# Active share and tracking error in the large cap growth space

Federated Hermes

## Key takeaways

- **The active share measurement was created to separate "truly" active investment managers versus those with an approach that more closely mirrors the strategy's benchmark.**
- **Underlying this calculation is the belief that a concentrated investment approach with high active share would lead to higher excess returns.**
- **The current market environment has forced some managers to balance concentration risk, tracking error and active risk exposures.**
- **Over the last several years, managers with lower active share in the large-capitalization growth space generally outperformed those with higher active share.**

## Outperforming an index begins with being different

In 2009, the initial paper on active share was published: *How Active is Your Fund Manager? A New Measure That Predicts Performance (Cremers and Petajisto).* It introduced the concept of active share, which measures how much a portfolio's holdings differ from its benchmark. The paper posited this as a way to identify managers simply drafting on market beta — closet indexers — versus active managers more likely to outperform their index.

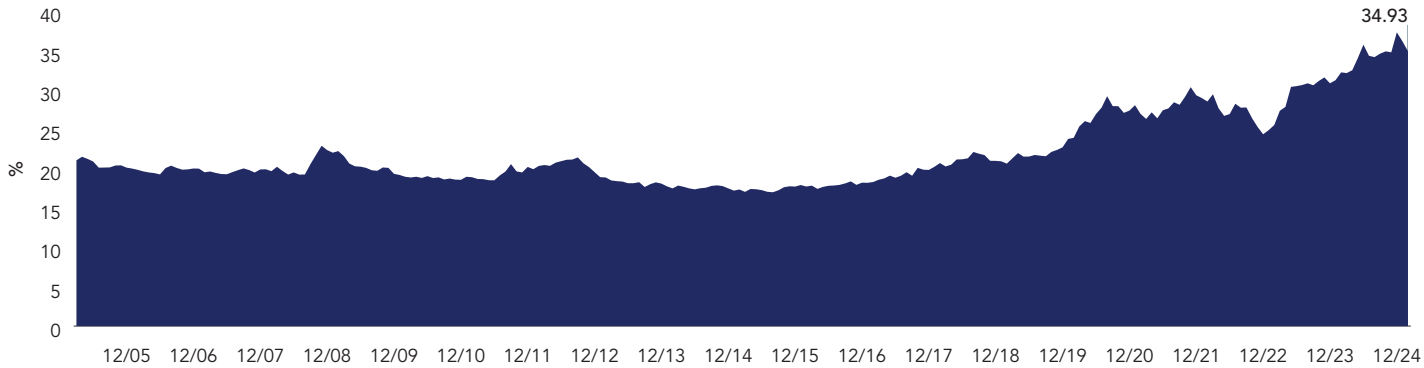
The active share calculation gained traction not least due to its simplicity. Requiring only addition and subtraction, one subtracts the individual holding weight of an index from the individual holdings in a portfolio and sums the total difference to obtain the active share weighting. In a field filled with exotic calculations, it is relatively easy to calculate and understand. But is it a helpful tool in the manager selection process?

Over the last several years, we have seen market concentration in a few large cap names affect the portfolio construction process for some managers as they have tried to balance active management approach against portfolio diversification needs while attempting to minimize tracking error. We see on the next page (exhibit 2), that managers with lower active share were able to generate higher excess returns than managers with higher active share within the Nasdaq eVestment US Large Cap Growth Equity (large cap growth) universe.

## US market concentration

Since 2009, markets have had to address many historically unusual circumstances, one of which has been a heavy concentration of a small number of large cap stocks at the top end of certain major indexes. The name and number have evolved, but the current collective known as the "Magnificent Seven" (Mag7) — Apple, Amazon, Alphabet, Meta, Microsoft, Nvidia, and Tesla — have significantly influenced market dynamics, accounting for a substantial portion of the S&P 500®'s performance (and other indexes as well) along the way.

### Exhibit 1: Top 10 holdings (%) S&P 500®




Source: Morningstar, Inc. From 3/31/05 to 12/31/24.

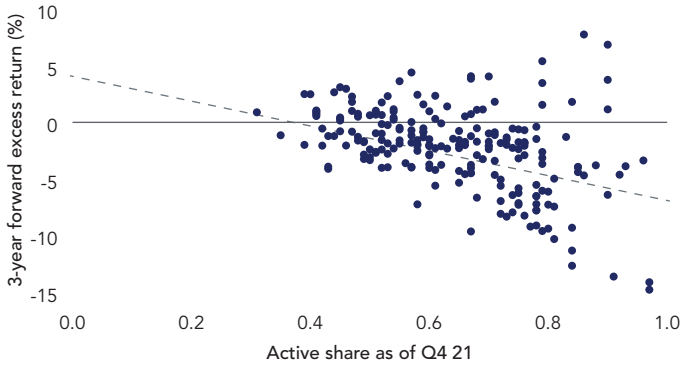
**Past performance is no guarantee of future results.**

For several years, benchmark concentration in large cap stocks, particularly large cap growth stocks, has been an issue for many managers to address. Confronted with the challenge of outperforming their benchmark within a reasonable level of tracking error while maintaining a reasonable level of portfolio diversification, we'll see below that some managers lowered their active share, deliberately or not, to keep pace with their benchmark.

The index concentration conundrum is particularly evident in the large cap growth sector of the market. Over the past decade, large cap growth strategies in particular have seen a gradual reduction in their active share, indicating a closer alignment with benchmark indexes as those larger stocks continued their runup.

## Active share and active return

### Exhibit 2: Large cap growth universe active share as of 12/31/21 and 3-year forward excess returns




Sources: Nasdaq eVestment™; Federated Hermes, Inc. Active share as of 12/31/21. Performance from 1/1/22 through 12/31/24. The dotted line plots the relationship between active share and excess return. The downward sloping line indicates a negative relationship within in this group. An upward sloping line would indicate a positive relationship.

**Past performance is no guarantee of future results.** Exhibit above is for illustrative purposes only.

Exhibit 2 illustrates the relationship between active share (as of December 31, 2021) and the 3-year forward excess return (from January 1, 2022, to December 31, 2024) for strategies in the US Large Cap Growth eVestment universe. Each dot represents an individual portfolio within this universe.

The x-axis measures active share, the percentage of a portfolio's holdings that differ from its benchmark index. The y-axis displays the 3-year forward excess return, indicating the performance of each strategy relative to its manager-preferred benchmark over the specified period.

The scatterplot reveals a negative trendline, suggesting an inverse relationship between active share and excess return. Over this period, increased active share led to decreased active return vs. a manager's preferred benchmark, highlighting one of the challenges managers faced in trying to construct portfolios that generate excess return in a market dominated by so few stocks.

## What about tracking error?

### Exhibit 3: Large cap growth universe 3-year excess return and tracking error


Sources: Nasdaq eVestment™; Federated Hermes, Inc. Performance from 1/1/22 through 12/31/24. Trailing three-year tracking error as of 12/31/24. The dotted line plots the relationship between tracking error and excess return. The downward sloping line indicates a negative relationship within in this group. An upward sloping line would indicate a positive relationship.

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Look familiar? This scatterplot is similar to the previous one, but instead of active share, we have swapped in tracking error on the x-axis. The y-axis remains the 3-year excess return from 1/1/22 to 12/31/24, indicating the performance of each fund relative to its manager-preferred benchmark over the specified period.

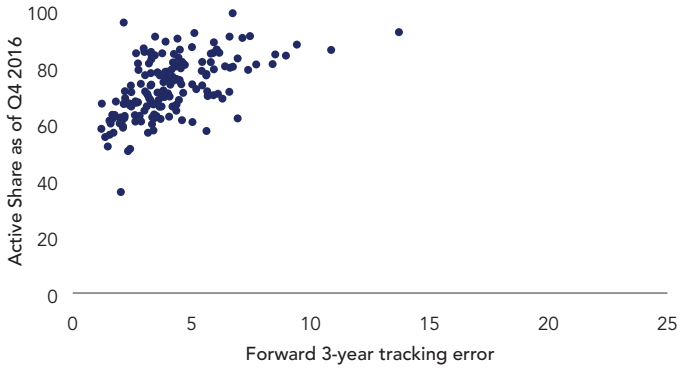
This chart again shows a negative trendline, suggesting an inverse relationship between tracking error and active return. As tracking error increased among peers, the active return to the benchmark tended to decrease.

Similar to the previous chart, this trend highlights managers' potential challenges in generating superior returns when their portfolios exhibit higher volatility and divergence from the benchmark.

## Tracking error and active share over time – A shift down and to the right

Revisiting the relationship between tracking error and active share, we present two scatterplots, five years apart, to visually demonstrate how this relationship has evolved.

### Exhibit 4: Large cap growth universe active share as of 12/31/16




Sources: Nasdaq eVestment™; Federated Hermes, Inc. Active share as of 12/31/16. Tracking error from 1/1/17 through 12/31/19.

**Past performance is no guarantee of future results.** Exhibit above is for illustrative purposes only.

### Exhibit 5: Large cap growth universe active share as of 12/31/21


Sources: Nasdaq eVestment™; Federated Hermes, Inc. Active share as of 12/31/21. Tracking error from 1/1/22-12/31/24.

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### Five years ago

Exhibit 4 shows the tracking error and active share relationship five years ago, with three years of returns ending 12/31/19. At that time, we observed a tightly clustered distribution of funds in a way one might expect to see, a higher tracking error corresponding with a higher active share, but with an emphasis on tighter tracking error.

### Current three-year period

Exhibit 5 presents the same x/y relationship but with data from the most recent three-year period ending 12/31/24. These data points reveal the distribution of funds has shifted over this toward higher tracking error and lower active share.

This shift reflects changing market dynamics and portfolio construction strategies. As the market became more concentrated, active managers faced significant challenges balancing diversification while generating excess returns.

### Implications

The visual comparison highlights how investment strategies had to evolve, given the performance and resultant concentration of just a few stocks. Managers have had to be flexible in their approaches to market leadership dynamics, leading the group to changes in both tracking error and active share.

As mentioned at the outset, outperforming an index requires being different. However, higher active share and tracking error has not translated into higher performance recently.

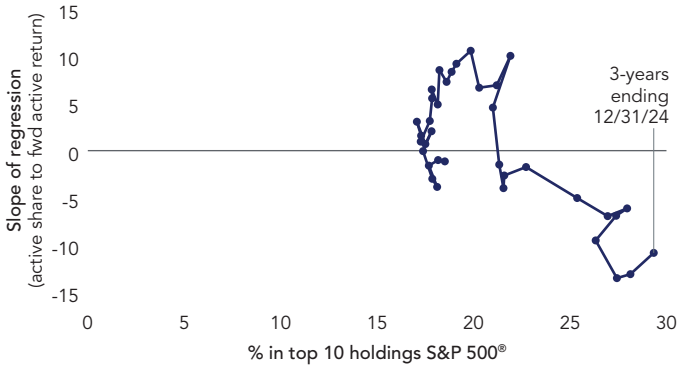
Understanding these shifts is crucial for evaluating manager skill, since understanding the sources of outperformance can often take a nuanced approach. It underscores the importance of considering risk and active management when assessing a strategy's potential to generate alpha.

## Taking a longer view

### Relationships among active share, active return and market concentration

The information presented in the previous sections above suggests that managers may have few good choices when constructing a portfolio with fast-rising stocks that are already a large part of the benchmark. They can overweight some of those stocks to increase active share while increasing concentration risk. They can underweight them at the risk of underperformance; or match the weightings, lowering tracking error and active share, and risk being marked as a closet indexer.

### Exhibit 6: Large cap growth universe active share over time




Sources: Nasdaq eVestment™; Federated Hermes, Inc. Performance from 1/1/13 through 12/31/24.

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Similar to exhibits 2 and 3, exhibit 6 looks at the relationships between market concentration, active share and forward 3-year returns but at different points since 2013. The analysis takes the average active share in the eVestment large cap growth universe at a point in time and performs a regression analysis. The slope coefficient in this regression analysis measures the relationship between active share and forward 3-year active return (y-axis) similar to the analyses above. At the same time, the x-axis tracks the concentration of holdings in the S&P 500®. The line connecting the dots represents the linear time progression, with the latest period 12/31/21-12/31/24 at the bottom right.

A negative slope — below zero on the x-axis — indicates that as active share increases, forward excess return decreases, and vice versa for a positive slope. This inverse relationship has become more pronounced in recent periods, as seen in the significant downward shift.

Additionally, the rightward movement of each data point along the x-axis mirrors the larger concentration of assets in the top 10 holdings of the S&P 500®, reflecting the increasing dominance of a few large cap stocks in the market. This concentration can reduce the opportunities for active managers to differentiate their portfolios and generate alpha.

### Excess returns and information ratio

Applying much of the same analysis as above we took the active share of the large cap growth universe on December 31, 2014 and looked at the results over the subsequent 10 years to see how these results fared over a longer time frame (Exhibits 7 and 8).

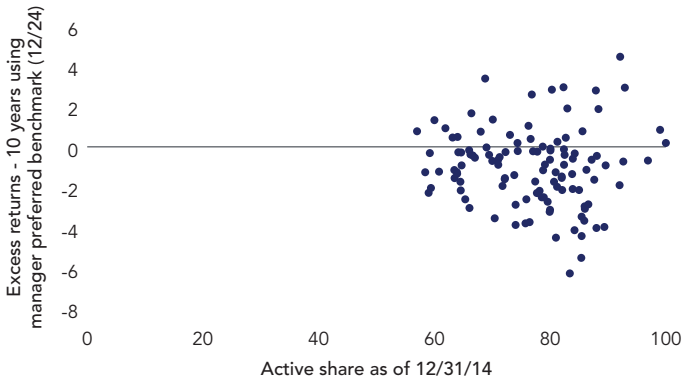
For this particular data set, higher active share again did not lead to better outcomes. If anything, there were slightly worse outcomes. Additionally the distribution of returns had close to zero correlation, 0.02 for the information ratio dataset and -0.08 for the excess returns.

## Conclusion

We chose the large cap growth universe because we thought we may produce some interesting results. This has been a challenging period for active large cap growth managers, especially, having strong performers concentrated in so few stocks. Active share can be a helpful tool in winnowing a universe of managers. However, as seen above, the active share measurement may not be a reliable way to forecast future investment performance. The measure may inadvertently screen out managers that have relatively low active share that go on to generate healthy excess returns. High-conviction, fundamental strategies holding a relatively small number of stocks can be seen as a way to create alpha. These, by default, will tend to have a higher active share than strategies that hold a large number of stocks. Quantitative strategies tend to hold a higher number of stocks and thus will tend to have a lower active share, again by default. But again, active share in the large cap growth universe has declined over the last 10 years, even as that market sector has generated historic returns.

Active portfolio management should be evaluated in a variety of ways. Over the last 15 years, we have seen many investment "rules" get broken regularly, underscoring the need for flexibility by managers and those charged with evaluating them.

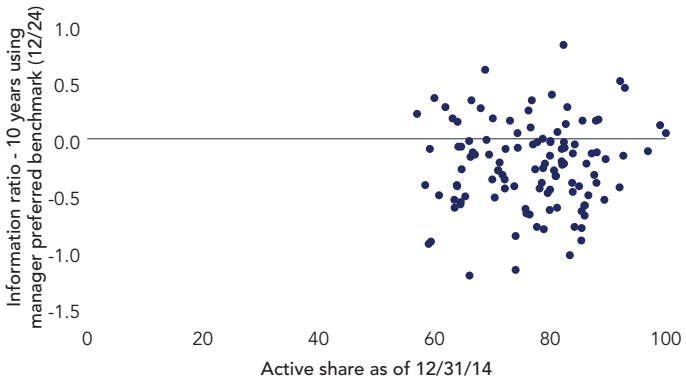
### Exhibit 7: Large cap growth universe excess returns - 10 years vs. manager preferred benchmark




Sources: Nasdaq eVestment™; Federated Hermes, Inc. Active share as of 12/31/14. Forward 10-year excess returns 1/1/15 through 12/31/24.

**Past performance is no guarantee of future results.** Exhibit above is for illustrative purposes only.

### Exhibit 8: Large cap growth universe information ratio - 10 years vs. manager preferred benchmark




Sources: Nasdaq eVestment™; Federated Hermes, Inc. Active share as of 12/31/14. Trailing 10-year information ratio using return data from 1/1/2015 through 12/31/24.

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Views are as of the dates indicated and are subject to change based on market conditions and other factors. These views should not be construed as a recommendation for any specific security or sector.

Investments involve risk and fluctuate in value.

Investing in equities is speculative and involves substantial risks. The value of equity securities will rise and fall. These fluctuations could be a sustained trend or a drastic movement.

The quantitative models and analysis may perform differently than expected and negatively affect performance.

Growth stocks tend to have higher valuations and thus are typically more volatile than value stocks. Growth stocks also may not pay dividends or may pay lower dividends than value stocks.

Diversification does not assure a profit nor protect against loss.

### Definitions

**Active share** is a measure used to determine how much a portfolio differs from its benchmark index. If a portfolio has an Active Share of 40%, it means 40% of the portfolio is different from the benchmark.

**Beta** is a statistical calculation of the market risk of a fund showing how responsive the fund is to market movements. The beta of the market is 1.00. A beta of zero indicates returns independent of market movement.

**Concentration risk** can occur as a larger percentage of an investment portfolio gets allocated to fewer names.

**Correlation** measures the similarity between two return series on a scale of -1.0 to +1.0. Assets with a correlation of 1.0 are perfectly correlated, -1.0 demonstrates perfect negative correlation and 0.0 indicates the absence of correlation.

**Excess return**, or active return, is the total return of a portfolio that exceeds a chosen benchmark.

**Information ratio** is a measure of return efficiency similar to the Sharpe ratio. It is the benchmark relative return divided by the tracking error of returns, the standard deviation of relative returns. A positive information ratio is desirable.

**Regression analysis** is a process that seeks to measure the relationship between two or more variables or sets of data.

**Sharpe ratio** is calculated by dividing a fund's annualized excess return by the fund's annualized standard deviation. The higher the Sharpe Ratio, the better the fund's historical risk-adjusted performance.

**Slope** measures the steepness and direction of universe of variables. An upward sloping line indicates a positive relationship between variables. A downward sloping line indicates a negative relationship.

**Tracking error** is the standard deviation of excess returns, a measure of relative risk.

**Nasdaq eVestment US Large Cap Growth Equity universe** contains investment manager strategies investing primarily in US stocks with a larger market capitalization expected to exhibit higher-than-average growth. These strategies tend to focus on established, well-known companies with the potential for strong earnings and revenue growth.

**S&P 500®:** An unmanaged capitalization-weighted index of 500 stocks designated to measure performance of the broad domestic economy through changes in the aggregate market value of 500 stocks representing all major industries.

Indexes are unmanaged and cannot be invested in directly.

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Federated Securities Corp.