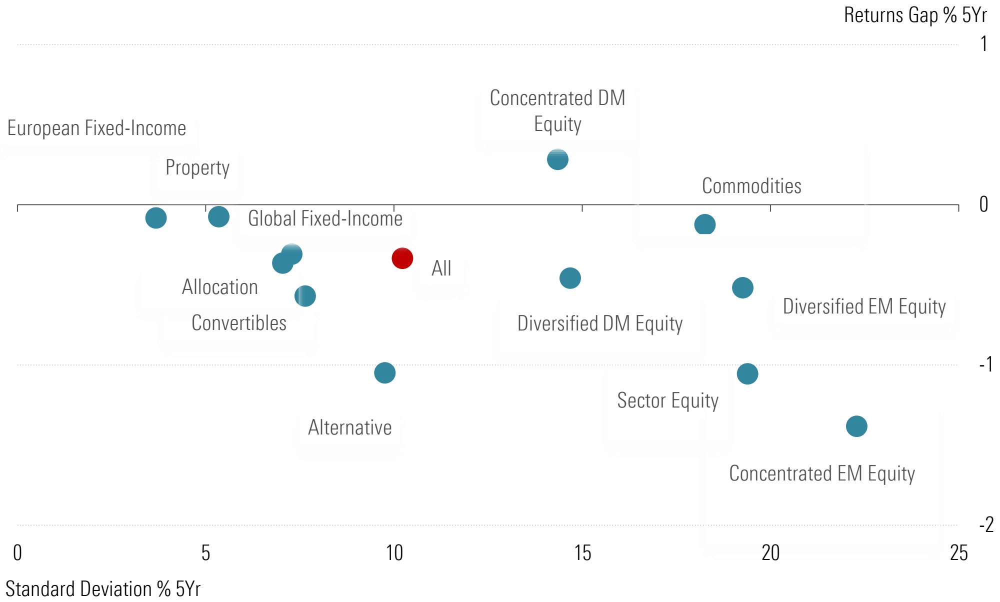
Alternative funds have risen in popularity in recent years. Results, however, have not been as good as expected, and the difficult periods weigh heavily on the poor results of these so-called “liquid alt” funds, which show a negative gap of 1.05 percentage points in the most recent five-year period.

Exhibit 4 Asset-Weighted Returns Gaps by Category Group, 5-Year



Source: Morningstar Direct. Data as of 31/07/2016.

Exhibit 5 Returns Gaps by Standard Deviation of Category Group, 5-Year Numbers



Source: Morningstar Direct. Data as of 31/07/2016.

There’s one category group where five-year investor returns trump total returns: Concentrated developed markets equity, which hosts funds investing in a single country (excluding the U.S., which is under "diversified developed-markets equity" in this study because of its large size). Drilling down into the data, we see that investors have had positive gaps in UK equity funds. The UK equity market has been on a fairly steady upward trend in the period under analysis, which may have helped investors avoid taking out their assets at a bad moment. In most other single-country categories results show negative return gaps. Ten-year gaps are negative also for the group of concentrated developed-markets funds (by 84 basis points).

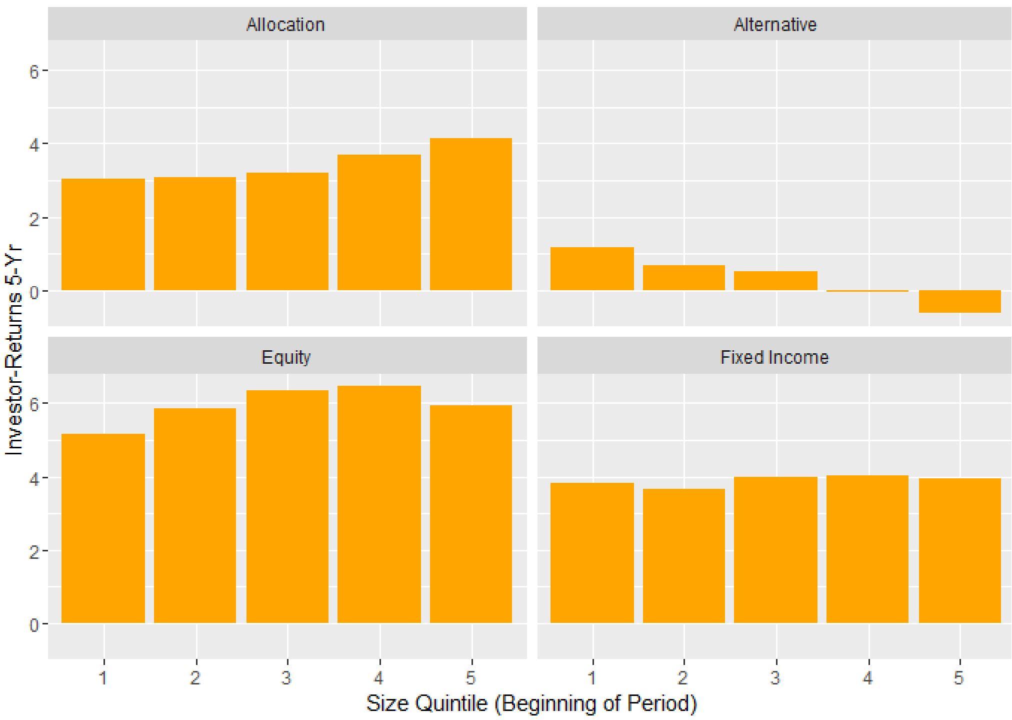
Factors Behind the Gaps

We've explained the basic rationale behind the concept of investor returns and return gaps, and European results seem to fall in line with the empirical evidence we've gathered from the U.S study, despite the shorter time period. But it's worthwhile to look beyond asset classes and category groupings. What's common to funds and categories that show larger or smaller negative return gaps? Gaining knowledge about this helps us to advise investors in achieving better outcomes.

Size

We already touched on one factor, which looms large in the European data: fund size. Let's first look at investor returns by decile in Exhibit 6, which gives a refined picture of how size is related to the returns that investors have experienced. We divide funds into size quintiles at the beginning of the five-year period (rather than the average for the calculation period as we are doing elsewhere in this study).

Exhibit 6 Investor Returns by Size Quintile, 5-Yr Numbers

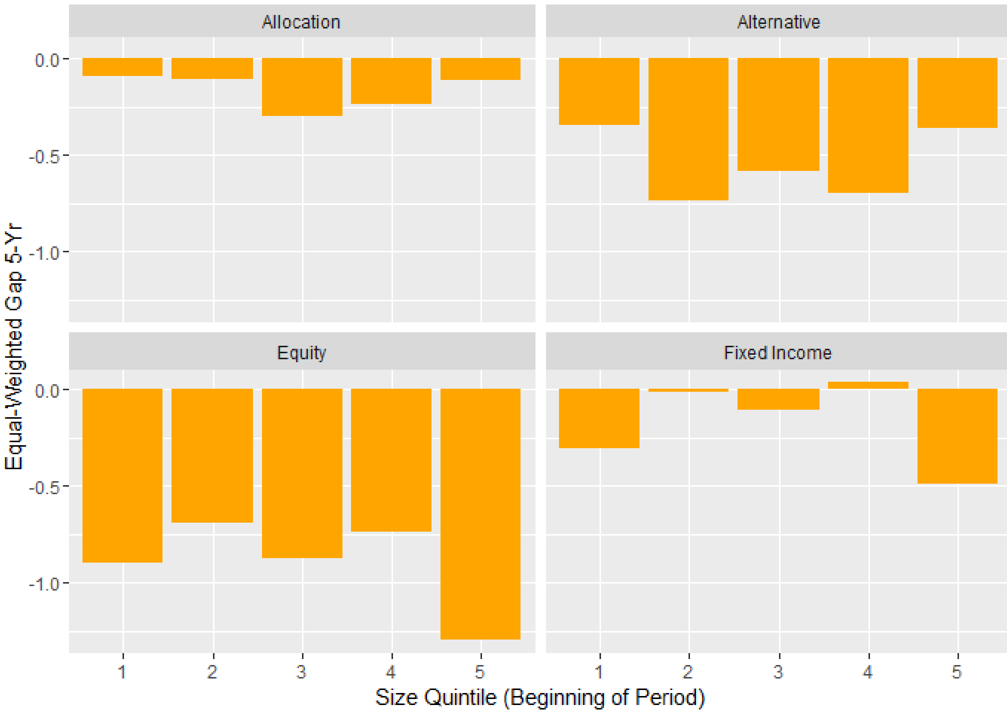


Source: Morningstar Direct. Data as of 31/07/2016.

Among allocation funds, investors have fared better in larger funds. The average fund in the smallest quintile has returned only 3.1% on an annualized basis compared with 4.4% in the largest quintile. Also in equity it has been a good bet to avoid small equity funds, but it's worthwhile to note that equity fund returns start to drop in the largest quintile. This phenomenon filters through most of our category groups (concentrated developed-markets equity, concentrated emerging-markets equity, diversified emerging-markets equity, and sector equity), and may be a sign of asset bloat—that is, large funds seeing their performance tail off as they have less room to move effectively in the markets. Only within concentrated developed-markets equity have funds in the fifth quintile (the largest funds) been able to outperform funds in the fourth quintile. In fixed income, assets under management don't seem to change end results, for better or worse. Finally, within alternatives, bigger funds have have clearly fared worse, as large property funds have trailed their smaller peers.

But how do return gaps play out when controlling for size? In Exhibit 7 we again divide funds into size quintiles at the beginning of the five-year period and compare average gaps. The results show that return gaps are not dependent on size. Investors do as well (or as poorly) in large and small funds. We note a larger gap for large funds within equity and fixed-income, but otherwise there is little directionality.

Exhibit 7 Asset-Weighted Returns Gaps by Size Quintile, 5-Year Numbers

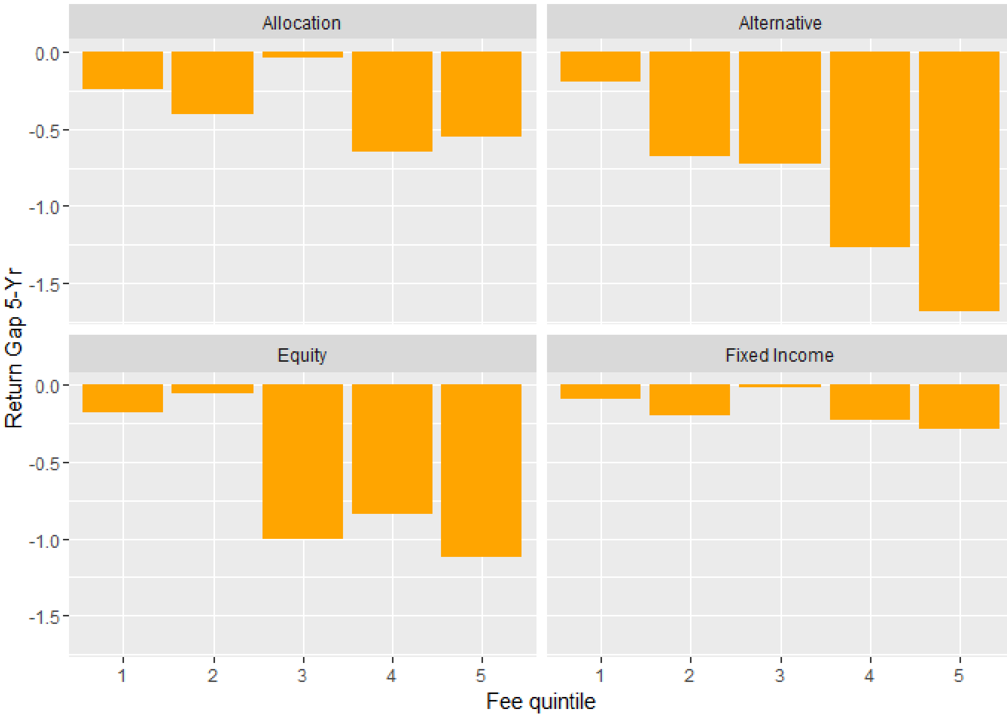


Source: Morningstar Direct. Data as of 31/07/2016.

Price

One of the strongest relationships we see is that the cheaper the fund, the better investors seem to have done in timing their investments. We have excluded index funds and institutional share classes from calculations in Exhibit 8 to focus on the fees of active funds. The result is clearest among alternative and equity funds where investors have had most difficulties in timing expensive funds during the last five years. In alternatives, investors have done worse in more-expensive funds, which have also been more volatile than the cheaper funds. Among equity funds, investors in the two cheapest quintiles have been able to accrue investor-returns almost at the level of total returns, whereas for the three most expensive quintiles, investor-returns have lagged because of poor timing. These quartiles include more-volatile funds with higher tracking error. In allocation and fixed income the differences are minimal, and thus we can't identify a relationship between price and an investor's ability to time the market.

Exhibit 8 Asset-Weighted Returns Gaps by Price Quintile, 5-Year Numbers



Source: Morningstar Direct. Data as of 31/07/2016.

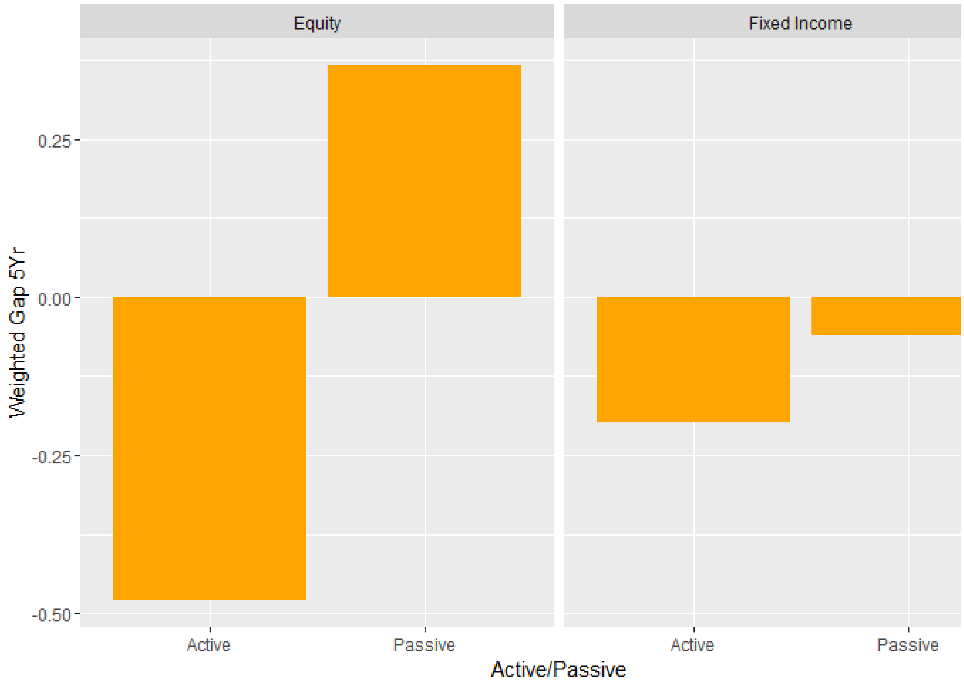
Index

The active/passive debate is not the topic of this paper. But in terms of behavior gaps, index funds are clearly the better choice. The differences have been massive in the past five years, as index-fund investors have experienced a positive asset-weighted gap of 26 basis points, while investors in nonindex funds have typically seen investor returns that are 37 basis points below their funds' total returns. For allocation and alternatives, the results for index funds have little value since there are only a handful of index funds in these asset classes and the results are thus unreliable. However, in equity there are 323 index funds, and 96 in fixed income. In equity, the difference in gaps is pronounced with index investors enjoying a *positive* gap of 37 basis points, while investors in active funds have suffered a *negative* return gap of 48 basis points–a difference of 85 basis points. These are shown in Exhibit 9.

While index equity funds have typically been less volatile (5-year standard deviation of 14.2% versus 15.9% for nonindex equity funds at the share class level), they have seen better returns (9.0% versus 6.9% at the share class level in base currency) and obviously have had much lower tracking errors and fees.

Still, it’s hard to pinpoint exactly what is causing the behavioral difference in the use of index and nonindex funds, but an educated guess is that index funds are typically used as long-term investing tools as part of the core of a portfolio, whereas nonindex funds include many kinds of specialized funds, which investors tend to go in and out of. It's also possible that exchange-traded funds (ETFs) absorb some of the short-term trading in passive instruments that would otherwise be displayed in the results of open-end index funds. Also, advisors typically get a bigger fee out of active funds, as they tend to have higher loads, and thus may have an incentive to propose more frequent trades on.

Exhibit 9 Asset-Weighted Returns Gaps By Index (Passive) and NonIndex (Active), 5-Year Numbers



Source: Morningstar Direct. Data as of 31/07/2016.

Parent

As previously discussed, the majority of European funds are in-house products distributed to retail investors by banks or insurance companies. As the parent company not only provides the product, but also advises in investing choices, it’s fair to say that the parent company (or “steward”) has an even stronger role in Europe than in the U.S. where independent advisors have a much larger role in fund selection. (Open architecture is gaining traction in Europe as well, especially in the Netherlands, Switzerland, and the U.K., because of regulatory changes. It's also worth noting that European institutions use funds heavily, and they are not tied to a single provider in the way retail clients may be.)

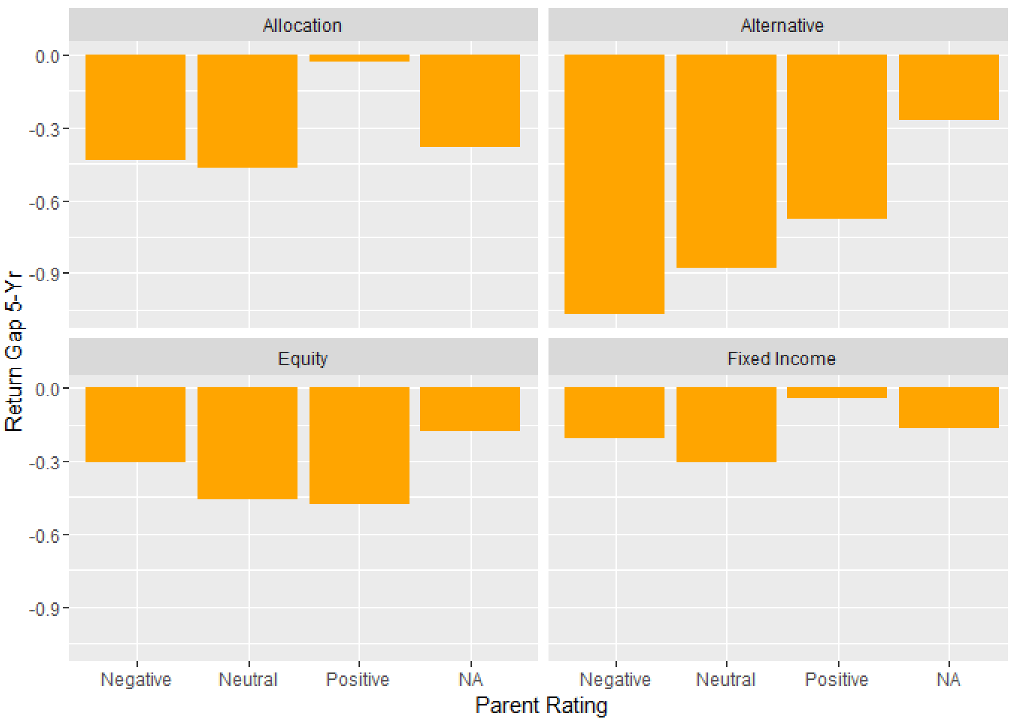
Morningstar’s 2016 U.S. "Mind the Gap" found that the more shareholder-friendly policies a fund company had, the smaller the gaps between total returns and investor returns. The differences were large: The highest Morningstar Stewardship Grade of A was associated with a 0.18% gap, whereas F-rated stewards’ funds displayed a gap of 2.59 percentage points.

In Europe, Morningstar manager research analysts rate 151 fund providers with either a Positive, Neutral, or Negative parent rating. Forty percent of fund assets included in this study's five-year numbers are from parents with a Neutral parent rating. The rating indicates that we think the fund company is doing neither a superb nor a lousy job in terms of pricing, fostering a good investment culture, and the like. Twenty-four percent of assets are in funds with a Positive parent rating, and 5% are provided by Negative-rated parents. Thirty-one percent of assets are in funds provided by unrated parents.

The numbers show that in asset-weighted terms, Morningstar's parent ratings may be helpful in guiding investors to better outcomes in some asset classes. Within allocation, funds with Positive parent ratings saw a difference between asset-weighted investor returns and asset-weighted total returns of only 2 basis points. For parents rated Neutral or Negative the gaps were 47 and 44 basis points, respectively. In the most recent 10-year period the gap was even more pronounced with a positive gap of 49 basis points for Positive parent ratings against a negative gap of 44 basis points for Negative-rated parents). Allocation funds are often used by retail clients and are provided by banks and insurance companies, and arguably the steward's responsibility is strongest here.

In fixed income there is also possibly some indication of positively rated parents doing a better job, with funds provided by Positive-rated parents seeing asset-weighted gaps of 4 basis points against 16 basis points for all funds, and 30 basis points for funds from Neutral-rated parents, but this gap was higher than that (21 basis points) found with Negative-rated parents. Negative-rated parents did particularly well in equity, where Morningstar' Positive-parent ratings did poorest.

Exhibit 10 Asset-Weighted Returns Gaps by Parent Rating, 5-Year Numbers



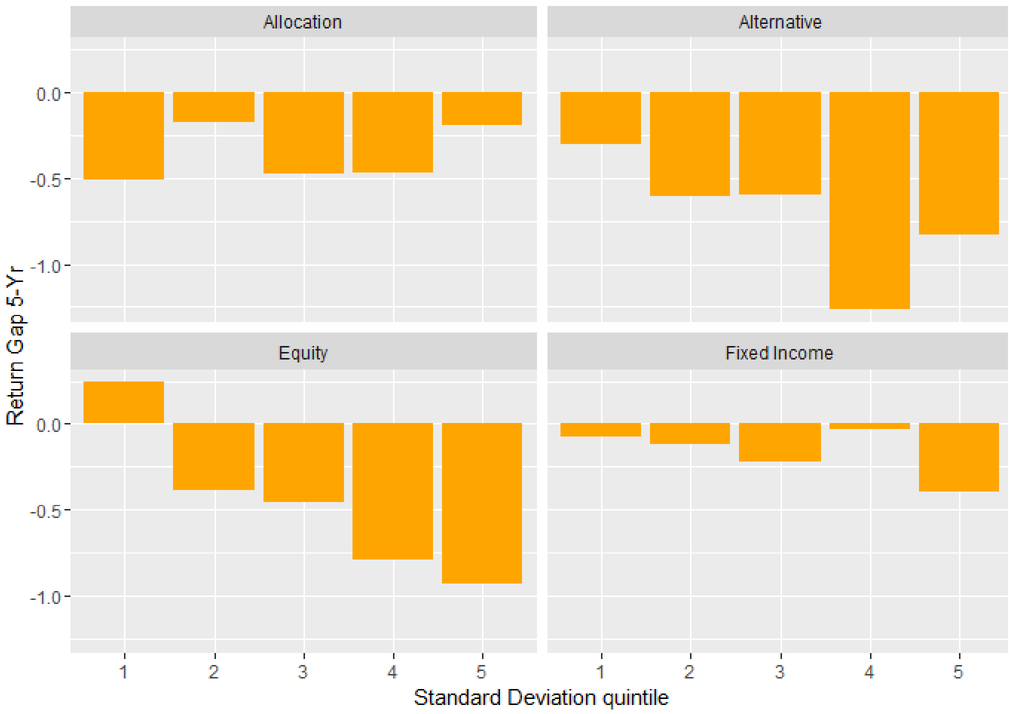
Source: Morningstar Direct. Data as of 31/07/2016.

Standard Deviation

Placing funds in each asset class into five quintiles based on their five-year standard deviation allows us to see whether riskier funds bring worse investor outcomes regardless of a fund's category. The results indicate strongly that this is the case within equity and alternative funds. In these two asset classes, the return gaps worsen almost in a linear fashion as volatility increases. In fixed-income we can also see a tendency toward worse return gaps as volatility rises.

This is not the case within allocation funds, which is interesting. It may be that allocation funds are not an asset class where investors are seeing opportunity to trade in and out.

Exhibit 11 Asset-Weighted Returns Gaps by Standard Deviation, 5-Year Numbers



Source: Morningstar Direct. Data as of 31/07/2016.

Conclusion: Bringing It All Together

Our findings show that investors suffer from poor timing in practically all types of funds, but not all. Investors have more difficulty in using certain types of funds compared with others. There are several takeaways for advisors in our findings.

Our grouping of funds by category groups (Exhibits 4 and 5) shows funds that are more volatile, and more often used as "satellite" holdings rather than as part of the core of a portfolio (such as sector equity and single-country emerging-markets funds) tend to leave investors with money-weighted returns that are clearly below those of a buy-and-hold investor.

Looking at attributes that may contribute to smaller gaps, our findings show that European investors have used index funds much more effectively than active funds (Exhibit 9). Investors have enjoyed largely positive behavior gaps in index funds compared with negative gaps in nonindex funds. Within active funds, high fees have been detrimental, with higher fees pulling investor-returns down in allocation and equity categories. Finally, selecting parent with a Positive rating would have helped investors within allocation funds.

Investors and their advisors should be especially aware of their behavioral traits when they venture into volatile and expensive funds, such as those in the concentrated emerging-markets or sector equity categories.

It should be noted that our results are descriptive in nature. They show tendencies, and raise red flags, but predicting behavior gaps at the fund level is difficult, and lies outside the scope of this study.

Data Appendix

Exhibit 12 Share Classes and Funds With 5-Year Investor Returns

	Share Classes With 5-Year Returns			Funds With 5-Year Total Returns		
	Total	Investor	% Of Share Classes with Investor Returns	Total	Investor	% Of Funds with Investor Returns
Allocation	11387	7764	68,2	7874	6054	76,9
Alternative	2393	1407	58,8	876	510	58,2
Commodities	351	259	73,8	97	73	75,3
Convertibles	634	407	64,4	190	149	78,4
Equity	22175	13644	61,5	7864	5668	72,1
Fixed Income	12542	8367	66,7	4253	3149	74,0
Property	165	66	40,0	88	46	52,3
Total	**49647**	**31914**	**64,3**	**21242**	**15649**	**73,7**

Source: Morningstar Direct. Data as of 31/07/2016.

Exhibit 13 Comparison of Assets Under Management of Funds With 5-Year Return Data

	All Funds With 5-Yr EUR Bil	Funds Included In 5-Yr Study EUR Bil	% of AUM With 5-Yr IR
Allocation	945,17	657,59	69,6
Alternative	233,41	137,39	58,9
Commodities	15,13	13,02	86,0
Convertibles	54,67	44,73	81,8
Equity	2170,22	1607,70	74,1
Fixed Income	1597,02	1237,94	77,5
Property	128,55	71,09	55,3
Total	**5144,18**	**3769,45**	**73,3**

Source: Morningstar Direct. Data as of 31/07/2016.

Exhibit 14 Funds With 5-Year Investor Returns by Domicile and Asset Class

	Allocation	Alternative	Commodities	Convertibles	Equity	Fixed Income	Property	Total
Andorra	0	0	0	0	0	0	0	0
Austria	219	15	3	5	210	252	5	709
Belgium	114	0	1	0	164	61	0	340
Czech Republic	0	0	0	0	0	0	0	0
Denmark	34	7	0	0	186	120	0	347
Estonia	0	0	0	0	3	0	0	3
Finland	34	6	2	0	85	36	0	163
France	802	91	2	56	905	428	0	2284
Germany	447	20	4	4	257	172	34	938
Gibraltar	0	0	0	0	0	0	0	0
Greece	11	0	1	0	25	15	0	52
Guernsey	17	16	1	0	13	6	0	53
Hungary	0	0	0	0	0	0	0	0
Iceland	0	0	0	0	8	5	0	13
Ireland	76	44	5	1	490	243	1	860
Isle of Man	3	0	0	0	5	1	1	10
Italy	75	6	0	1	74	75	0	231
Jersey	8	1	0	0	28	12	0	49
Latvia	6	0	0	0	3	4	0	13
Liechtenstein	63	14	6	5	59	26	0	173
Lithuania	0	0	0	0	5	0	0	5
Luxembourg	923	231	28	72	1837	1092	3	4186
Malta	0	5	0	0	3	0	0	8
Monaco	2	0	0	0	2	0	0	4
Netherlands	20	1	0	0	59	22	0	102
Norway	18	0	0	0	65	37	0	120
Poland	3	0	0	0	13	1	0	17
Portugal	26	3	0	0	41	27	0	97
Russian Federation	2	0	0	0	0	0	0	2
Slovenia	1	0	0	0	11	3	0	15
Spain	2753	43	1	2	205	173	2	3179
Sweden	0	0	0	0	0	0	0	0
Switzerland	139	8	18	5	325	200	0	695
United Kingdom	277	31	1	1	631	169	1	1111
Total	6073	542	73	152	5712	3180	47	15779

Source: Morningstar Direct. Data as of 31/07/2016.

Exhibit 15 Returns of EUR Share Classes, 5-Year

Asset Class (EUR share classes)	**5-Year Asset-Weighted %**		**5-Year Average Return %**				
Asset Class	Total Return	Investor Return %	Total Return	Investor Return	Returns Gap	Asset-Weighted Gap	Number of Funds
Allocation	4,60	3,98	3,50	3,24	0,47	-0,62	5398
Alternative	1,55	0,94	1,01	0,34	-0,06	-0,60	634
Equity	8,25	7,65	6,82	5,93	0,83	-0,60	3678
Fixed Income	4,11	3,78	4,08	3,84	-0,30	-0,33	2249
All Funds	5,40	4,88	4,50	4,03	0,38	-0,52	11959

Source: Morningstar Direct. Data as of 31/07/2016.

Exhibit 16 Returns and Returns Gaps by Size Quintile (Funds, by Fund Size at the Beginning of Period)

Asset Class	Size quintile	Number of Funds	EW TR5y	AW TR5y	EW IR5y	AW IR5y	Returns Gap 5y	Weighted Gap 5y	Avg Size EUR Mil
Allocation	1	1210	3,09	3,04	3,04	3,00	-0,09	-0,04	2,40
	2	1209	3,21	3,25	3,06	3,10	-0,11	-0,15	4,59
	3	1210	3,52	3,54	3,20	3,22	-0,30	-0,32	10,44
	4	1209	4,00	4,09	3,68	3,76	-0,23	-0,32	30,67
	5	1209	4,40	4,40	4,12	4,29	-0,11	-0,11	325,19
Alternative	1	156	1,28	1,17	1,18	0,94	-0,34	-0,23	6,41
	2	156	1,26	1,11	0,70	0,52	-0,73	-0,58	26,85
	3	155	1,10	1,16	0,52	0,52	-0,58	-0,64	68,59
	4	156	0,54	0,37	-0,06	-0,16	-0,70	-0,53	166,33
	5	155	0,10	0,09	-0,61	-0,26	-0,36	-0,36	1006,08
Equity	1	1129	6,23	6,34	5,16	5,33	-0,90	-1,01	6,32
	2	1128	6,60	6,67	5,85	5,91	-0,69	-0,76	23,56
	3	1128	7,19	7,17	6,33	6,32	-0,87	-0,85	57,51
	4	1128	7,19	7,20	6,44	6,45	-0,74	-0,74	136,74
	5	1128	6,48	5,62	5,91	5,18	-1,30	-0,43	777,16
Fixed Income	1	628	3,97	3,84	3,81	3,67	-0,30	-0,18	11,67
	2	628	3,75	3,79	3,67	3,73	-0,01	-0,06	40,99
	3	628	4,11	4,12	3,97	4,00	-0,11	-0,12	93,09
	4	628	4,04	4,09	4,03	4,08	0,04	-0,01	210,84
	5	628	3,95	3,44	3,93	3,46	-0,49	0,02	1059,96

Source: Morningstar Direct. Data as of 31/07/2016.

Exhibit 17 5-Year Returns and Return Gaps by Fees (Share Classes, Latest Ongoing Charges, Institutional and Index Share Classes Excluded)

Asset Class	Fee Quintile (1=Cheapest)	Number of Share Classes	AW TR5y	AW IR5y	EW TR5y	EW IR5y	Standard Deviation	Tracking Error	Ongoing Charges	Returns Gap
Allocation	1	1405	5,28	5,04	4,01	3,90	7,75	4,21	0,53	1,03
	2	1405	4,74	4,33	3,75	3,64	5,79	3,21	1,10	0,59
	3	1404	5,07	5,03	4,09	3,84	6,48	3,73	1,43	0,94
	4	1405	4,35	3,70	3,90	3,42	7,43	4,33	1,80	-0,20
	5	1404	3,58	3,03	2,72	2,12	8,09	4,39	2,51	0,31
Alternative	1	273	1,33	1,14	0,94	0,51	4,52	3,22	0,76	0,20
	2	273	0,69	0,02	1,24	0,40	9,23	3,19	1,27	-1,22
	3	272	2,53	1,80	1,10	0,19	9,76	3,19	1,62	0,70
	4	273	0,58	-0,68	-0,20	-1,14	10,56	3,91	1,91	-0,48
	5	272	1,72	0,03	0,09	-1,16	10,54	2,76	2,59	-0,05
Equity	1	2058	8,88	8,70	7,98	7,11	15,32	4,98	0,89	0,72
	2	2058	8,92	8,87	7,85	7,01	14,78	5,20	1,59	1,02
	3	2058	6,97	5,97	6,49	5,22	16,42	5,22	1,87	-0,52
	4	2058	2,66	1,82	4,53	3,11	18,71	6,43	2,13	-2,71
	5	2058	4,52	3,40	3,40	1,95	16,83	5,63	2,76	0,00
Fixed Income	1	1225	3,57	3,48	3,61	3,59	3,39	1,70	0,35	-0,12
	2	1225	4,24	4,03	4,16	3,94	4,31	2,08	0,80	-0,13
	3	1224	4,29	4,27	4,03	3,71	5,01	2,30	1,08	0,25
	4	1225	3,36	3,13	3,73	3,24	7,21	3,97	1,38	-0,60
	5	1224	2,46	2,17	2,12	1,51	7,83	3,97	1,96	0,06

Source: Morningstar Direct. Data as of 31/07/2016.

Exhibit 18 Returns and Returns Gaps for Index and Nonindex Funds (Share Classes, 5-Year Numbers)

Broad	Index	Number of Share Classes	AWTR5y	AWIR5y	EWTR5y	EWIR5y	Standard Deviation	Tracking Error	Ongoing Charges	Weighted Gap 5y
Equity	No	12,732	7,33	6,85	6,29	5,13	15,89	5,25	1,51	-0,48
Equity	Yes	710	8,66	9,02	8,51	8,42	14,23	1,48	0,35	0,37
Fixed Income	No	8,119	3,88	3,68	3,72	3,47	5,48	2,61	0,89	-0,20
Fixed Income	Yes	231	5,13	5,07	5,09	5,17	4,02	1,29	0,21	-0,06

Source: Morningstar Direct. Data as of 31/07/2016. Alternatives and allocation excluded due to small number of index funds.

Exhibit 19 Parent Rating and 5-Year Returns Gaps at the Fund Level

Broad	Parent Rating	Number of Funds	EW TR5y	EW IR5y	AW TR5y	AW IR5y	AUM EUR Bil	Returns Gap 5y	Weighted Gap 5y
Allocation	Negative	205	4,60	4,28	4,43	3,99	49,5	-0,61	-0,44
	Neutral	1405	4,20	3,99	4,81	4,34	231,6	0,14	-0,47
	Positive	246	4,78	4,61	5,38	5,35	90,6	0,58	-0,03
	No rating	4197	3,35	3,11	4,32	3,94	228,3	0,59	-0,38
Alternative	Negative	43	0,86	1,17	1,54	0,47	7,0	-0,39	-1,07
	Neutral	238	1,29	0,43	2,06	1,17	78,0	-0,12	-0,90
	Positive	63	1,35	0,68	2,28	1,61	36,8	0,25	-0,67
	No rating	434	0,56	0,16	0,96	0,69	97,4	0,13	-0,27
Equity	Negative	347	6,74	6,33	7,58	7,28	56,2	0,54	-0,30
	Neutral	1729	6,86	6,12	7,49	7,03	567,5	0,17	-0,46
	Positive	820	7,33	6,42	7,38	6,90	409,1	-0,43	-0,48
	No rating	2748	6,52	5,76	7,48	7,30	324,1	0,78	-0,17
Fixed Income	Negative	225	3,94	3,84	4,02	3,81	64,4	-0,13	-0,21
	Neutral	1035	4,38	4,22	4,21	3,91	415,3	-0,46	-0,30
	Positive	310	4,35	4,18	3,53	3,50	246,8	-0,85	-0,04
	No rating	1573	3,64	3,54	3,90	3,74	303,5	0,10	-0,16

Source: Morningstar Direct. Data as of 31/07/2016.

Exhibit 20 5-Year Returns and Return Gaps by Standard Deviation Quintiles

Asset Class	Volatility Quintile	Number of Funds	EW TR5y	EW IR5y	AW TR5y	AW IR5y	Standard Deviation	Returns Gap 5y	Weighted Gap 5y
Allocation	1	1211	3,07	2,77	3,75	3,24	4,27	0,18	-0,51
	2	1211	4,29	3,94	5,38	5,21	7,33	0,92	-0,17
	3	1210	3,69	3,48	5,12	4,64	9,66	0,96	-0,48
	4	1211	3,67	3,49	5,05	4,59	11,53	0,92	-0,47
	5	1210	3,52	3,41	4,72	4,53	14,90	1,01	-0,19
Alternative	1	156	2,44	2,13	1,91	1,61	2,70	-0,83	-0,30
	2	156	2,28	1,76	2,85	2,25	8,78	-0,03	-0,61
	3	155	1,63	1,19	1,54	0,94	9,81	-0,69	-0,60
	4	156	1,50	0,99	1,96	0,70	11,35	-0,81	-1,26
	5	155	-3,56	-4,38	-4,54	-5,37	18,35	-1,81	-0,83
Equity	1	1129	9,50	9,23	10,25	10,49	11,85	1,00	0,24
	2	1129	9,31	8,72	9,79	9,40	14,04	0,09	-0,38
	3	1129	8,13	7,40	8,92	8,47	15,47	0,34	-0,46
	4	1129	5,64	4,71	5,17	4,38	17,40	-1,26	-0,79
	5	1128	1,21	-0,05	1,21	0,28	22,31	-0,93	-0,93
Fixed Income	1	629	1,58	1,55	1,65	1,58	1,16	0,00	-0,08
	2	629	3,46	3,47	3,63	3,52	2,85	0,05	-0,12
	3	628	4,80	4,67	5,34	5,12	4,17	0,32	-0,22
	4	629	5,10	5,05	5,18	5,15	5,78	0,05	-0,03
	5	628	4,92	4,49	3,64	3,24	9,44	-1,68	-0,39

Source: Morningstar Direct. Data as of 31/07/2016.

Exhibit 21 Category Groupings

Category	Category
Allocation	**Alternative**
Asia Allocation	Alt - Currency
CHF Aggressive Allocation	Alt - Debt Arbitrage
CHF Cautious Allocation	Alt - Diversified Arbitrage
CHF Moderate Allocation	Alt - Event Driven
EUR Aggressive Allocation	Alt - Fund of Funds - Equity
EUR Aggressive Allocation - Global	Alt - Fund of Funds - Multistrategy
EUR Cautious Allocation	Alt - Fund of Funds - Other
EUR Cautious Allocation - Global	Alt - Global Macro
EUR Flexible Allocation	Alt - Long/Short Debt
EUR Flexible Allocation - Global	Alt - Long/Short Equity - Emerging Markets
EUR Moderate Allocation	Alt - Long/Short Equity - Europe
EUR Moderate Allocation - Global	Alt - Long/Short Equity - Global
GBP Aggressive Allocation	Alt - Long/Short Equity - Other
GBP Cautious Allocation	Alt - Long/Short Equity - UK
GBP Flexible Allocation	Alt - Long/Short Equity - US
GBP Moderate Allocation	Alt - Market Neutral - Equity
Global Emerging Markets Allocation	Alt - Multistrategy
IDR Allocation	Alt - Other
ILS Aggressive Allocation	Alt - Systematic Futures
ILS Cautious Allocation	Alt - Volatility
ILS Cautious Allocation, 10% Equity Cap	
NOK Aggressive Allocation	**Commodities**
NOK Cautious Allocation	Commodities - Broad Agriculture
NOK Moderate Allocation	Commodities - Broad Basket
PLN Allocation	Commodities - Energy
SEK Aggressive Allocation	Commodities - Grains
SEK Cautious Allocation	Commodities - Industrial & Broad Metals
SEK Flexible Allocation	Commodities - Livestock
SEK Moderate Allocation	Commodities - Precious Metals
Target Date 2011 - 2015	Commodities - Softs
Target Date 2016 - 2020	Commodities - Other
Target Date 2021 - 2025	
Target Date 2026 - 2030	
Target Date 2031 - 2035	
Target Date 2036 - 2040	
Target Date 2041 - 2045	
Target Date 2046+	
TWD Aggressive Allocation	
TWD Cautious Allocation	
TWD Moderate Allocation	
USD Aggressive Allocation	
USD Cautious Allocation	
USD Flexible Allocation	
USD Moderate Allocation	
ZAR/NAD Aggressive Allocation	
ZAR/NAD Cautious Allocation	
ZAR/NAD Flexible Allocation	
ZAR/NAD Moderate Allocation	
Islamic Allocation - Other	
Other Allocation	

Concentrated DM Equity
Australia & New Zealand Equity
Austria Equity
Belgium Equity
Canada Equity
Denmark Equity
Finland Equity
France Large-Cap Equity
France Small/Mid-Cap Equity
Germany Large-Cap Equity
Germany Small/Mid-Cap Equity
Israel Large/Mid-Cap Equity
Israel Small-Cap Equity
Italy Equity
Japan Large-Cap Equity
Japan Small/Mid-Cap Equity
Netherlands Equity
Nordic Equity
Norway Equity
Portugal Equity
Singapore Equity
Spain Equity
Sweden Large-Cap Equity
Sweden Small/Mid-Cap Equity
Sweden/Global Equity
Switzerland Large-Cap Equity
Switzerland Small/Mid-Cap Equity
Taiwan Large-Cap Equity
Taiwan Small/Mid-Cap Equity
UK Equity Income
UK Flex-Cap Equity
UK Large-Cap Blend Equity
UK Large-Cap Growth Equity
UK Large-Cap Value Equity
UK Mid-Cap Equity
UK Small-Cap Equity
Japan Equity - Currency Hedged
Other Asia-Pacific Equity
Other Europe Equity

Concentrated EM Equity
Africa & Middle East Equity
Africa Equity
Brazil Equity
China Equity
China Equity - A Shares
Greater China Equity
Greece Equity
Hong Kong Equity
India Equity
Indonesia Equity
Islamic Global Equity
Korea Equity
Poland Equity
Russia Equity
South Africa & Namibia Equity
South Africa & Namibia Small-Cap Equity
Thailand Equity
Turkey Equity
Islamic Equity - Other
Other Africa & Middle East Equity
Other Americas Equity

Convertibles
Convertible Bond - Asia/Japan
Convertible Bond - Europe
Convertible Bond - Global
Convertible Bond - Global, CHF Hedged
Convertible Bond - Global, EUR Hedged
Convertible Bond - Global, GBP Hedged
Convertible Bond - Global, USD Hedged
Convertible Bond - Other
Convertible Bond - Other Hedged

Diversified DM Equity
ASEAN Equity
Asia ex Japan Equity
Asia ex-Japan Small/Mid-Cap Equity
Asia-Pacific ex-Japan Equity
Asia-Pacific inc. Japan Equity
EMEA Equity
Europe Equity Income
Europe ex-UK Large-Cap Equity
Europe ex-UK Small/Mid-Cap Equity
Europe Flex-Cap Equity
Europe Large-Cap Blend Equity
Europe Large-Cap Growth Equity
Europe Large-Cap Value Equity
Europe Mid-Cap Equity
Europe Small-Cap Equity
Eurozone Flex-Cap Equity
Eurozone Large-Cap Equity
Eurozone Mid-Cap Equity
Eurozone Small-Cap Equity
Global Equity Income
Global Flex-Cap Equity
Global Large-Cap Blend Equity
Global Large-Cap Growth Equity
Global Large-Cap Value Equity
Global Small-Cap Equity
US Flex-Cap Equity
US Large-Cap Blend Equity
US Large-Cap Growth Equity
US Large-Cap Value Equity
US Mid-Cap Equity
US Small-Cap Equity
Vietnam Equity
Europe Equity - Currency Hedged
US Equity - Currency Hedged

Diversified EM Equity
BRIC Equity
Emerging Europe Equity
Emerging Europe ex-Russia Equity
Global Emerging Markets Equity
Global Emerging Markets Small/Mid-Cap Equity
Global Frontier Markets Equity
Latin America Equity

European Fixed-Income
CHF Bond
CHF Bond - Short Term
DKK Bond
DKK Bond - Short Term
DKK Domestic Bond
DKK Domestic Bond - Short Term
EUR Bond - Long Term
EUR Corporate Bond
EUR Corporate Bond - Short Term
EUR Diversified Bond
EUR Diversified Bond - Short Term
EUR Flexible Bond
EUR Government Bond
EUR Government Bond - Short Term
EUR High Yield Bond
EUR Inflation-Linked Bond
EUR Ultra Short-Term Bond
Europe Bond
Europe High Yield Bond
GBP Corporate Bond
GBP Diversified Bond
GBP Diversified Bond - Short Term
GBP Flexible Bond
GBP Government Bond
GBP High Yield Bond
GBP Inflation-Linked Bond
NOK Bond
NOK Bond - Short Term
NOK High Yield Bond
PLN Bond
SEK Bond
SEK Bond - Short Term
SEK Corporate Bond
SEK Inflation-Linked Bond
TRY Bond
Fixed Term Bond

Global Fixed-Income

Asia Bond
Asia Bond - Local Currency
Asia High Yield Bond
AUD Bond
CAD Bond
Emerging Europe Bond
Global Bond
Global Bond - CHF Biased
Global Bond - CHF Hedged
Global Bond - EUR Biased
Global Bond - EUR Hedged
Global Bond - GBP Biased
Global Bond - GBP Hedged
Global Bond - ILS
Global Bond - NOK Hedged
Global Bond - USD Biased
Global Bond - USD Hedged
Global Bond - ZAR/NAD
Global Corporate Bond
Global Corporate Bond - CHF Hedged
Global Corporate Bond - EUR Hedged
Global Corporate Bond - GBP Hedged
Global Corporate Bond - USD Hedged
Global Emerging Markets Bond
Global Emerging Markets Bond - EUR Biased
Global Emerging Markets Bond - Local Currency
Global Emerging Markets Corporate Bond
Global Emerging Markets Corporate Bond - EUR Biased
Global Flexible Bond
Global Flexible Bond - CHF Hedged
Global Flexible Bond - EUR Hedged
Global Flexible Bond - GBP Hedged
Global Flexible Bond - USD Hedged
Global High Yield Bond
Global High Yield Bond - CHF Hedged
Global High Yield Bond - EUR Hedged
Global High Yield Bond - GBP Hedged
Global Inflation-Linked Bond
Global Inflation-Linked Bond - EUR Hedged
Global Inflation-Linked Bond - GBP Hedged
Global Inflation-Linked Bond - USD Hedged
HKD Bond
IDR Bond
ILS Corporate & Convertible Bond
ILS Diversified Bond
ILS Government Bond
ILS Government Inflation-Linked Bond
ILS High Yield Bond
ILS Inflation-Linked Bond
Islamic Global Bond
JPY Bond
RMB Bond
RMB Bond - Onshore
RMB High Yield Bond
SGD Bond
TWD Bond
USD Corporate Bond
USD Diversified Bond
USD Diversified Bond - Short Term
USD Flexible Bond
USD Government Bond
USD High Yield Bond
USD Inflation-Linked Bond
ZAR/NAD Bond - Short Term
ZAR/NAD Bond - Ultra Short Term
ZAR/NAD Diversified Bond
ZAR/NAD Flexible Bond
Global Bond - Other Hedged
Global Equity - Currency Hedged
High Yield Bond - Other Hedged
Other Bond
Other Inflation-Linked Bond

Guaranteed and Capital Protected

Capital Protected
Guaranteed Funds

Money Market

AUD Money Market
CAD Money Market
CHF Money Market
EUR Money Market
EUR Money Market - Short Term
French PEA Eonia SWAP
GBP Money Market
GBP Money Market - Short Term
HKD Money Market
ILS Money Market
NOK Money Market
PLN Money Market
SEK Money Market
SGD Money Market
TWD Money Market
USD Money Market
USD Money Market - Short Term
ZAR/NAD Money Market

Property

Property - Direct Europe
Property - Direct Global
Property - Direct Other
Property - Direct Switzerland
Property - Direct UK
Property - Indirect Asia
Property - Indirect Europe
Property - Indirect Eurozone
Property - Indirect Global
Property - Indirect North America
Property - Indirect South Africa & Namibia
Property - Indirect Switzerland
Property - Indirect Other

Sector Equity

Sector Equity Agriculture
Sector Equity Alternative Energy
Sector Equity Biotechnology
Sector Equity Communications
Sector Equity Consumer Goods & Services
Sector Equity Ecology
Sector Equity Energy
Sector Equity Financial Services
Sector Equity Healthcare
Sector Equity Industrial Materials
Sector Equity Infrastructure
Sector Equity Natural Resources
Sector Equity Precious Metals
Sector Equity Private Equity
Sector Equity Technology
Sector Equity Utilities
Sector Equity Water
Sector Equity Other

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