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Active Share in European Equity Funds
The Activeness of Large-Cap European Fund Managers Through the Lens of Active Share

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Executive Summary

In less than a decade, "active share" has become a widely used concept in fund analysis. However, much of the available active share research references only US-domiciled funds. In this paper we study a subset of European funds investing in European equities to see how their active share has developed over time, and evaluate how the active share measure might be used as a tool to aid fund selection within the European fund universe. The study encompasses the period 1 January 2005 through June-end 2015. By including only large-cap funds, we reduce the difficulties arising from benchmark selection and the impact of the small-cap effect. Our results show that between 2005 and 2015 "closet indexing" has become rarer among European large-cap funds, and those funds with higher active shares have received the lion's share of new assets. We find that funds with higher active share have delivered better investment results than the least active funds in most of our research period, but not unambiguously. Because dispersions in returns and risk characteristics become much wider as a portfolio's active share rises towards 100%, investors should not rely solely on active share when selecting funds.

Key Take-Aways

► Average active share for European large-cap funds was 69.6% in the three-year period through March 2015, with a median of 72.4% when measured against the funds' appropriate style indexes. *(Page 8)*

► The percentage of funds with a three-year average active share below 60% (so-called closet indexers) was 20.2%. The portion of funds that can be characterized as closet indexers has been falling in the researched categories in recent years. The majority of new assets in European equities have landed in the most active funds. *(Page 10)*

► Although funds in the most active quartile charge 33 basis points more on average than those in the least active quartile for their retail share classes, we find that when price is measured per unit of active share, European investors are overpaying for low active share funds. Investors should compare fees carefully as dispersion in fees among funds with similar active shares is high. *(Page 15)*

► We find a strong inverse correlation between active share and market risk. Active share numbers dropped considerably during the financial crisis of 2008-09 but have been rising at a steady pace since then. *(Page 19)*

► Funds across the board lowered the share of mid- and small-cap stocks in their portfolios in 2008-09, but this was especially the case for the most active funds. *(Page 21)*

► The funds with the highest active shares have done better, on average, than those in the least active quartile in all of the five-year periods tested between 1 July 2006 and June-end 2015. However, the difference in excess returns between the most and the least active quartile has decreased recently, which implies that the strength of active share as a selection tool is time-period dependent. Invariably, however, the funds with the lowest active shares have been the worst performers. *(Page 24)*

► We find that funds in the highest active share quartile have displayed much stronger style biases than the average fund. This may not always be desirable from a fund investor's point of view, and complicates the use of active share in fund selection. The style effects have been especially strong in the small group of funds with an above 90% active share. After controlling for style effects in a four-factor regression model, we find their alpha to be lower than for any other group in the most recent five-year period researched. *(Page 25)*

► Investors who use active share as a fund selection tool should exercise caution. As active share increases, dispersion in returns and risk levels rises sharply; the best and worst performing funds are to be found among the more active ones. Therefore, we advise using active share only in combination with other quantitative and qualitative tools. *(Page 29)*

► Combining active share with tracking error adds a useful dimension to the analysis, and we find this to be an adequate analytical framework in the European large-cap space. Confirming results in US markets, we find that funds that exhibit a large tracking error but a low or moderate active share (so-called factor bet funds) have underperformed. *(Page 31)*

► We find that funds with Positive Morningstar Analyst Ratings tend to have above-average active shares and tracking errors. *(Page 42)*

1. Introduction

In 2015, hardly a week went by without a media article or a study on "active share", a concept developed by researchers Martijn Cremers and Antti Petajisto in 2006. Remarkably, in less than a decade, the active share concept–and the related idea of "closet indexing" brought to the fore by the two academics–have become not just topics of discussion but also a data point used by many fund selectors, advisors, and even sophisticated retail investors when selecting funds. Regulators in some European countries, as well as the European regulator ESMA, have also taken note and started to regard active share as a way to separate truly actively managed funds from quasi-passive ones.[1] In the Nordics, fund associations in Denmark, Norway, and Sweden have advised their members to publish active share numbers in reports.

Although there is currently a much wider awareness of active share in Europe than was the case just a few years ago, the discussion in Europe is younger and less refined than in the United States. Furthermore, much of the research on active share has been conducted with US mutual fund data, including Cremers and Petajisto's initial working paper in 2006[2] as well as their 2009 journal article[3] based on the working paper and Petajisto's 2013 paper[4]. This is partly because of the larger number of funds with long track records in the US, but also because of the wider availability of regular holdings data (funds domiciled in the US are required to publish their portfolios quarterly). However, Morningstar has actively collected portfolios from fund companies in Europe since the early 2000s, and we have used that data set in this study to offer a thorough view of the development of active share in European funds.

To overcome potential difficulties related to benchmark choice and investment style differences, this study focuses only on funds investing mainly in European large-cap companies. By studying this universe, we proceed to answer the following questions, among others: What is a typical active share for a European large-cap equity fund? Does a fund's active share typically change over time or remain stable? How widespread is closet indexing in Europe, and has there been a change in the proportion of funds mimicking their benchmarks? Have funds with higher active shares outperformed their competitors on a risk-adjusted basis? How might one best use active share as a tool in fund selection?

We start our exploration with a descriptive analysis that shows how active European large-cap equity funds are when seen through the lens of active share. We use three-year average active shares for each fund (period ended 31 March 2015) to ensure that the numbers are not dependent on portfolios from a single date.

We then move into European historical trends in active share and "closet indexing"–that is, actively managed funds that largely mimic their benchmark while charging active management fees. The portfolio data is from the 10-year period between March 2005 and March 2015. We detect a strong

1. In 2013, the Danish FSA ran a consultation on whether funds should publish their active share figures. In 2014, the Financial Services Consumer Panel in the UK issued a recommendation for funds to disclose their active share scores. In November 2014, the European Securities & Markets Authority started investigations on closet indexing with its 28 national regulators, and released preliminary results in February 2016. In February 2015, the Swedish government launched an investigation into closet trackers

2. "How Active is Your Fund Manager? A New Measure That Predicts Performance". First version 2006, most recent version 31 Mar, 2009. Cremers, Martijn and Petajisto, Antti. Available at SSRN: http://ssrn.com/abstract=891719

3. *Review of Financial Studies*, 2009, 22(9):3329-3365

4. "Active Share and Mutual Fund Performance" January 15, 2013. Petajisto, Antti. Available at SSRN: http://ssrn.com/abstract=1685942

relationship between the risk environment and average active share as well as a strong movement of flows into more-active funds in recent years. Perhaps not coincidentally, flows into funds with higher active shares have increased as passively managed funds have steadily gained market share. This suggests that the increasing popularity of passive strategies pushes managers to distinguish themselves and to demonstrate the benefits of an active strategy. Active management is indeed under higher scrutiny from investors who don't want to pay high fees for funds that are not sufficiently differentiated from their benchmark index.

In the third part, we move into the more contested dimension of active share, namely its ability to predict outperformance as suggested by Cremers and Petajisto. The original argument was refined in Petajisto's 2013 paper in which he distinguished five different types of active investing and claimed to prove that dedicated stock-pickers are an investor's best bet when selecting active equity funds. Cremers and Petajisto's findings related to performance have been challenged by the investment management industry.

Our results indicate that funds with higher active shares have performed better in the European equity space in some time periods, but not all. The most active funds (with active shares above 90%) touted by Petajisto as the most likely to outperform on a risk-adjusted basis have not excelled in Europe, and their returns have been driven much more heavily by style bets than for those funds with lower active share figures. Moreover, as active share rises towards its maximum of 100%, funds' results start to diverge drastically; the best and the worst funds are typically found in the group with extremely high active shares. Concurrently, the level of risk also increases: Higher active share on average leads to higher standard deviations, higher maximum drawdowns, and higher tracking error. Combining returns and risk indicates that funds with higher active share are not necessarily generating better risk-adjusted returns after fees. (In the chapter on performance we use multiple five-year time periods that extend through June-end 2015, which allows us to include one quarter of performance effects from our latest, March-end 2015 portfolios.)

The criticisms of active share as a fund selection tool have been many. A central one has been that it is much too simplistic to truly separate good and bad funds on its own. This is a dilemma, as it is precisely its common-sense dimension that has made active share so popular. Fund companies are now confronted with claims of charging active management fees for quasi-passive management. These arguments are much harder to push aside than claims about too low tracking error, for instance. Whereas tracking error is a statistical concept without a clear real-world explanation, active share is intuitive, and this explains the wide media attention the concept has gathered. Fund company marketing and sales departments have had to react, but so, too, have the fund managers themselves. **M**

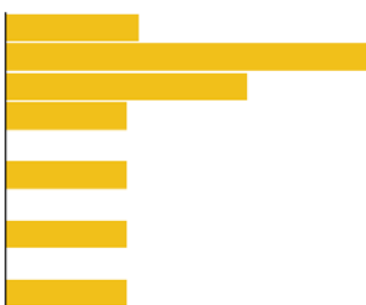## 2. What Is Active Share?

The Concept of Active Share

The active share score is a way to quantify how much of an equity portfolio's holdings differ from its benchmark. It is simply calculated as the sum of absolute differences between the weights of securities in a given portfolio and the weights of securities in the benchmark, divided by 2.

$$Active\ Share = 1/2 \sum_{i}^{N} |\ Weight_{\text{fund, i}} - Weight_{\text{index, i}}\ |$$

Defined differently, one could divide an actively managed equity portfolio into two components: one part equal to (*1 – Active Share)* that is passive and therefore equal to the benchmark, combined with an active component that differs from the benchmark, measured by the level of active share. At the extremes, a portfolio with an active share of 100% would have no common holdings with the index and a portfolio with an active share of 0% would be identical to the benchmark. The higher the score, the more actively the fund is managed.

Exhibit 1 Hypothetical Example of an Active Share Calculation (All Figures in %)

Stock	Allocation % Portfolio	Benchmark	Active Share Contribution %
A	20	15	2.75
B	0	15	7.50
C	20	10	5.00
D	15	10	2.50
E	10	10	—
F	5	10	2.50
G	10	10	—
H	5	10	2.50
I	10	10	—
J	5	0	2.50
			Score: 25.00

The hypothetical portfolio indicates that there can be three sources of active share. The first and purest form of generating active share is by assigning different portfolio weights to benchmark stocks. Secondly, excluding benchmark stocks from a portfolio increases its activeness, while selecting off-benchmark names further adds to the level of active share.

Why Does Active Share Matter?

Historically, the wealth management industry described a portfolio's deviation from the benchmark index in statistical terms derived from financial theory such as R-squared[5] or tracking error[6]. These returns-based metrics were the best tools available to investors for measuring the level of active risk in a portfolio. The difficulty is that in their commonly used formats these tools are also capturing active management in terms of factor bets (deviations in sector- and regional allocation or by market capitalization). However, stock-pickers may not want to let factor bets make their fund deviate from its benchmark. Rather, they may want to apply active management primarily by selecting different stocks from those in the benchmark. By comparing a fund's portfolio holdings with its benchmark's holdings, active share uses portfolio holdings data and adds another dimension to the tools with which investors can quantify the activeness and style of portfolio management.

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5. R-squared, or the coefficient of determination, is calculated through a regression analysis of the fund's returns with the benchmark's returns and indicates the percentage of variation in returns of a fund that can be explained by the benchmarks returns.

6. Tracking error is calculated as the annualized standard deviation of the monthly excess returns of a fund versus its benchmark.

A major novelty of active share was its ability to reveal which funds were closet indexers: funds with such small proportions of active holdings that beating their benchmarks after fees would seem unlikely. Cremers and Petajisto drew the line between "active" and "closet indexing" funds at an active share of 60%. However, their research was about more than dividing funds into those that are more or less active. Cremers and Petajisto also seemed to be after the "Holy Grail" of finance: finding the recipe for selecting managers who can beat their benchmarks or peer groups on a risk-adjusted basis in the long run. They found such funds at the other extreme of the active share spectrum: The best-performing funds were found among those that had the highest active share.

A Hot Topic of Debate

Cremers and Petajisto's conclusion that funds with high active shares tend to outperform their benchmark, even after expenses, has been regularly challenged by the asset-management industry. Vanguard published a study[7] in 2012, in which its researchers concluded that a "higher level of active share did not predict outperformance" and presented a link between active share and dispersion of excess returns as well as fees. A study conducted by Fidelity in 2014 yielded similarly mixed results.[8] Their analysis suggested that the relationship between high active share and excess return "appears to have been primarily driven by smaller-cap portfolio exposures". In 2013, Lazard showed results[9] mostly supporting Cremers and Petajisto's claim but broadening the thinking around active share's importance. Also in 2013, American Century Investments wrote a highly critical paper[10] on the use(lessness) of active share. The authors argue that active share tells investors nothing about portfolio risk and is not indicative of manager skill. They dispute the claim of outperformance by high active share portfolios, limiting the use of the metric to a manager observation tool for process consistency and as a proxy to test benchmark appropriateness. More recently, AQR Capital Management vehemently rejected the results from the original studies with a paper published in 2015[11]. The authors come to the conclusion that no theory or empirical data "justify the expectation that active share might help investors improve their returns."

Most studies point out that active share is not useful in isolation to predict which funds will outperform; we draw similar conclusions from our study of European equity funds in the last section of this paper. M

7. "The search for outperformance: Evaluating active share." May 2012. *Vanguard.*
8. "Active Share: A Misunderstood Measure in Manager Selection." February 2014. *Fidelity.*
9. "Taking a Closer Look at Active Share." March 2013. *Lazard Asset Management*
10. "Debunking Active Share." September 2013. *American Century Investments*
11. "Deactivating Active Share." April 2015. *AQR Capital Management*

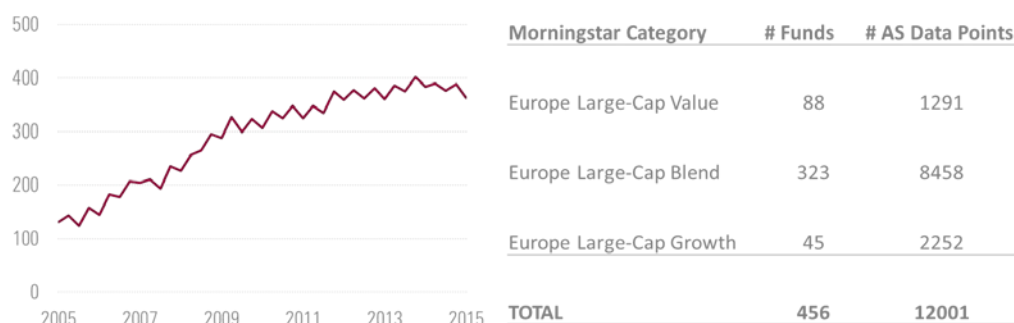### 3. How Active Are European Fund Managers?

Sample Selection

To conduct this study, we used data on funds available for sale in Europe from Morningstar Direct™. Our analysis focuses on long-only nonindex funds within the three European large-cap Morningstar Categories: Europe Large-Cap Value Equity, Europe Large-Cap Blend Equity, and Europe Large-Cap Growth Equity. The Morningstar Category system is particularly relevant to this study because it classifies funds primarily based on their underlying portfolio holdings. Moreover, rather than using a fixed market-cap threshold between large-, mid-, and small-cap stocks, Morningstar's classification system applies a flexible methodology that isn't affected by overall movements in the market. A stock is classified as large, mid-, or small cap based on its position in the cumulative market capitalization of Europe.[12]

Using the three categories mentioned above ensured that our group of funds is consistent in terms of market-cap exposure, and thus reduces the size effect in our analysis of performance and risk. We excluded funds in the Europe Flex-Cap Equity category, as they cannot typically be compared against their large-cap peers or a large-cap index such as the MSCI Europe Index given their ability to invest in equities across the market-cap spectrum and their significant exposure to small- and mid-caps.

Out of the 860 funds in the three categories at the end of March 2015, we retained only those with an inception date before January 2010 to include at least five calendar years of performance history. Of these funds, only those disclosing their portfolio holdings data to Morningstar were included to allow us to calculate the active share scores independently. We removed passively managed strategies as well as fund of funds and funds with short positions from our sample. We retrieved portfolio data as far back as 2005 so our study can span over 10 years and include the global financial crisis of 2008, as well as the eurozone debt crisis of 2011. The active share scores for a fund were calculated on a quarterly basis based on the portfolio data available at the end of each quarter. For quarters when the fund belonged to a different category from the three mentioned above, we removed the data point. For analyzing performance and risk characteristics, we created separate data sets for retail and institutional share classes for each fund, if available. Our final sample comprised 456 different funds and 12,001 active share scores with more data availability in recent years (**Exhibit 2**).

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12. Large-cap stocks are those that together account for the top 70% of the capitalization of Europe's listed stocks, mid-cap stocks represent the next 20%, and small-cap stocks represent the balance.

Exhibit 2　Number of Active Share Score Calculations (Quarterly Basis)

Morningstar Category	# Funds	# AS Data Points
Europe Large-Cap Value	88	1291
Europe Large-Cap Blend	323	8458
Europe Large-Cap Growth	45	2252
TOTAL	456	12001

Source: Morningstar Direct

Benchmark Choice: Morningstar Category Benchmarks

We chose to calculate active share 13, tracking error, excess return, and other metrics against each fund's Morningstar Category benchmark rather than assigning each fund to its prospectus benchmark. This means that we analyzed funds that are classified into the Europe Large-Cap Blend Equity category versus the MSCI Europe Index, funds that are part of the Europe Large-Cap Value Equity category versus the MSCI Europe Value Index, and funds classified into Europe Large-Cap Growth Equity against the MSCI Europe Growth Index.

We are aware that there were two potential alternate treatments: (1) We could have used the index used by most funds (49%) in our sample, the MSCI Europe Index, for all funds; or (2) we could have mapped all funds onto their primary prospectus benchmarks. We chose not to extend the use of the MSCI Europe Index outside the Europe Large-Cap Blend category as that would have led to potentially high style deviations between the index and value- and growth-oriented funds. As for prospectus benchmarks, we acknowledge that these should be specifically tailored to each fund's objectives and investment style. However, a fairly large portion of funds investing in European large caps do not have an official benchmark or use a composite or custom benchmark. Finally, some funds clearly have been assigned an inappropriate benchmark. Given the limitations of using a single benchmark or prospectus benchmarks, we found the three style benchmarks chosen by Morningstar for each category to provide the most solid foundation for our calculations.

Current Level of Active Share

The equal-weighted average active share over the past three years (June 2012 – March 2015) in our sample was 69.6% and the median is 72.4%. 14 These numbers are high compared with the data gathered by Cremers and Petajisto in their original study. The average active share score of funds with the S&P 500 as the benchmark index was around 55%–60% during most of the 2000s. A similar study by Morningstar in Australia[15] showed that large-cap Australian equity funds had an average active share of

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13. Morningstar doesn't include cash, bonds, or preferred equities in its calculations. (The portfolio must contain a net asset allocation of stock and cash positions greater than or equal to 85%.) We rescale the stock positions to 100%. Morningstar also maps holdings at the company/issuer level rather than considering, for example, a GDR and a Moscow-listed share of a company as two different investments.

14. We used the average instead of the median in the rest of the paper despite the negative skewness of the sample. Using the average gives weight to the left tail of the distribution (low active shares), which we think makes sense. At the other end, active shares were capped to 100%.

15 "Active Share: The Activeness of Large-Cap Australian Share Fund Managers." November 2011. Morningstar.

50%, with the highly concentrated nature of that market providing some rationale for such a low level of activeness.

Our sample was composed of funds from three different Morningstar Categories with different investment styles. By matching the funds with either a value- or a growth-oriented portfolio with corresponding MSCI Europe style indexes, we largely removed the style effect that would otherwise boost active share numbers for these funds. (**Exhibit 3**).

Exhibit 3 Active Share by Morningstar Category (Average March 2012 - March 2015, Equally Weighted)
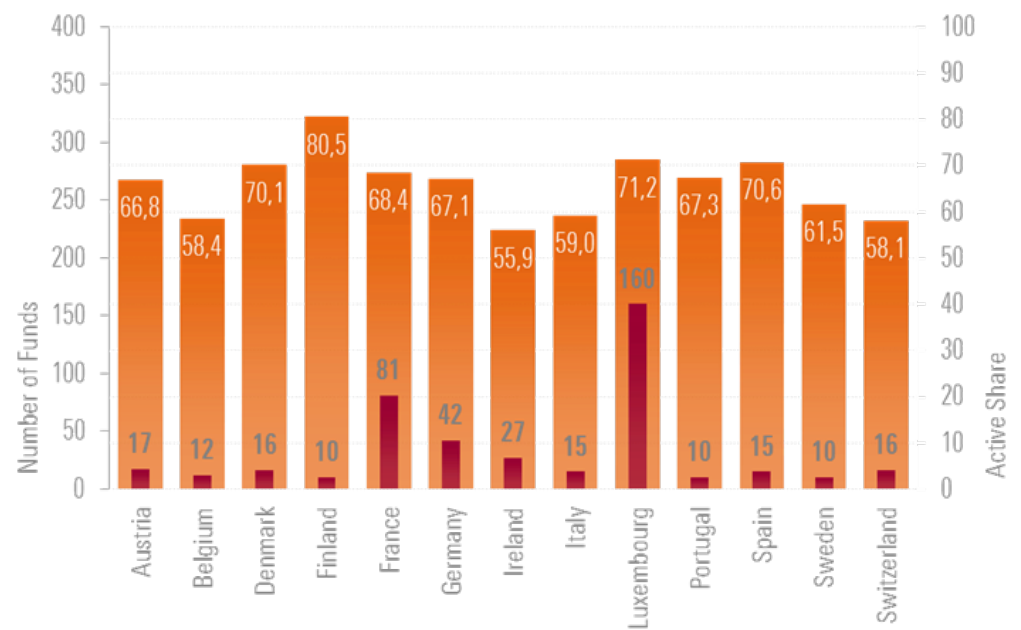

Source: Morningstar Direct

Active Share by Domicile

We also looked at active share score by domicile. Given the structure of the European fund market, a large proportion of funds in this asset class is domiciled in Luxembourg but typically managed from different European countries. There were almost no funds domiciled in the UK in the sample as the European equity strategies managed in the UK are largely registered offshore in Ireland or Luxembourg and sold to continental investors. UK-based investors tend to use Europe ex-UK funds that are not included in our sample.

We show only countries with at least 10 domiciled funds in the chart below (**Exhibit 4**). To prevent small funds from having too large an impact on the results of individual countries' numbers, we show an asset-weighted average. Seven of the 13 countries listed have asset-weighted active shares close to 70% (plus or minus 5 percentage points). However, some countries show clearly lower numbers with three-year average active shares below 60 for the country's funds in the sample. The limited number of funds for these four countries in the sample, particularly for Belgium and Italy, may have played a role in the outcome.

Exhibit 4 Active Share by Domicile (3-Year Asset-Weighted Average Active Share)

Source: Morningstar Direct

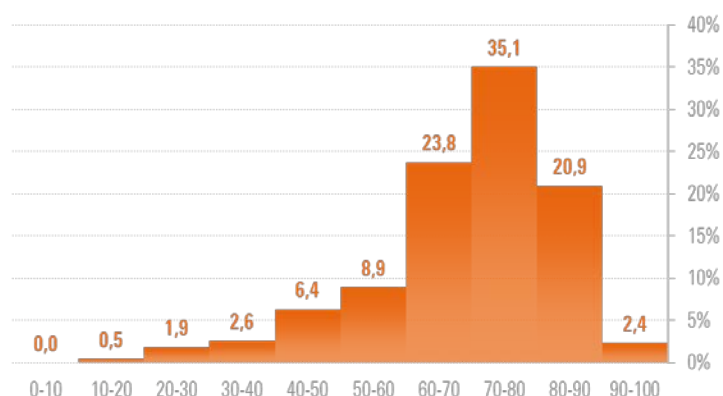## How Widespread Is Closet Indexing?

"Closet indexing" is the common term used to describe funds that claim to be active and that charge the considerably higher fees associated with active management, but that are not sufficiently differentiated from the benchmark to warrant either the claim or the fees. After Cremers & Petajisto (2009), the closet indexing threshold is generally set at an active share of 60%. As Petajisto puts it,[16] it "implies that an active manager should be able to select his investments from what he considers to be the top 40% of all stocks based on their future alphas." We used this threshold as it has become an industry standard, but note that the 60% cutoff is valid only as long as the underlying benchmark index is well-diversified as is the case for the MSCI Europe Index. (In many single-country markets in Europe, a few companies represent a sizable part of the index and thus make it difficult for managers to push for an active share above 60% without completely avoiding the largest holdings). Low active share is not inherently wrong. However, with a smaller proportion of active positions the fund's returns tend to deviate less from those of its index. At this point, fees become crucial, and many European closet indexers charge fees similar to truly active funds, creating too high a hurdle for them to outperform the index.

European equity funds show a wide range of activeness from just below the 20s through the mid-90s. **Exhibit 5** displays the distribution of average active share based on the three-year average (June 2012– March 2015) in our sample. To qualify for inclusion, a fund must have disclosed at least two portfolios in that time frame. Since we excluded explicit index funds, there were hardly any funds with a score below 20%. The majority of funds had active shares between 60% and 80% with the distribution skewing negatively, but 20.2% of the funds in our sample had a three-year average active share below the 60% cutoff and therefore qualify as closet indexers as defined by Cremers and Petajisto. The percentage of assets under management in closet indexers was 17.5% as of March 2015. Comparatively, Petajisto (2013) found that the percentage of assets in closet indexers (active share between 20% and 60%) in

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16. "Active Share and Mutual Fund Performance." September 2013. Antti Petajisto.

2009 was 31% for US all-equity mutual funds. That result may have been affected by the timing of the calculation, as it was performed right after the global financial crisis of 2008, and closet indexing rose materially during this period. The level of closet-indexing pre-crisis as calculated by Cremers and Petajisto was 19.4% in 2006, closer to our findings. Similarly, a more recent study[17] by Cremers and his colleagues concluded that about 20% of worldwide mutual fund assets are managed by closet indexers.

Exhibit 5 Distribution of Funds by Active Share (3-Year Average Active Share, All Figures in %)
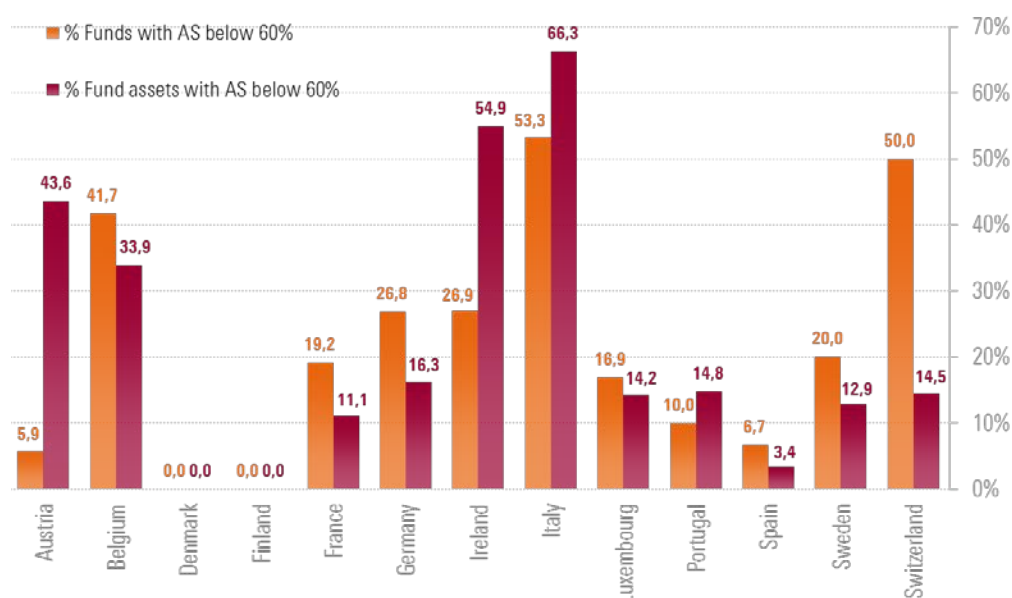

Source: Morningstar Direct.

Closet Indexing by Country of Domicile

Some countries have a significantly higher percentage of fund assets managed close to the benchmark than others (**Exhibit 6**). For instance, in our sample, 66% of fund assets in Italy had an average active share below 60% over the past three years. In Switzerland, half of the actively managed funds appeared to be benchmark-huggers, but the proportion when measured in terms of asset size was less significant. Factors such as regulation and market structure can explain these discrepancies between countries, as Cremers et al. discussed in their 2015 paper. They found a negative correlation between the increase of explicit indexing in a given country and the level of closet indexing. They further argued that the shift in pension regime from a state-managed (or defined-benefit) to a defined-contribution system increases the availability of low-cost funds and index trackers and therefore plays a role in the overall level of active share. One of their key conclusions was that greater competition from passive vehicles—either index funds or exchange-traded-funds—may be forcing actively managed funds to be more active and to lower their fees.

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17 "Indexing and Active Fund Management: International Evidence". January 2015. Martjin Cremers, Miguel Ferreira, Pedro Matos and Laura Starks.

Exhibit 6 Closet Indexing by Country of Domicile (3-Year Average, All Figures in %)

Source: Morningstar Direct.

A Closer Look at the Extremes

Until now we have discussed trends and characteristics of active share for our entire data set, but zooming in on individual funds provides more insight into the magnitude of active management on the fund level versus Morningstar Category benchmarks. Although the majority of the funds in our data set had three-year average active share levels that fall tightly between 60% and 80%, the level of active share for individual funds ranged from 19.8% to 95.8% over the three-year period ended March 2015. The least active funds on this measure were Candriam Business Equities Europe (19.8%), Eurizon EasyFund Equity Europe LTE (19.9%), and Mi-Fonds (CH) EuropeStock (22.1%). These funds fell clearly short of the 60% active share hurdle and can be considered closet-indexers given their close resemblance to the relevant Morningstar Category benchmarks. It is also worth noting that their low active shares were consistent over time, as measured by the standard deviation of their active shares. Moreover, the dispersion in the level of active share over time, measured by the difference between the maximum and minimum active share in the period, was below 10 percentage points, as illustrated in **Exhibit 7**.

Exhibit 7 Least Active Funds in the Sample

| Fund Name | Morningstar Category | Morningstar Category Benchmark | 3-Year Active Share | | | 5 Yr Excess Return vs Category BM % |
			Average	Std Dev	Dispersion	
Candriam Business Equities Europe	Europe Large-Cap Value Equity	MSCI Europe Value	19,8	1,9	6,3	-2,0
Eurizon EasyFund Equity Europe LTE	Europe Large-Cap Blend Equity	MSCI Europe	19,9	2,8	9,8	-2,2
Mi-Fonds (CH) EuropeStock	Europe Large-Cap Blend Equity	MSCI Europe	22,1	1,4	3,5	-1,3

Source: Morningstar Direct.

As these funds are largely copying the positions of their category benchmarks, it would be essential to charge investors low fees, which would leave the door open for outperformance. In relative terms, Mi-Fonds (CH) EuropeStock came out best of the three with its latest Key Investor Information Document revealing an ongoing charge of 1.06%, ranking it at the 23rd percentile among retail classes within its Morningstar Category. Candriam Business Equities Europe has a 1.20% ongoing charge versus its category median of 1.77% for retail classes, leading to a Morningstar Fee Level Rank of 27 in the fund's Morningstar Category. In contrast, Eurizon EasyFund Equity Europe LTE charges 2.08%, ranking the fund at the 72nd percentile within its category, making it a clearly inferior choice. However, even the fees of Mi-Fonds and Candriam are significantly above those charged by ETFs designed to track the MSCI Europe Index, putting a large question mark on their ability to generate added value for investors. The negative five-year annualized excess returns of the funds support this conclusion.

On the other side of the spectrum we found more concentrated, high-conviction, or benchmark-agnostic actively managed funds that post high levels of active share versus their Morningstar Category benchmarks. Most active were Luxicav Azionario Europa (95.8%), Amundi Valeurs Durables (94.3%), and Focus Generation (94.0%), displayed in **Exhibit 8**.

Exhibit 8 Most Active Funds in the Sample

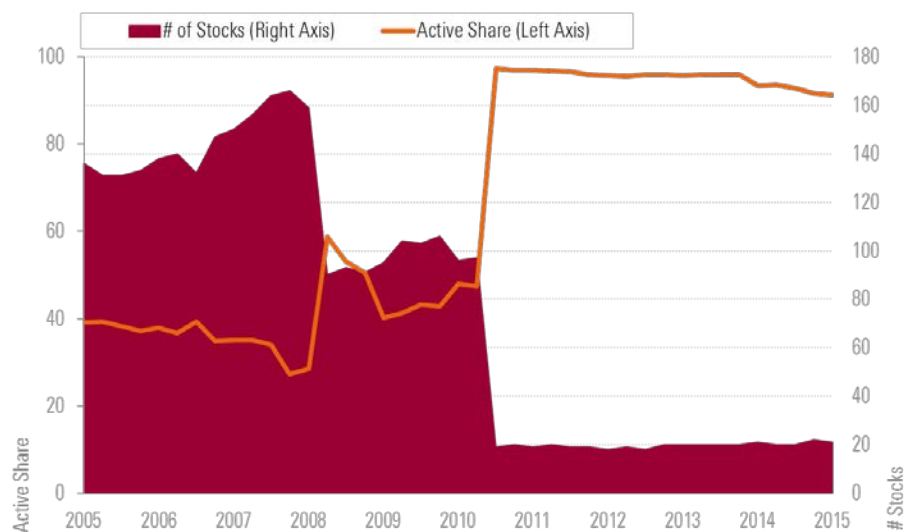| Fund Name	Morningstar Category	Morningstar Category Benchmark	3-Year Active Share			5 Yr Excess Return vs Category BM %
			Average	Std Dev	Dispersion	
Luxicav Azionario Europa	Europe Large-Cap Value Equity	MSCI Europe Value	95,8	2,4	4,4	-6,5
Amundi Valeurs Durables	Europe Large-Cap Blend Equity	MSCI Europe	94,3	0,5	1,5	0,2
Focus Generation	Europe Large-Cap Blend Equity	MSCI Europe	94,0	1,6	4,2	-3,1

Source: Morningstar Direct.

Clearly, the portfolios of these funds differ significantly from their category benchmark's portfolio and test the limits of their respective Morningstar Categories. Although this enables the funds to generate a distinct return from the benchmark, investors should take into account that this deviation can be either positive or negative. As the five-year track record of the three funds mentioned indicates, a high active share is not a sufficient condition for outperformance, being notably silent on the subject of skill.

Furthermore, a portfolio that significantly strays from its benchmark can suffer from a style bias and hence expose investors to unintended or undesired bets. The portfolio construction of such a fund can be very different from what an investor would expect when taking the category benchmark as a starting point. Amundi Valeurs Durables for example, has a thematic focus on sustainable investing and environmental, social and governance factors as it seeks exposure to "green" technologies through companies involved in renewable energy, energy efficiency, water management, and waste management. This causes its portfolio to mostly exclude certain sectors like financials and healthcare. Furthermore, the high level of active share seems to be the result of a stronger bias to mid- and small caps, something we have found in general for funds with a higher level of active share (see Chapter 5 'Active Share Put to the Test'). Investors should be aware of the existence of such explicit portfolio biases when selecting funds with a high active share.

The funds in **Exhibit 8** not only had high current active share scores, but also displayed strong consistency in their high level of active share over the three year period assessed. Both the standard deviation and the dispersion in active share were at low levels. This should not be taken for granted, however: Our research indicates that the level of active share can vary dramatically for an individual fund over the short term but also over the entire 10-year period we investigated. While the average active share dispersion (difference between maximum and minimum values) over a five-year horizon ended March 2015 amounts to 14.6 percentage points, all 11% of funds in the sample had active share dispersion greater than 25 percentage points. So while we would agree with Cremers & Petajisto (2009) that generally speaking this year's active share is a good predictor of next year's active share, for some funds active share is highly volatile. This is yet another reason for investors to analyze a fund more closely than relying solely on active share as a proof of its activeness or quality.

Active share can vary over time for a number of reasons, but manager and process changes are often the cause of large deviations. An example is Handelsinvest Europa (a Danish-domiciled fund of the Handelsbanken group) where the fund provider was not satisfied with the performance of its European equity vehicle and decided to drastically change the strategy into a more concentrated, high-conviction actively managed fund as of July 2010. As **Exhibit 9** shows, the fund had 136 stock holdings in March 2005, resulting in an active share of 39.1% versus the MSCI Europe Index. Although portfolio concentration had risen already before 2010, it changed dramatically after the process was altered, lifting active share to over 90%. This extreme example is presented as a reminder that active share can vary dramatically over time.

Exhibit 9 Active Share Volatility: Case of Handelsinvest Europa
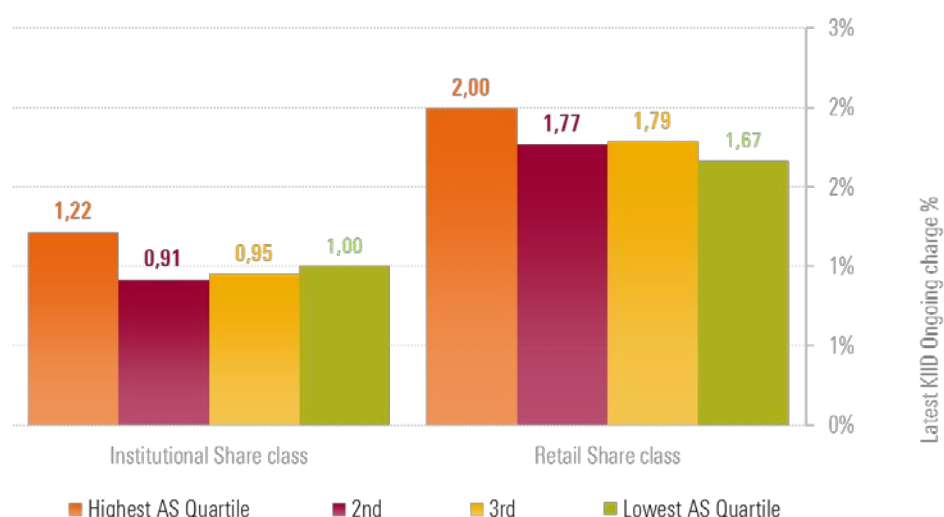

Source: Morningstar Direct.

Are Investors Paying Active Fees for Passive Management?
As discussed in several studies by Morningstar and others, fees are an essential component when analyzing a fund's chances of outperforming its benchmark. What are European large-cap funds' fees telling us of European fund investors' preferences for active share?

On average, we found that European investors pay more for funds that have a higher active share. In **Exhibit 10**, we split the funds into active share quartiles and look at the latest ongoing charge from their Key Investor Information Documents.[18] For institutional share classes the fee difference between funds in the highest and lowest active share quartile was 22 basis points. This suggests that institutional investors expect better results from more active funds; otherwise they would not "pay up" for more active management. Retail share classes showed a similar picture, but at an even more pronounced level: The difference between average fees in the most active and least active quartile was 33 basis points. It must be noted, however, that distribution around the mean was wide across all quartiles, and thus it is possible to find both cheap funds and very expensive ones with similar levels of active management. As an illustration, in the most active quartile for retail share classes, the cheapest fund had an ongoing charge of 61 basis points while the most expensive clocks at 363 basis points. In keeping with the Morningstar study[19] of Australian funds, we found a very weak correlation between fees and a fund's degree of activeness. The implication for investors is that they should be very careful in examining fees.

Exhibit 10 Average Fees and Active Share Level (All Figures in %; active share based on 3-year average
April 2012–March 2015)

Source: Morningstar Direct. (We included a specific share class only when it had an ongoing charge in our database)

In **Exhibit 11**, we plot the average active share and retail funds' expense ratios. For each level of active share, there is a wide dispersion in fee level.

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18. We included only share classes for which we had an ongoing charges number in our data. 156 institutional and 375 retail share classes were accepted for our fee analysis.
19. "Active Share: The Activeness of Large-Cap Australian Share Fund Managers". November 2011. Morningstar.

**Exhibit 11** Retail Fees and Active Share (AS based on 3-year average April 2012–March 2015)
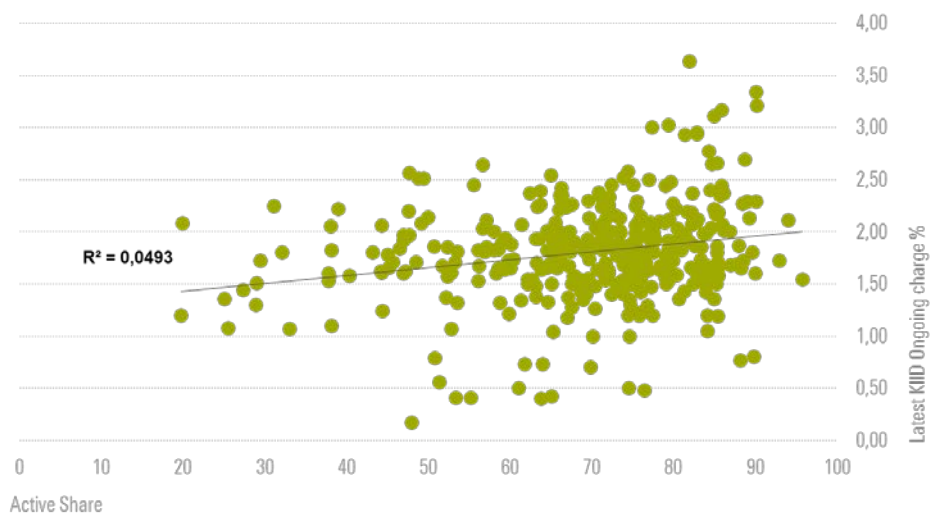
Source: Morningstar Direct.

Another angle to look at the relationship between fees and active share is to calculate how much investors are paying for the active part of their portfolio. As explained earlier, an active fund consists of two components: the part that is equally invested to the benchmark (1-active share) and the rest (active share). It is fair to state that the fee charged for the passive part of the portfolio should equal the fee paid for an ETF that tracks the MSCI Europe Index.[20]

To calculate what investors are paying for the active part of their portfolio, we first multiply the weight of the passive component (1-active share) by the ETF fee to arrive at the proportional fee charged for the passive part of the portfolio. Subtracting this from the ongoing charge of an actively managed fund, we arrive at the fee charged for the active component of the portfolio. Dividing this fee by the active share, we can calculate the ongoing charge per unit of active share. **Exhibit 12** shows the ongoing charge per unit of active share versus the level of active share.

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20. We define the ETF fee by taking the average ongoing charge of the three largest ETFs tracking the MSCI Europe Index, which are iShares MSCI Europe Dist, db x-trackers MSCI Europe (DR) 1C, and Lyxor ETF MSCI Europe D-EUR A/I. The average ongoing charge amounts to 32 basis points.

Exhibit 12 Retail Fees and Active Share (AS based on 3-year average April 2012–March 2015)
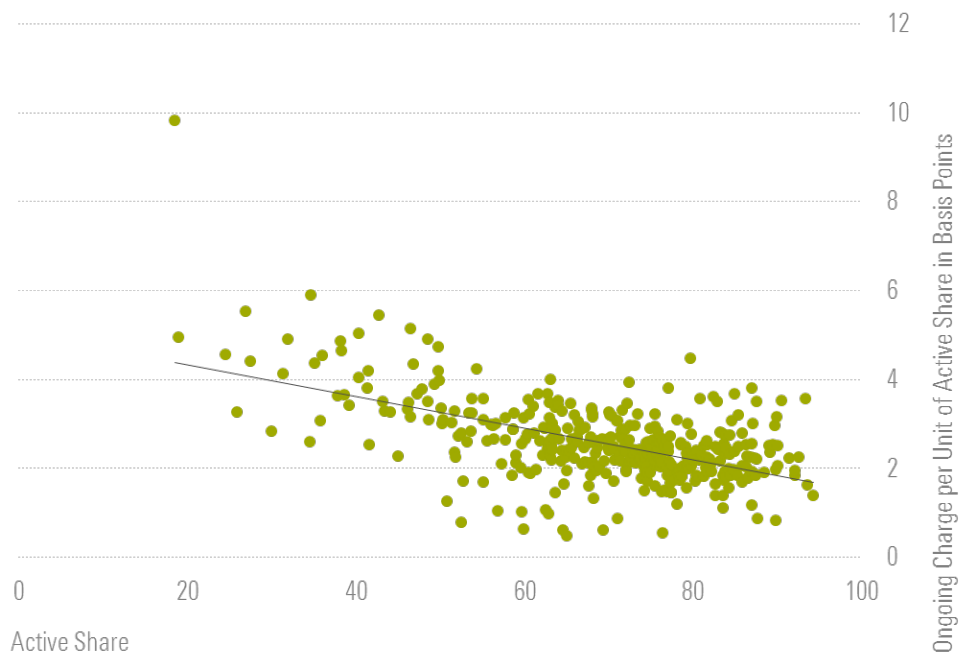
Source: Morningstar Direct.

The average ongoing charge per unit of active share amounts to 2.6 basis points. Theoretically, the fee charged for a unit of active share should be independent of the level of active share. However, the scatter plot demonstrates a negative relationship between the level of active share and the ongoing charge per unit of active share. This indicates that, although funds with a higher active share on average charge higher fees, investors are actually more likely to overpay for funds with a lower active share on a fee per unit of active share basis.

Does Size Matter?

Petajisto found in his 2013 paper that the most active funds have much smaller asset bases than the norm, and that is amplified when compared with the closet indexers of his U.S. sample. His two most active groups of funds ("Stock Pickers" and "Concentrated") had an asset-weighted average fund size of USD 430 and USD 463 million while "Closet Indexers" had USD 2.0 billion of assets on average.

In Europe's more fragmented fund market, size differences between fund types are not as large. We find differences in fund sizes when analyzed in the context of active share, with the most active funds typically being smaller than the average. However, the least active funds are not bigger than the norm. Instead, their median assets fall close to the sample median. Sorting our sample by active share and dividing it into quartiles based on the past three years' portfolios, we found that the median fund in the highest active share quartile had EUR 77.1 million of assets under management (at 31 December 2014) against a median of EUR 107.5 million for the whole sample as shown in **Exhibit 13**. (We looked at medians as the variation in fund size was great, as multi-billion-euro funds shared the list with funds that have only a few million euros under management.) Fund sizes in the two least active quartiles were clearly above the sample median. Looking at funds sorted by size and split into asset-size quartiles, the

smallest quartile of funds by assets had a median active share of 73.6% versus 71.4% for the quartile with the largest funds. These results indicate that fund size has limited value as a screening tool when looking for funds that apply highly active management.

Exhibit 13 Fund Size by Active Share

| Active Share, 3-Year Average	Median Fund Size, end-2014, EUR Million
Q1 (highest active share)	77,1
Q2	131,5
Q3	138,0
Q4 (lowest)	101,9
Sample median AUM	107,5

Source: Morningstar Direct.

In terms of *fund company* assets under management, active shares seem to be slightly higher for funds from fund providers that had the least AUM, as measured by AUM at 2014 year-end from Morningstar's European Asset Flows data. This was especially true for the smallest asset managers in our sample (below EUR 200 million AUM) among which we didn't find any funds with active shares below 60%. Instead, five funds from these companies had an active share above 90%, which is unusually high. The number of such funds was very limited, but the findings make sense as fund companies with relatively small AUM are typically independent and thus need to be differentiated to market their products. **M**

4. Long-Term Trends In Active Share

Have European Equity Fund Managers Become More or Less Active Over Time?

Exhibit 14 shows the quartile distribution and average active share across our sample of European large-cap funds over the past 10 years (2005–15). In the period before the financial crisis, average active share hovered slightly above 70%, but it dipped considerably in the crisis-ridden period of 2008–09. This result is consistent with Cremers and Petajisto's study, which noticed a significant drop in average active share in US mutual funds after the 2008 financial crisis. Since 2009, European fund managers seem to have increased their active bets incrementally to pre-crisis levels. The core of the distribution (second and third quartile) has narrowed in the past 10 years.
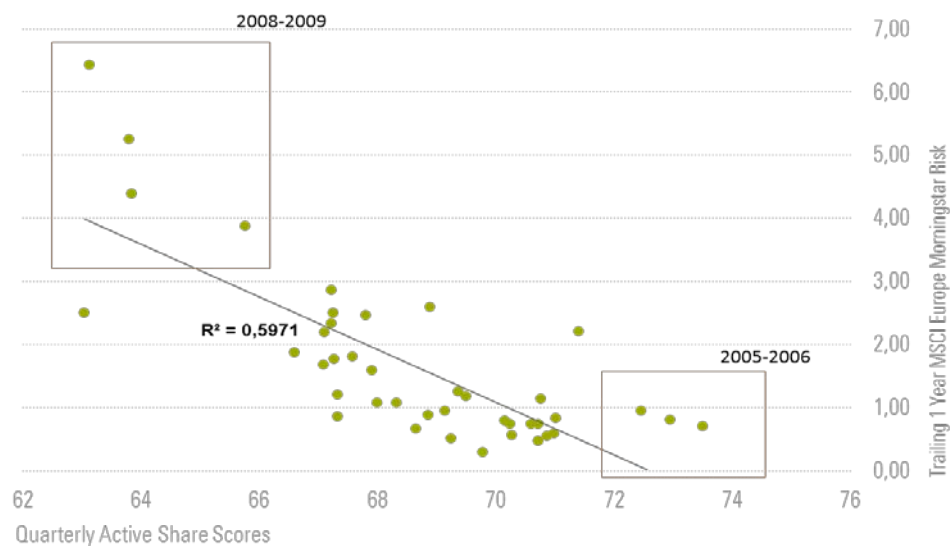
Exhibit 14 European Large-Cap Fund Managers' Active Share Distribution 2005–15
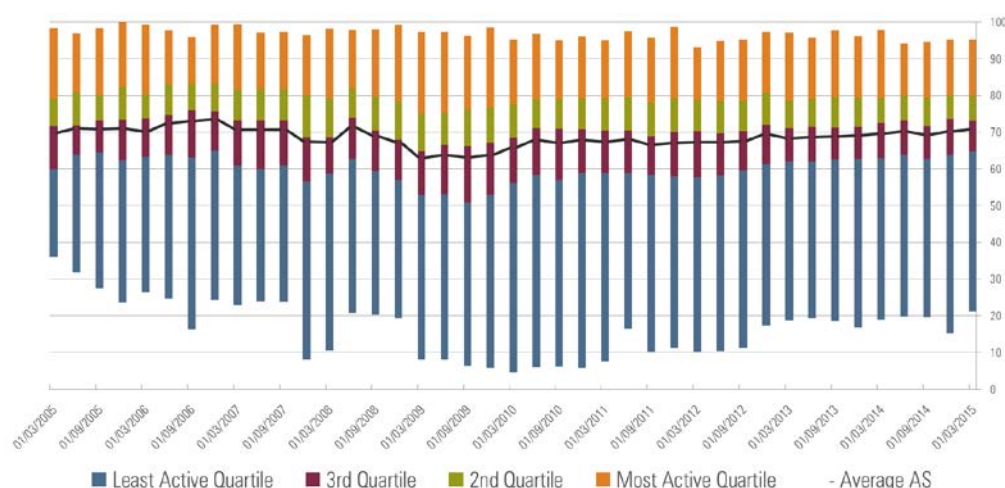
Source: Morningstar Direct.

It appears that in the short-term active share is affected by market volatility. In **Exhibit 15**, we plot our 41 observations of quarterly average active shares (from March 2005 to March 2015) against one-year trailing Morningstar Risk measures for the MSCI Europe Index. They serve as a proxy for the level of risk in the European equity market. (For example, we matched the average active share at the end of March 2015 with the Morningstar Risk calculation for the MSCI Europe Index from 1 April 2014 to 31 March 2015.) We used Morningstar Risk[21] as our risk measure instead of standard deviation as Morningstar's measure gives more weight to downside variation; standard deviation does not recognize that investors are generally risk-averse and dislike downside variation more than they appreciate upside variation. We found a discernible negative relationship between risk and active share.

21.Morningstar Risk is derived from Morningstar Risk-Adjusted Return. It is an annualized measure of a fund's downside volatility.

Exhibit 15 Correlation Between Active Share and Morningstar Risk

Source: Morningstar Direct.
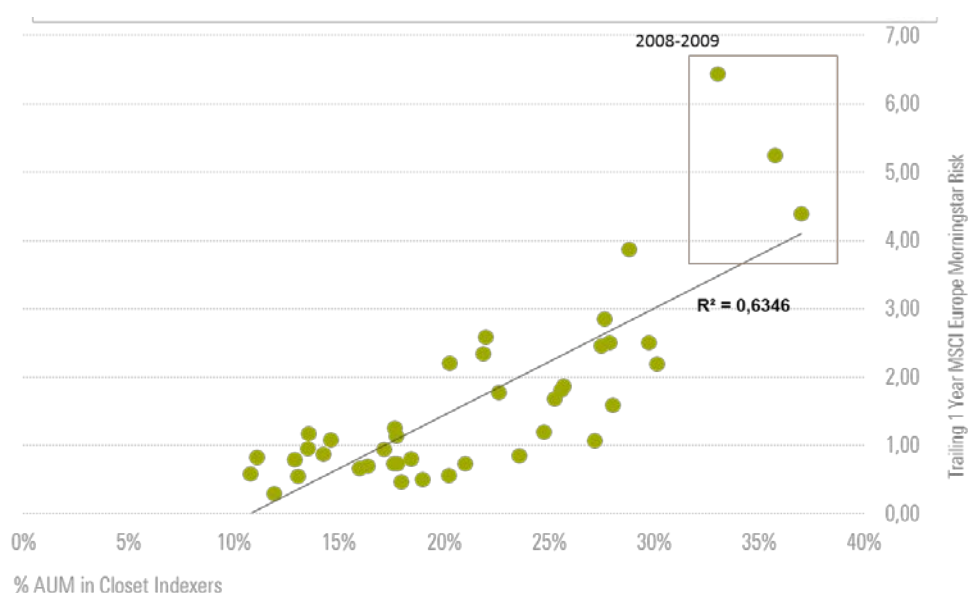
Evolution of Closet Indexing

In a way, the evolution of closet indexing seems to be a mirror-image of changes in average active shares. Although the proportion of fund assets staying close to the benchmark index (active share below 60%) varied significantly, the peak in closet indexing clearly coincided with the aftermath of the global financial crisis (**Exhibit 16**). In fact, we found an even stronger correlation between closet indexing and market risk (**Exhibit 17**) than with the average active share (**Exhibit 15**). These results are similar to Petajisto's findings in 2013. His long-term study of US mutual funds shows that "closet indexing peaked in 1999–2002, declined until 2006, and then increased again from late 2007 to 2009 toward its prior peak." He also found a positive correlation between closet indexing and market volatility.

Exhibit 16 Evolution of Closet Indexing: % of Funds and Fund Assets 2005–15

Source: Morningstar Direct

When uncertainty is greater, fund managers may be tempted to reduce the size of their active bets. In our sample, we found that fund managers, particularly the most active ones, reduced their exposure to smaller companies and stuck to more liquid, large, established companies in 2008 and 2009. Following the reasoning in Petajisto (2013), it might be the case that some want to voluntarily manage their *career* risks by staying closer to the benchmark. Underperforming the benchmark in a down market is indeed more painful than losing to the competition in a bull market: If a fund manager underperforms in a down market because he keeps a highly distinctive portfolio, he runs the risk of being fired. If he outperforms, he will enjoy some temporary success. The risk/-reward proposition is asymmetrical. The fund manager can also be heavily influenced by external and internal stakeholders (clients, supervisors, and risk managers) to reduce the "activeness" of the portfolio in times of uncertainty.

Exhibit 17 Correlation Between Closet Indexing and Morningstar Risk

Source: Morningstar Direct.

In the long run, the story is different and many factors may influence the evolution of active share such as the degree of market competition, particularly from low-cost passive strategies, investors' awareness, and the regulatory environment (Cremers et al. 2015). In Europe, we've witnessed an increasing scrutiny from regulators in many countries that could lead to a structural change down the road with less closet indexing in the market.

Assets Flowing to More Active Funds

It seems, however, that investors are not waiting for regulators to act. Morningstar's data[22] on asset flows for European large-cap funds in our sample suggests that funds with a higher active share received considerably more flows in recent years than the least active funds (**Exhibit 18**). As recounted earlier in this study, the active share concept was invented in 2006 but the fund industry took note only after the study's publication in an academic journal in 2009. Thus it stands to reason that very few fund selectors in Europe were basing their investment decisions on the metric before 2009 or 2010.

To see whether there is a difference in proportional flows to higher-active share funds in our sample, we sorted funds by active share for every calendar year from 2006 to 2013 and split the funds into two halves at the end of each year *t*. We then calculated asset flows in the following year *(t+1)* for funds in the upper and lower half. We used halves instead of quartiles or deciles to reduce the skew a single large fund can have in the results. (Size and flows vary by several magnitudes with net flows in a year ranging from billions of euros for Europe's largest funds to only a few thousand euros for the smallest ones.)

The results showed funds with above-average active shares coming clearly on top in both periods in the sample. In the first period (2007–10) the funds with above-average active shares saw much higher net flows both in 2008 and 2010 whereas in the two other years the differences were small. It is especially intriguing that investors were willing to invest more of their assets with the highly active funds in the midst of the financial crisis (2008) – perhaps expecting their less constrained managers to better navigate the turbulent market. However, as we have seen earlier in this study, in 2008 equity managers lowered their active shares to be less exposed to their off-benchmark bets. In 2011, when the euro crisis led to large outflows, net flows were evenly distributed across the active share spectrum. In the three years since 2011, investors in the funds included in our sample largely favored more active funds. Whereas the half of the funds with above-average active shares in the sample cumulatively received EUR 11.8 billion of inflows, the less active half experienced cumulative outflows totaling EUR 1.5 billion. M

22 Morningstar's asset flows data is estimated based on monthly returns and changes in a fund's net asset value or, in absence of the latter, surveyed fund size. Flows are the part of change in share class or fund size growth that is not explained by returns. The data has been systematically collected since 2007, and we'll thus use that year as the starting year here.

Exhibit 18 Cumulative Net Flows Into Funds in 2007–10 and 2011–14 by Active Share Within the Sample
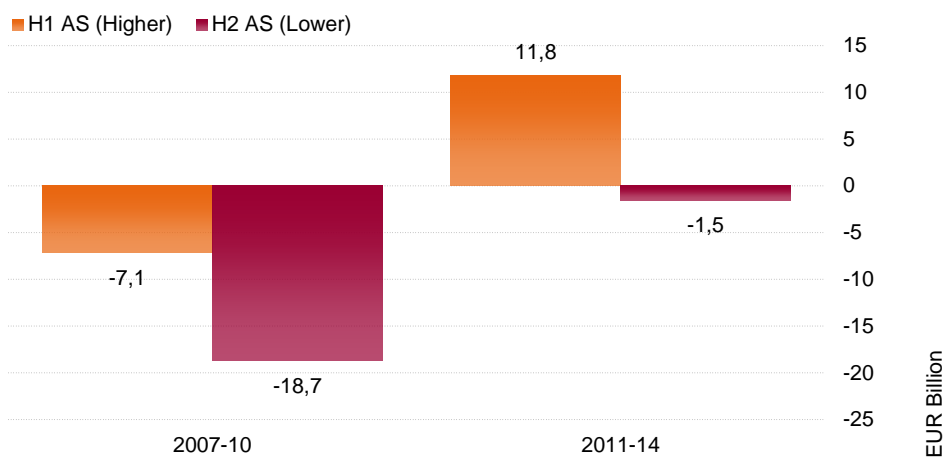
Source: Morningstar Direct.(AS H1 is comprised of the 50% most active funds, AS H2 of the funds in the lower half.)

5. Active Share Put To The Test

Has High Active Share Led to Better Performance in European Large Caps?

The ability of active share to predict which funds can outperform their benchmarks is arguably one of the most heated debates in finance today. Thus far the inventors of the active share concept, Martijn Cremers and Antti Petajisto, have been most outspoken about the measure's predictive power, but they are not alone[23]. Research from the fund industry has sounded a more skeptical note on active share's predictiveness, as discussed in Chapter 2.

The major difference between our paper and most studies on the topic is the fund universe we chose and the way we controlled for investment styles. The majority of studies on active share focused on U.S. mutual funds that use all types of long-only portfolio management styles, whereas our research provides evidence on European large-cap funds. Indexes are typically better matches for large-cap than for small-cap, funds given that the definition of "small" can vary widely.

We started by comparing excess returns of funds with different levels of active share against their style benchmarks in five five-year periods. To shed light on the mixed results achieved in the different time periods, we analyzed returns in two five-year periods through a four-factor model that includes the size, value, and momentum factors, allowing us to control for several style biases at once. Finally, to understand the relationship between active share and different risk measures, we drilled down into results from the most recent five-year period (July 2010–June 2015).

In all of these analyses we used net returns of share classes designed primarily for retail investors as that sample was considerably larger than for institutional share classes. Although the use of net returns adds dispersion to the performance numbers, these differences are also experienced by investors. We acknowledge that net returns include the effect of fees, which we found to be among the strongest predictors of net returns. However, fees were only one of many factors–including active share–that have explanatory power on the investment results achieved by funds in our sample.

Analysis of Excess Returns

We analyzed first how a fund's average active share in calendar year t has predicted its performance in an ensuing five-year period. We started our performance test periods with a lag of two quarters to ensure that investors had access to year-end portfolio data in the time of making their investment decision. Our active share quotations started from 2005, and we calculated excess returns for the rolling five-year periods starting from 1 July 2006. We calculated excess returns against each fund's style benchmark as dictated by its current category.[24]

Sorting the data by active share in year t and splitting the sample into quartiles, we discover that in four out of five five-year periods funds in the highest active share quartile performed better than funds in any other quartile, while the least active quartile performed the worst in every period (**Exhibit 19**). The results are especially strong in the early periods. In the period 1 July 2006 until 30 June 2010 only four
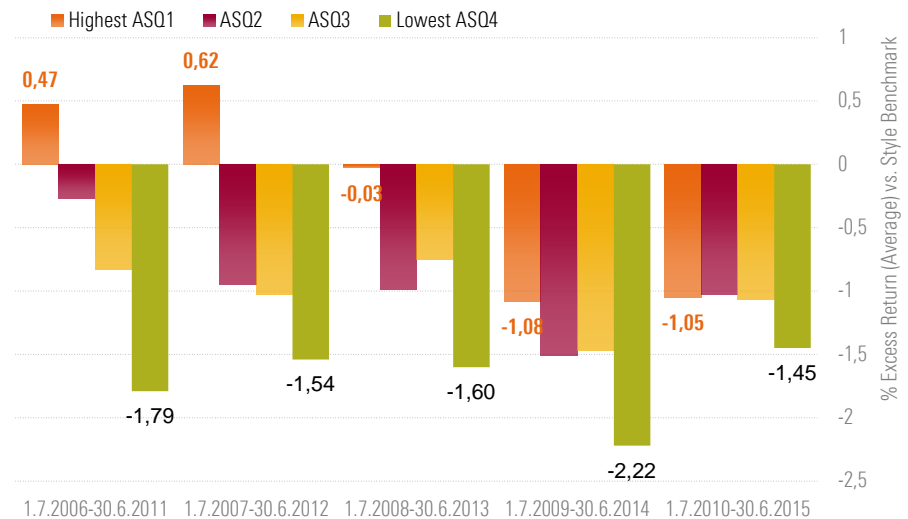
23. See for example: "Deconstructing Active Share." Jon A. Fulkerson and Timothy B. Riley. Working paper (28 September 2015 version), SSRN-id2545551.

24. MSCI Europe Value NR Index for funds in the Europe Large-Cap Value category, MSCI Europe NR Index for funds in the Europe Large-Cap Blend category, and MSCI Europe Growth NR Index for funds in our Europe Large-Cap Growth category.

of the 47 funds (8.5% of funds) in the lowest active share quartile performed better than the *median* fund in the highest active share quartile.

Exhibit 19 Excess Returns by Active Share Quartile, 5-Year Calendar Year Periods

Source: Morningstar Direct.

It is worth noting, however, that the differences between the active share quartiles were not stable, but seem dependent on the time period used. A comfortable 226 basis-point difference in returns between the most and least active quartiles dwindled to only 40 basis points in the period 1 June 2010 until 30 June 2015. This would seem to indicate that the usefulness of active share as a predictor of excess returns is dependent on market conditions. We will explore this question further in this chapter.

Among the most active funds, we found that the small group funds with above 90% active shares (*n* between 10 and 20 in the analyzed time periods) underperformed the average fund in the highest active share quartile in every time period tested. Taking into account that the dispersion of excess returns between the funds with above 90% active share was much greater, we therefore concluded that the risks of reaching out for an extremely high active share have not been rewarded in these categories.

Digging Deeper Into The Effects of Style
In the previous section we controlled for the effects of investment style by calculating excess returns in relation to the MSCI style index assigned to each fund's Morningstar Category. This may still leave some style biases unaccounted for, as each fund was assigned the style index of its current category. We therefore calculated so-called four-factor alphas (outperformance after accounting for market returns and the effects of the momentum, small-cap, and value effects) for each fund in two five-year periods: 2006–10 and 2010–14, using the same methodology of assigning funds into active share quartiles as above[25].

25 The return data for the style indexes has been downloaded from Prof. Kenneth French's website.
   mba.tuck.dartmouth.edu/pages/faculty/ken_french/data_library.html

Exhibit 20 Average Monthly Factor Loadings and Alphas of Retail Share Classes, 2006–10

Category	Mom	Value	Small	Beta	Alpha	Active share	# of funds	Return p.a.
Blend	0,01	-0,11	0,08	1,03	-0,20	63,01	133	-0,41
Growth	0,07	-0,19	0,15	0,97	0,01	74,65	21	2,95
Value	-0,01	0,01	0,01	1,00	-0,32	66,06	30	-2,15
Active share Q	Mom	Value	Small	Beta	Alpha	Active share	# of funds	Return p.a.
ASQ1 High	0,05	-0,06	0,16	0,98	-0,10	88,13	45	1,21
ASQ2	0,01	-0,12	0,11	1,05	-0,16	76,46	45	-0,03
ASQ3	0,02	-0,11	0,03	1,02	-0,23	69,10	46	-0,74
ASQ4 Low	-0,03	-0,13	0,01	1,01	-0,26	50,74	46	-1,55
AS >90	0,10	-0,05	0,28	0,97	-0,14	93,24	16	1,30
AS <60	-0,02	-0,11	-0,01	1,01	-0,24	48,25	38	-1,31

Source: Morningstar Research. Monthly numbers for net returns.

The overall picture as shown in **Exhibit 20** is similar to the one arrived at by analyzing excess returns: In the period 2006–10, funds in the highest active share quartile show considerably higher alphas than those in the lowest active share quartile even as four-factor alphas were negative for both groups (monthly alpha of negative 0.10 for the most active funds versus negative 0.26 for the least active, on average). Funds in the highest active share quartile showed considerably higher loadings on the small-cap factor, and also have some exposure to momentum. These effects were even more pronounced amongst the small group of funds (16) that had an average active share above 90% in 2005 (the year t of this test). Their results were to a large extent a result of style effects.
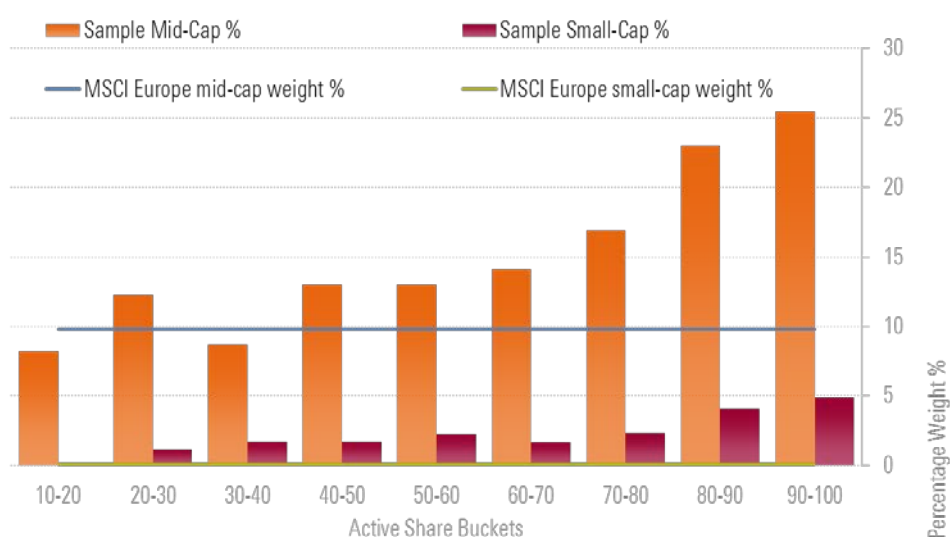
As **Exhibit 21** indicates, in the second five-year period analyzed (2010-14), style had an even stronger effect as opposed to pure stock-picking skill, which would show in the alpha column. After accounting for market beta and momentum, small-cap, and value style effects, funds in the highest active share quartile have had a lower average alpha than funds in the lowest active share quartile despite higher absolute returns. Funds with active shares above 90% (10 funds) performed miserably in terms of four-factor alpha. Again, the higher a fund's active share, the more it leaned on the small-cap effect, and in this latter period also on the growth style (shown as negative value loading) as value stocks have underperformed growth stocks dramatically. To conclude, as active shares grow higher, funds' exposures to style effects tend to rise, which makes it difficult to separate active share from other explanatory factors such as style loadings. In our sample, funds with extremely high active shares that rely genuinely on stock-picking skill are rare finds. The more funds lean on style effects, the more they are dependent on those styles to do well. Conditions were favorable to a greater degree in 2006–10 than in 2010–14. Naturally, predicting this is naturally very difficult.

Exhibit 21 Average Monthly Factor Loadings and Alphas of Retail Share Classes, 2010–14

Category	Mom	Value	Small	Beta	Alpha	Active share	# of funds	Return p.a.
Blend	0,02	-0,11	-0,06	1,02	-0,27	63,24	245	7,43
Growth	0,06	-0,41	0,09	1,03	-0,19	72,11	33	10,65
Value	-0,03	0,09	-0.07	1,02	-0,26	62,79	69	5,83
Active share Q	Mom	Value	Small	Beta	Alpha	Active share	# of funds	Return p.a.
ASQ1 High	0,03	-0,19	0,06	1,02	-0,25	83,40	87	8,33
ASQ2	0,02	-0,11	-0,03	1,01	-0,26	71,32	87	7,49
ASQ3	0,01	-0,08	-0,07	1,03	-0,27	60,21	87	7,24
ASQ4 Low	0,00	-0,04	-0,14	1,02	-0,22	40,84	87	6,64
AS >90	0,07	-0,30	0,20	1,03	-0,44	92,61	10	7,23
AS <60	0,00	-0,05	-0,13	1,02	-0,21	45,59	124	6,92

Source: Morningstar Research. Monthly numbers for net returns.

As discussed above, our sample has the strength that all funds have a large-cap bias as we limited ourselves to funds in Morningstar's three Europe large-cap categories. For these funds, it would theoretically be possible to put together a high active share portfolio without relying on mid- or small caps as the range of large-cap stocks in the universe is large. However, looking inside the portfolios of the funds in our sample, the share of mid-caps rose strongly as active share grew, which confirms the results achieved by the returns-based analysis above. As the Morningstar Category system requires funds to have a large-cap bias, small caps tend to take up only a minority of assets. Still, relatively speaking, funds with high active shares used small caps to a much larger extent than funds in the lower active share buckets as shown in **Exhibit 22**.

Exhibit 22 Weight of Mid- and Small-Cap Stocks in Funds by Active Share Deciles

Source: Morningstar Direct.

The Risk Characteristics of Active Share

As the analysis of returns and portfolios across different levels of active share reveals, the characteristics of funds tend to change depending on their level of active share. For an investor this poses challenges as it is not just the style bias of a fund that changes but also its risk characteristics. Whereas in earlier sections of this chapter we used pre-period active share figures to analyze the predictiveness of the measure, in this section we turn to using five-year average active shares to show how different levels of active share relate to measures of risk. We use returns from the five-year period from July 2010 to June 2015 with 413 funds' retail share classes included. **Exhibit 23** summarizes the results *at the level of averages*.

To analyze the results from an active share perspective, we divided the sample into two parts. The first part contained a bucket of funds with an active share lower than 60%, that is, funds that are generally considered as closet indexers. For the funds with an active share larger than 60%, we created deciles based on the level of active share.
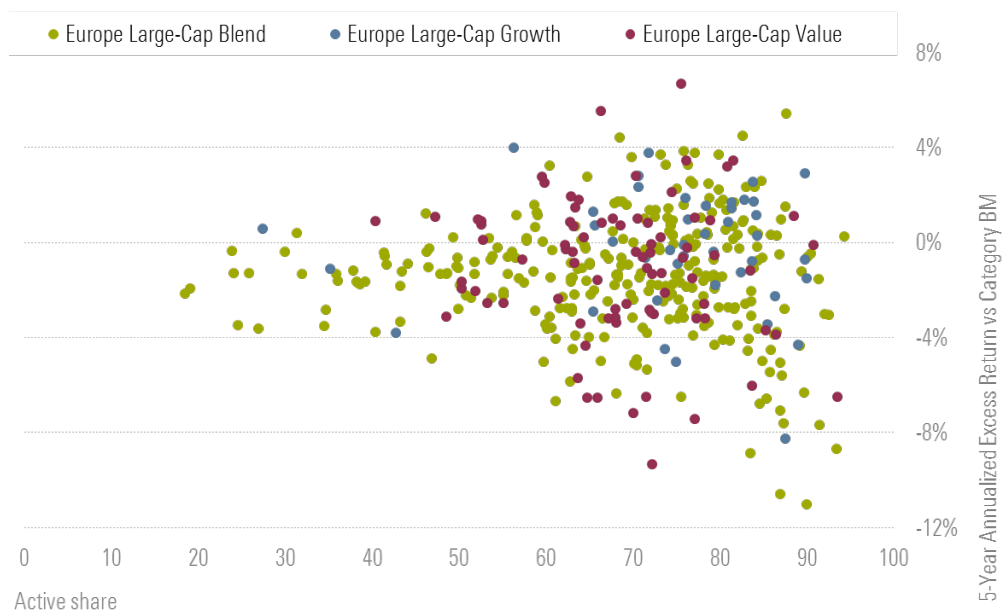
Exhibit 23　Active Share Buckets, Risk and Return % (July 2010–June 2015)

5-Year Average Active Share Bucket	0-60	60-70	70-80	80-90	90-100
Annualized excess return vs. category benchmark	-1.1	-1.4	-0.8	-1.65	-3.0
Standard Deviation	12.6	12.5	12.5	12.4	14.4
Maximum Drawdown	-20.7	-21.1	-20.3	-21.1	-23.5
Tracking Error vs. Category Benchmark	3.0	4.0	4.9	5.5	7.7
Number of Funds	82	93	143	84	10

Source: Morningstar Direct.

In terms of excess returns against their style benchmark, the results again indicate the difficulties of funds with a high active share in recent years.[26] Funds that have an above 90%—or even an 80%-90% active share underperformed their category benchmarks by more than the other three groups. However, the numbers are only averages. The scatter plot in **Exhibit 24** combines funds' five-year average active shares with their five-year annualized excess returns against each fund's style benchmark and demonstrates that the deviations in excess return were many times larger among the most active funds.

26.For the five-year period assessed, the average annualized excess return versus the category benchmark was negative 1.2% when including all funds. Of the 413 funds in the sample, 130 managed to beat their category benchmark. For the funds classified in Europe Large-Cap Blend Equity, 27.2% outperformed the MSCI Europe Index. Within Europe Large-Cap Value Equity, 37.0% of the funds have beaten the MSCI Europe Value Index, while 50.0% of the funds in Europe Large-Cap Growth Equity has generated positive alpha versus the MSCI Europe Growth Index.

Exhibit 24   Active Share Versus Annualized Excess Return (July 2010–June 2015)

Source: Morningstar Direct.

The dispersion in annualized excess return for funds with a five-year active share below 60% amounted to 9.0%, ranging from 4.0% to negative 5.0% annualized excess return versus their respective category benchmarks, but the large majority of funds were plotted relatively tightly together. However, as active share increases, the range of annualized excess returns increased; indeed among funds with a five-year average active share above 60%, excess returns ranged from 6.7% to negative 11.0%. Therefore, investors selecting the highest active share funds should take into account that the returns can vary significantly from the benchmark, resulting in strong outperformance but also disastrous underperformance. Thus, it is not the degree of deviation that determines the level of outperformance, but rather the quality of active positions in the portfolio.
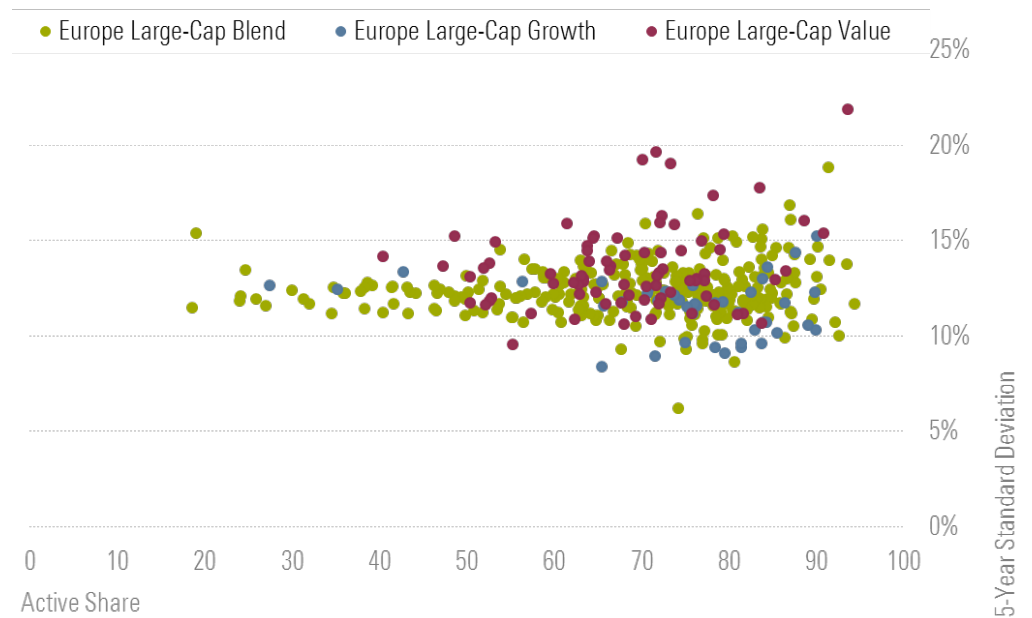
No Return Without Risk
As all investors should know, returns go hand-in-hand with risks. How do these large return differences observed in **Exhibit 24** affect funds' risk levels?

The most typically used risk metric is standard deviation, which we measure from monthly return data over the five-year period ended June 2015. For funds in the Europe Large-Cap Blend Equity Morningstar Category, the average standard deviation was 12.4%. Within Europe Large-Cap Value Equity, the average standard deviation was higher (13.6%), while the standard deviation for funds in the Europe Large-Cap Growth Equity category averaged 11.5%.

The scatter plot in **Exhibit 25** indicates that, for nearly all of the funds we examined, no clear relationship exists between the active share and standard deviation. Only the most active funds in the 90%–100% active share bucket posted a markedly higher average standard deviation of 14.4%. Investors should be aware of the possible higher risk involved when investing in funds that strongly deviate from

the benchmark. Part of this elevated risk profile can be explained by the increasing exposure to smaller caps as we have shown before.

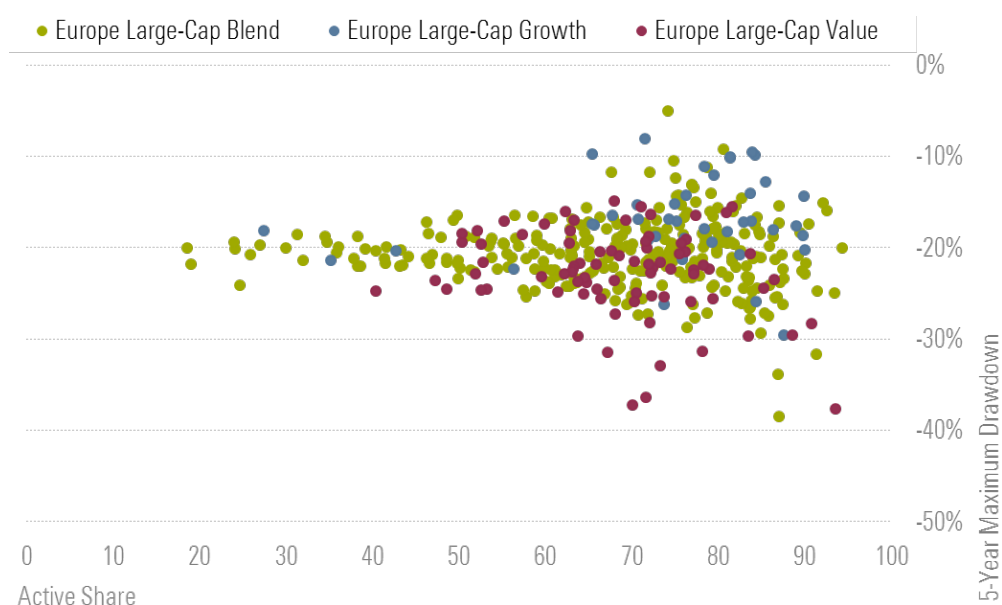**Exhibit 25** Active Share Versus Standard Deviation (July 2010–June 2015)

Source: Morningstar Direct.

Maximum Drawdown

Standard deviation is one definition of risk, but it does not differentiate between positive and negative deviations. Looking at maximum drawdowns can also shed light on the risk taken by investors as they invest in high active share funds. The funds in the sample on average reported a maximum drawdown of negative 20.8% over the five year period ended June 2015. The worst drawdowns in this period were generally suffered by value funds with the average drawdown for the Europe Large-Cap Value Equity category reaching negative 22.9%, while the maximum drawdown for funds in the Europe Large-Cap Growth Equity category averaged just negative 17.1%. Obviously, the positive sentiment for growth stocks and the difficult environment for value investors drove these results.

As was the case for excess returns, the span of outcomes in terms of drawdowns was very wide. The lowest maximum drawdown was negative 5.1%, while the fund with the biggest decline suffered negative 38.5% from peak to trough. Taking active share as a lens through which to analyze maximum drawdown, there seems to be no relationship between the level of active share and the magnitude of the maximum drawdown when looking at the *averages* of the active share buckets. However, **Exhibit 26** indicates a pattern of increasing maximum drawdowns as active share rises. The highest active share bucket clearly suffered the largest maximum drawdowns. For investors, this means that selecting a fund with a higher active share increases the possibility of experiencing larger losses.

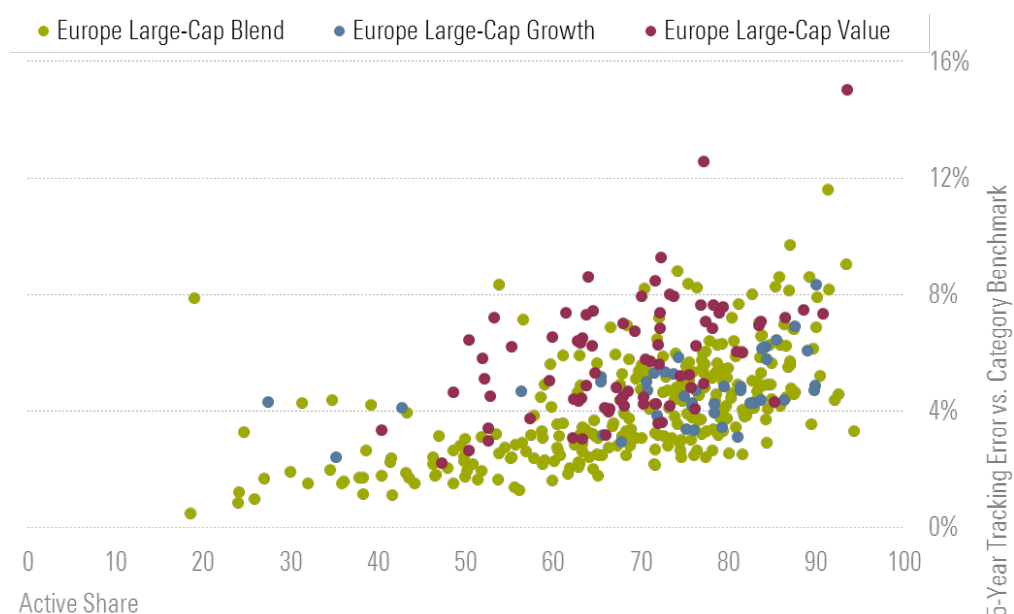**Exhibit 26** Active Share Versus Maximum Drawdown (July 2010–June 2015)

Source: Morningstar Direct.

Tracking Error

Another metric often used to define risk within mutual funds is tracking error. Tracking error is seen as an indicator of "factor bets" such as overweighting cyclical stocks, certain countries, sectors, or other style factors as opposed to a stock-picking approach. A larger tracking error indicates stronger factor bets and, hence, a higher degree of active management.

The funds in the sample reported on average a tracking error of 4.5% in the five year period ended June 2015. The lowest tracking error reported was 0.5%, while the largest tracking error hit 15.0%. For the funds in the Europe Large-Cap Blend Equity category, the average tracking error was 4.1%. Funds within Europe Large-Cap Value Equity had on average a tracking error of 5.8%, while funds in Europe Large-Cap Growth Equity averaged 4.7%.

Looking at tracking error versus active share, **Exhibit 27** points to a relationship between the level of active share and the level of tracking error. As active share rises, tracking error tends to rise in a moderately exponential fashion. For all funds with a five-year average active share larger than 60%, the average tracking error was 4.9%, compared with an average of 3.0% for the funds below the 60% active share mark, and the average tracking error increased with the order of the active share deciles.

Exhibit 27 Active Share Versus Tracking Error (July 2010–June 2015)
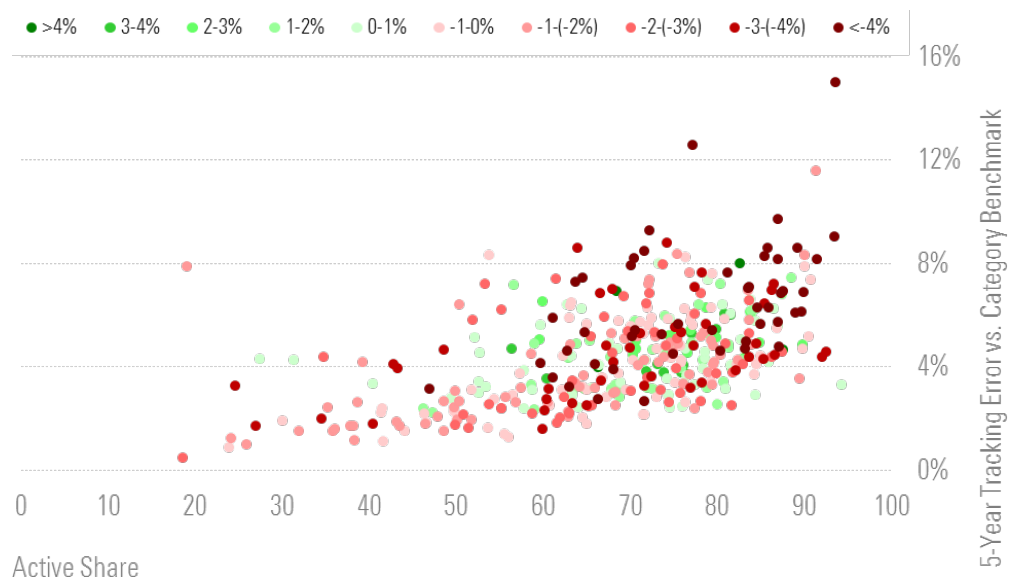

Source: Morningstar Direct.

Funds in the top right corner of the scatter plot are considered the most benchmark-agnostic, while funds in the bottom-left corner are not straying far from their category benchmark.

Relationship Among Active Share, Tracking Error, and Performance

The scatter plot in **Exhibit 27** indicates the activeness of funds measured by active share and tracking error, but it does not tell how successful the funds have been. To demonstrate the relationship between active share, tracking error and performance, we created **Exhibit 28**. Here funds have been sorted on excess return versus their respective category benchmark and then allocated into one of 10 excess return groups based on the level of excess return in the five-year period analyzed. The color of the dots for each fund is related to the level of under- or outperformance achieved. Combining this with active share and tracking error statistics shows how successful funds have been at a particular level of active management.

The scatter plot reveals that as active share and tracking error increased, the underperformance of funds became larger, as symbolized by the increased frequency of dark red dots. However, the most successful funds, represented by the dark green dots, were also among the more active funds. In general, the presence of various shades of green dots also increased as the level of active management rose.

Exhibit 28 Active Share vs. Tracking Error vs. Excess Return

Source: Morningstar Direct.

One of Cremers and Petajisto's main findings has been to show that funds' investment styles can be identified by looking at the different combinations of active share and tracking error. A fund manager can target for a high tracking error but still have a portfolio with a comparatively low active share, as **Exhibit 28** shows. In his 2013 paper, Petajisto distinguished five styles of fund management, and demonstrated that, among US-domiciled funds investing in the US-stock market, funds with low or moderate tracking error combined with high active share ("Stock Pickers") did best in risk-adjusted terms, whereas "Factor Bet" funds (run with a top-down mandate) were the worst performers, on average.

We tested a slightly simplified version of Petajisto's approach on our sample, using active share and tracking-error quartiles instead of quintiles for the five-year period between July 2010 and June 2015, owing to the smaller size of our sample. The 16 subsets have a varying number of funds, ranging from 63 in the group of funds with a lowest-quartile active share and lowest-quartile tracking error to only three in the group where funds have a very high active share (highest quartile) but are in the lowest tracking error quartile. We combined our funds into four larger style groups loosely following Petajisto's methodology.

Our results (**Exhibit 29**) had similarities with those of Petajisto, but also some major differences. As in Petajisto's US data set, we found that high tracking error generally led to below-average results, no matter the level of active share.

The five investment strategies identified by Petajisto are "Closet Indexers", "Factor Bets", "Moderately Active", "Stock Pickers", and "Concentrated (Stock Pickers)", and they have been combined into **Exhibit 30** from our sample as indicated by the colors. The groups are not of the same size, but this is natural as some of the strategies are highly differentiated, such as "Concentrated" funds, which have both high active share and high tracking error. The average excess returns look worse for

"Concentrated" funds, however, the dispersion in returns skews this number. As can be seen in **Exhibit 31**, the distribution in excess returns in this group is wide. Although "Concentrated" funds on average underperformed "Closet Indexers", the boxplots for both groups indicate that underperformance is more common for "Closet Indexers" and "Factor Bets."

Exhibit 29 Excess Returns by Quartiles of Active Share and Tracking Error (July 2010–June 2015)

Active Share

		4	3	2	1
Highest AS	1	* n=3	-0,71% 24	-1,17% 30	-2,72% 46
	2	-0,94% 11	0,13% 29	-0,66% 36	-1,45% 27
	3	-1,37% 27	-0,70% 30	-1,15% 27	-2,32% 19
Lowest AS	4	-1,35% 63	-1,28% 20	0,14% 10	-1,45% 11
		4 Low	3	2	1 High

Tracking Error

Source: Morningstar Direct.

Exhibit 30 Excess Returns by Type of Investment Process (July 2010–June 2015)

Type of Process	Average 5-Yr Excess Return	Number of Funds	Average TE	Average AS
Closet Indexers	-1,17 %	93	2,67	48,54
Factor Bets	-1,74 %	57	7,00	68,50
Moderately Active	-0,75 %	160	3,95	71,38
Stock Pickers	-0,93 %	57	4,37	83,98
Concentrated	-2,72 %	46	7,25	85,84

Source: Morningstar Direct.

While our results confirmed Petajisto's finding about the poorer-than-average results of "Factor Bets" in our considerably shorter five-year timeframe (Petajisto analyzed the 20-year period of January 1990–December 2009), they differed in one key area: In the period analyzed here, "Stock Pickers" were not able to distinguish themselves even as their average excess return of negative 0.93% was among the better results. They have been a much better choice than "Concentrated" funds, which posted an excess return of negative 2.72% on average—although both groups consist of funds with active shares in the highest quintile. As should be evident from the performance analysis earlier in this chapter, the selection of time period is critical. Funds with high active shares were better able to distinguish themselves in our

earlier time periods. To us, this proves that separating funds by not only active share but also other measures of active management such as tracking error is vital in a fund-selection process.

Exhibit 31   Excess Returns Distribution by Type of Investment Process (July 2010–June 2015)
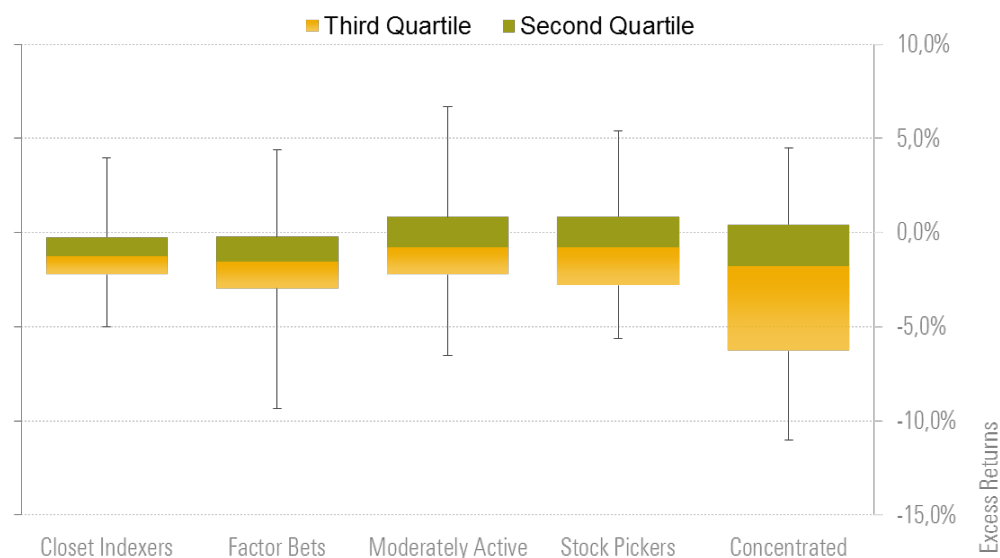
Source: Morningstar Direct.

We analyzed excess returns and various risk measures in relation to active share. Combining these in a risk/return analysis is a possible next step. We have done so using Israelsen modified information ratios. Appendix A includes the methodology and our results. Ⅲ

6. How To Be a Smart User of Active Share

A simple truth lies at the root of fund management: Actively managed funds need to differentiate themselves from their benchmark in order to potentially outperform it after fees. By measuring this difference, the concept of active share can be a useful tool for investors to gauge the degree of active management at the portfolio level. However, investors using active share in the process of their fund selection should be aware of its characteristics and limitations. Here are the most important factors that investors should take into consideration when using active share:

► Active share provides insight into just one dimension of active management. Activeness on the stock level is one side of the coin, as factor bets can also be used to deviate from the benchmark. Metrics such as R-squared, tracking error, style bias, or portfolio concentration can also serve as yardsticks for active management. Hence, we recommend using active share in combination with other metrics in the fund analysis toolkit to make a robust assessment of the level of active management applied.

► Active share only measures the proportion of a fund's assets invested differently from the benchmark. It is notably silent on the prudence of those divergences from the index.

► Active share is only indicative for long-only funds that don't invest in derivatives, other funds or ETFs.

► The level of active share is highly dependent on the benchmark selected. Benchmarks can vary in their number of constituents, weighting mechanism, and concentration of holdings. A high active share can therefore imply active management, but may also simply indicate the selection of an inappropriate benchmark.

► If a proper benchmark is used, high active share can still signal portfolio style bias or drift, which might expose investors to unintended or undesirable risk factors. For instance, we find that an increase of active share was accompanied by an increase in exposure to lower market capitalizations. Given this, it can be useful to augment active share with returns-based style analysis that more precisely measures a strategy's sensitivity to factors that a holdings-based approach might not capture.

► Benchmark construction influences the level of active share. Depending on risk constraints, a portfolio manager who is benchmarked against a very concentrated index such as the MSCI Europe/Energy Index may well have to include top-constituents such as Total. The UCITS 10/40 rule, which limits managers to a maximum position size of 10% (and only a maximum of 40% of a fund's assets may be in positions of between 5% and 10%) can also limit a portfolio manager's ability to express her positive view on a stock, or conversely, force her to give underweights to the benchmark in top holdings.

► Active share measures the activeness of a portfolio at a single point in time. Although active share levels are fairly stable over time for most funds, a change in manager or strategy can result in large shifts in the level of active share. Market and inner corporate circumstances also appear to influence portfolio managers' willingness to take active bets.

► As active share increases, so does dispersion in annualized excess returns, standard deviation, maximum drawdown, and tracking error. Portfolios with the same level of active share can exhibit various levels of excess return and risk. This implies that active share alone is not sufficient to generate alpha and consequently investors have to do more research to select superior funds.

How To Be a Smart User of Active Share

With the above-mentioned characteristics and limitations taken into account, how can one be a smart user of active share in fund analysis? We list some recommendations below:

► Higher active share is not necessarily better. Chasing high active share funds can result in selecting the strongest outperformer, but also the worst underperformer. It is a portfolio manager's skill of selecting the right deviations from the index that generates outperformance.

► Keep track of style differences versus the benchmark and make sure no unintended bets in terms of style or size are taken by the manager.

► Avoid funds that combine a low active share and a low tracking error (closet indexer) with above-average fees, as these products have only a small chance of outperforming after fees in the long run. Investors seeking a performance close to the benchmark should opt for a low-cost passive fund or a very moderate priced actively managed fund instead.

► Fees are an important factor and Morningstar has previously demonstrated the negative relationship between fees and mutual fund performance[27]. Investors should be skeptical of expensive funds. Generally speaking, fees tend to go up as active share rises. However, this doesn't imply that all funds with higher active share are expensive. Instead of looking at the absolute level of fees, we think investors should look at the fee paid per unit of active share as a yardstick for fair payment.

To conclude, we believe active share can be a useful tool for investors to analyze the activeness of a fund. Nevertheless, the beauty of its simplicity can also turn out to be its biggest weakness.

In selecting funds, combining active share with measures of risk, such as tracking error, can be fruitful in understanding the style of a fund and being able to analyze its performance and qualities against other funds with similar styles. Morningstar's research shows that risks grow as active share rises, which leads to a trade-off. It emphasizes the need to be very careful when selecting funds with high active shares. To understand the capabilities at the asset management company, how stocks are selected, how risk is managed, and so on, a qualitative approach is helpful to back up the quantitative analysis. There are many ways one might approach the matter. Morningstar's manager research team's qualitative methodology, as embodied in the Morningstar Analyst Rating™, provides one such example and is discussed in Appendix B. Ⅲ

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27. "When You Wish Upon a Star", April/May 2010 Morningstar Advisor, Don Phillips

Appendix A

Combining Risk and Return

This chapter discusses the risk-adjusted returns of funds in the sample. We have included the analysis as a separate appendix, as comparing funds from three categories requires a slightly more complex and lengthier analysis than is usual.

The traditional Sharpe ratio is the commonly used metric for risk-adjusted returns. It is calculated as defined below.

$$Sharpe\ Ratio = \left(\frac{R_P - R_F}{\sigma_P}\right)$$

Where:

R_P = Portfolio return

R_F = Risk free rate

σ_P = Portfolio standard deviation

Although often used by investors, the Sharpe ratio is not insightful for our sample of funds as it uses pure returns rather than benchmark-adjusted ones. As we used funds from three different categories, return differences between styles have affected the results. A solution is provided by the information ratio, as it enables us to use annualized excess return versus the Morningstar Category benchmark. By using relative returns instead of absolute returns, we can compare the excess returns of funds in various Morningstar Categories as these are now corrected for style biases. The information ratio is calculated as defined below.

$$Information\ Ratio = \left(\frac{R_P - R_B}{\sigma(R_P - R_B)}\right)$$

Where:

R_P = Portfolio return

R_B = Benchmark Return

$\sigma(R_P - R_B)$ = Portfolio tracking error

However, using the traditional information ratio can be inappropriate when annualized excess returns become negative[28]. This situation is relevant to our analysis as the majority of the funds in our sample posted negative annualized excess returns versus their respective category benchmark. To correct for this, we used the Israelsen method to adjust the information ratio and take into account the inconsistency of the traditional information ratio when excess returns are negative. The adjustment is

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28 To illustrate this issue, consider two investments that have the following risk/return characteristics.

Investment A   Investment B
Excess return: negative 10%   Excess Return: negative 10%
Tracking error: 8%   Tracking error: 4%

The information ratio for investment A is negative 1.25 (negative 10/8) while the information ratio for investment B equals negative 2.50 (negative 10/4), and thus investment A is preferred over B. This is counterintuitive, as the active risk of investment A is twice the level as of investment B. Hence, investment B should be preferred. Applying the Israelsen modified information ratio to the hypothetical investments, investment A has a modified information ratio of negative 80 versus negative 40 of Investment B. Hence, investment B is preferred.

made to the denominator by using the tracking error raised to the power of excess return divided by the absolute value of the excess return. The calculation of the Israelsen modified information ratio is defined below.

$$Israelsen\ Modified\ Information\ Ratio = \left(\frac{R_P - R_B}{\omega^{\ ER/ABS\ ER}}\right) = \begin{cases} \dfrac{R_P - R_B}{\omega} & if \quad R_P - R_B \geq 0 \\[3em] R_P - R_B \cdot \omega & if \quad R_P - R_B < 0 \end{cases}$$

Where:

R_P = Portfolio return

R_B = Benchmark Return

ω = Portfolio tracking error

ER = Excess Return

$ABS\ ER$ = Absolute value of the excess return

It is important to note that the Israelsen modified information ratio is equal to the traditional information ratio when excess return is positive. For negative excess returns, scores can be large and hence more difficult to interpret. The median geometric Israelsen Modified Information Ratio of the funds in the sample amounts to negative 3.0. However, with only 130 out of 413 funds with positive annualized excess returns, funds with negative excess returns create a large skew because they have a significant impact on the results owing to the nature of the measure. (The highest Israelsen modified information ratio was 1.3, while the lowest was negative 91.7)

To limit the impact of the large range of outcomes and the skewness in the data, we calculated percentile ranks for the funds in our sample based on their Israelsen modified information ratio. The funds were ranked in percentiles from 0 to 100, where the fund with the highest Israelsen modified information ratio ranked 0, and the worst scoring fund ranked 100. The results are shown in **Exhibit 32**.

Exhibit 32 Active Share Versus Positive Israelsen Modified Information Ratio Rank (July 2010–June 2015)
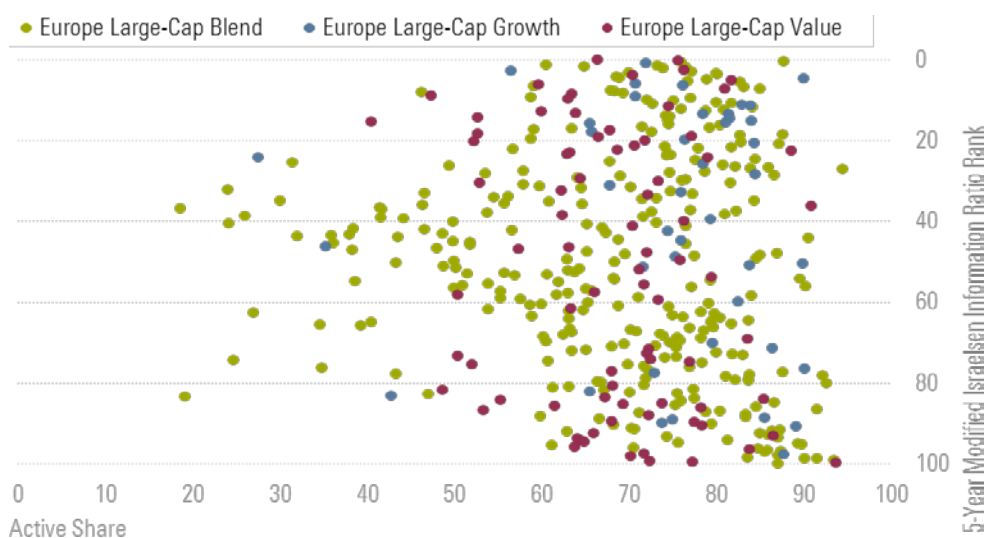
Source: Morningstar Direct.

As can be concluded from the scatter plot, there was a weak relation between the level of risk-adjusted return and the level of active share. As the level of active share rose, we found an increasing number of high-ranked funds, but also more funds that failed to convert their active approach into better risk-adjusted returns in the time period analyzed. We then calculated the average rank for various active share buckets, shown in **Exhibit 33**.
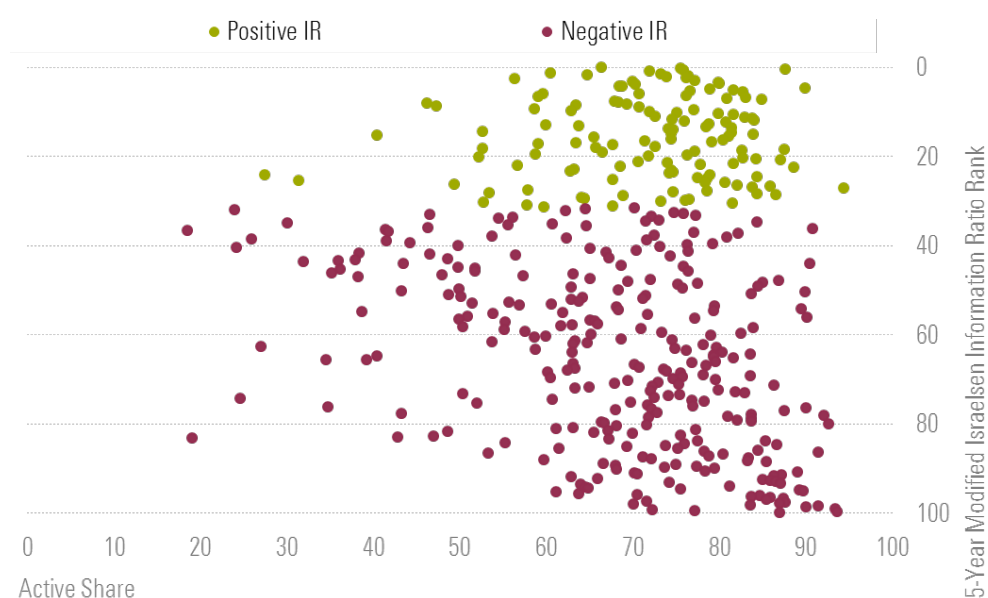
Exhibit 33 Israelsen Modified Information Ratios Rank for Active Share Buckets

5-year average active share bucket	0-60	60-70	70-80	80-90	90-100
Average Modified IR Rank	44.9	51.9	48.2	53.9	71.1

Source: Morningstar Direct.

Combining this with our earlier findings of increasing dispersion in excess return and risk, one might conclude that active management has not added value for European large-cap funds applying a highly active management style versus a more benchmark-aware investment process. The patterns in these risk-adjusted return calculations point in the same direction. Nevertheless, the scatter plot is based on ranks and those ranks provide no indication as to whether a fund was able to generate excess return versus its respective category benchmark. The scatter plot in **Exhibit 34** separates funds that have achieved a positive Israelsen modified information ratio (that is, funds that have produced excess returns against their style benchmark) from those that have a negative Israelsen modified information ratio.

Exhibit 34 Active Share Versus Positive/Negative Israelsen Modified Information Ratio Ranks

Source: Morningstar Direct.

As active share rose, the share of funds with positive Israelsen modified information ratios increased slightly in our sample: Whereas 25% of the perceived closet indexers outperformed their style benchmark, 33% of the funds with an active share above 60% added value. Also, when sorting the sample into active share buckets (**Exhibit 35**), we found an increasing percentage of funds with positive

Israelsen modified information ratios as the level of active share rose. In terms of numbers of funds, 108 of 130 funds that have added value in the analyzed time period had an active share above 60%.

Exhibit 35 Positive Israelsen Modified Information Ratio vs Active Share Buckets

5-year average active share bucket	0-60	60-70	70-80	80-90	90-100
% of funds with positive IR	25	28	35	39	9

Source: Morningstar Direct.

This pattern from our sample of European large-cap funds indicates that increasing the level of active management can pay off. However, the dramatically low percentage of successful funds for the highest active share bucket once again reminds us of the risks involved with very active investment strategy: It can be a source for outperformance, but also for underperformance. Given the wide dispersion seen earlier, the difficulty remains in determining which managers have the skill to use active bets to drive outperformance. Ⅲ

Appendix B

Morningstar Analyst Rating for Funds

The Morningstar Analyst Rating™ for funds is the summary expression of Morningstar analysts' forward-looking analysis of a fund. Analyst Ratings are assigned globally on a five-tier scale running from Gold to Negative. The top three ratings, Gold, Silver and Bronze, indicate that the analysts think highly of a fund; the difference between them corresponds to differences in their level of conviction in a fund's ability to outperform its peers and a relevant benchmark over a full market cycle on a risk-adjusted basis.

The framework that Morningstar analysts use to evaluate funds is based on the following elements, or 'Pillars':

Process: What is the fund's strategy, and does management have a competitive advantage enabling it to execute the process well and consistently over time?
Performance: Is the fund's performance pattern logical given its process? Has the fund earned its keep with strong risk-adjusted returns over relevant time periods?
People: What is Morningstar's assessment of the manager's talent, tenure, and resources?
**Parent:** What priorities prevail at the firm, and how does its corporate culture influence its ability to manage portfolios well?
Price: Is the fund a good value proposition compared with similar funds sold through similar channels?

Combining active share and the Morningstar Analyst Rating

In our sample, 61 funds carry a Morningstar Analyst Rating (four Gold, 15 Bronze, 12 Silver, 21 Neutral and nine Negative). Our analysis of their active share scores reveals that, on average, Morningstar Medalists (Gold, Silver, and Bronze-rated funds) are managed more actively than the average fund (**Exhibit 36**).

Exhibit 36 Active Share by Morningstar Analyst Rating (5-Year average for June 2010-March 2015)
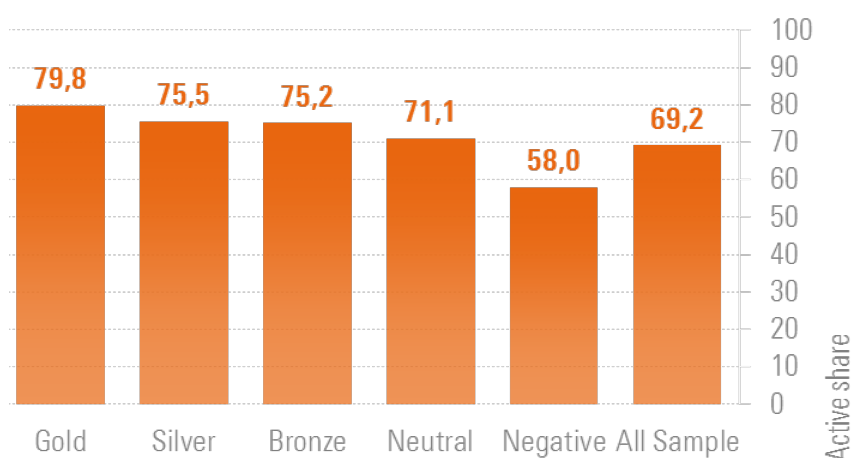
Source: Morningstar Direct.

Many of the positively rated funds have a very distinct investment approach and are managed with high convictions, leading to portfolios that often bear little resemblance to their benchmarks. Their portfolio managers don't hesitate to go their own way, even if it means underperformance in the short term. On the other end of our rating spectrum, funds with a Negative rating tend to have a lower active share than the sample average. For some of these funds, our assessment is not only driven by the fact that they stay too close to their benchmark to be able to outperform in the long run, but also by the fact that their management fee is similar or even higher than the average for active funds. In our rating methodology, six out of the nine Negative-rated funds carried a Price Pillar rating of Negative (at the end of March 2015). Their low level of activeness combined with their expensive fees make the likelihood of long-term outperformance very slim.

Digging Deeper Into the Morningstar Analyst Ratings
When selecting all 61 funds in our sample covered by Morningstar analysts, and grouping them by their current Morningstar Analyst Rating, we found that our ratings display some interesting characteristics. **Exhibit 37** shows the data in relation to the Morningstar Analyst Rating and versus the entire sample of funds.

Exhibit 37   Morningstar Analyst Rating

Morningstar Analyst Rating	Active Share 5 Year Average	Tracking Error vs Cat BM 5 Year	# of Stock Holdings	% Asset in Top 10 Holdings	Large Cap %	Mid + Small Cap %	Manager Tenure	KIID Ongoing Charge
Medalists	75,9	4,6	64	30,7	77,8	22,2	8,0	1,8
Neutral	71,1	4,0	67	31,3	82,3	17,7	5,6	1,9
Negative	58,0	3,4	113	27,9	84,5	15,5	4,2	2,0
Sample	*69,2*	*4,5*	*89*	*31,1*	*80,1*	*19,9*	*6,3*	*1,8*

Source: Morningstar Direct.

The level of active share increased with the order of analyst conviction, while the tracking error of Medalists was also higher than that for the Neutral- and Negative-rated funds (although only slightly higher than the sample average). Placing our ratings into Petajisto's five types of fund management, our current Medalists are all classified as "Moderately Active", "Stock Pickers", and "Concentrated (Stock Pickers)." Neutral- and Negative-rated funds were found among every type of investment style, with 40% of them classified as "Closet Indexers" or "Factor Bets."

Assessing portfolio characteristics of the funds in our sample versus funds that have an Analyst Rating provides further insight in the characteristics of funds that are favored by Morningstar's analysts. Medalist fund managers ran more concentrated portfolios in terms of the number of stock holdings versus the sample average. Negative-rated funds, on average, held more names in their portfolios, although the average was skewed by the extremely high number of holdings in two of the nine Negative funds (210 and 314 holdings). In terms of top-10 concentration, the difference was less pronounced. This indicates that the average position size per stock holding is larger for Medalists than for the other funds in the sample, meaning that Morningstar's analysts prefer funds that are managed with higher conviction, but sufficient portfolio diversification.

In terms of market capitalization, it is no surprise that the more actively managed Morningstar Medalists had a slight bias to mid- and small caps. As we showed previously, increasing a fund's level of active

share tends to go hand in hand with a rising allocation to shares of smaller companies. The Negative-rated funds had a higher allocation to large caps versus the sample average, in line with their more-benchmark-aware investment style.

Another distinguishing element of Morningstar Medalists was the average manager tenure. The average tenure for Bronze-, Silver-, and Gold-rated funds was almost two years higher than the sample average and close to double the average tenure of Negative-rated funds. It demonstrates Morningstar's preference for experienced and stable investment teams.

Finally, we can see a preference for cheaper-than-average funds as the conviction of the Morningstar analysts rises. M

About Morningstar Inc.

Morningstar, Inc. is a leading provider of independent investment research in North America, Europe, Australia, and Asia. The company offers an extensive line of products and services for individual investors, financial advisors, asset managers, and retirement plan providers and sponsors. Morningstar provides data on more than 510,000 investment offerings, including stocks, mutual funds, and similar vehicles, along with real-time global market data on more than 17 million equities, indexes, futures, options, commodities, and precious metals, in addition to foreign exchange and Treasury markets. Morningstar also offers investment management services through its investment advisory subsidiaries, with more than $180 billion in assets under advisement and management as of Dec. 31, 2015. The company has operations in 27 countries.

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