



Concentrated vs. Diversified Managers: Challenging What You Thought You Knew About “High Conviction”

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Introduction

The general rationale for concentrated portfolios suggests managers can't possibly have equal conviction about a large number of stocks. Under this school of thought, investors want a portfolio of “best ideas,” rather than a diversified portfolio that could only represent diluted alpha information. Stock portfolios with many stocks and relatively lower tracking errors to benchmarks are often considered “closet indexers,” not worth active management fees or the effort relative to a passive approach. The work of Cremers and Petajisto (2009)¹ gave credence to these biases with the introduction of the measure known as Active Share.

In simple terms, Active Share is a holdings-based calculation that measures the deviation of a portfolio from a benchmark in percentage terms. A portfolio with a score of 0% is the exact same as the benchmark, while a portfolio with an Active Share of 100% has no overlap in holdings with the benchmark. The original

paper provided evidence among mutual funds of a relationship between a fund's deviation from a benchmark and its excess return. The Cremers and Petajisto (2009) paper added another manager analysis tool to plan sponsors' toolboxes, but it perpetuated a notion that high Active Share (and/or concentration) results in higher excess returns.

Review of Prior Work

Since the publishing of their original paper, there have been many articles, including work from AQR,² Fidelity,³ and Axioma,⁴ challenging any positive relationship between Active Share and excess return. Recent work from Andre Frazzini at AQR uses the same dataset as the original paper to obtain different results when mutual funds are grouped by and measured against more appropriate benchmarks. The original work organized all managers, from large-cap to small-cap, into one large data set. Their results were driven much more by the variation across capitalizations and benchmarks

than from differences in managers versus their relevant benchmarks.

Specifically, small-cap managers measured against a broad large-cap benchmark, such as the S&P 500 Index, will exhibit much higher Active Share than large-cap managers. Frazzini's work finds the empirical spread between high and low Active Share managers to have roughly equal numbers of positive and negative observations, depending on the specific benchmark. In other words, the results are largely random, and there is no measurable or statistically significant relationship between Active Share and excess return during that time period.

A 2014 paper from Fidelity similarly concludes that higher Active Share leads to higher dispersion and downside risk, attributing most of the positive relationship between Active Share and excess return to small-cap size exposure for managers.⁵ In this view, Active Share merely becomes a proxy for small-cap exposure. Recently, the markets experienced a small-cap super-cycle that provided excess returns over large-cap stocks. This super-cycle was similar in duration and magnitude to 1975-83. This latest small-cap run largely encompassed the data set covered in the Active Share papers, which inflated the returns of high Active Share small-cap strategies measured against the broad market cap weighted benchmark.

Even the latest paper from Petajisto (2013),⁶ building on the earlier framework of Cremers and Petajisto (2009), suggests the problem with most managers with low Active Share and lower tracking error is simply that the fee structure is too high. With high fee burdens, higher return potential is required for net of fee excess returns. In other words, with a lower fee structure, even lower-risk managers could potentially add value; it's not necessarily a function of alpha information related to the number of names. Moreover, the threshold as relevant for Active Share to add value is a relatively low 60%. The vast majority of active large-cap strategies satisfy this threshold — even those with relatively low tracking errors. (See the work from Fidelity for distributions of managers by Active Share). The average large-cap strategy has an Active Share of 75%, while it is 95% for small-cap strategies, according to the Fidelity paper.

Our Analysis

As with much of our prior work on the value of active management, we explored an institutional manager data set, rather than the retail mutual fund universe. We examined gross of fee returns for institutional managers, which are of primary interest to most plan sponsors. We used gross returns because institutional fees vary across mandates of varying sizes, allowing the reader to adjust the results based on their own appropriate fee assumption.

We grouped and categorized our analysis by the number of stocks, rather than Active Share. We classified large-cap portfolios with up to 40 stocks as concentrated and those of 100 stocks or more as highly diversified, with the remainder constituting the third group that rests in between. The number of stocks in representative separate account portfolios is accurately and readily available from Morningstar and other manager databases. This simple metric is highly intuitive for most investors, while Active Share percentage is not. Moreover, Active Share is a point in time measure that requires detailed portfolio holdings and benchmark

designation, which is information not readily available to investors for most managers. The Active Share metrics that do show up in databases are often self-reported manager statistics, rather than metrics that are independently calculated.

There can be a theoretical deviation between Active Share and the number of stocks for portfolios that hold a few highly concentrated bets along with a large number of small diversified stock holdings, but this is not typical. Empirically, we found a high degree of association between the number of stocks held and Active Share — an average correlation near -0.5 as of March 31, 2015, across large-cap and small-cap datasets (see appendix for details).

In the work of Petajisto (2013), the average number of holdings for the group classified as 'concentrated' was nearly 60 stocks, only slightly fewer than the group labeled as 'stock pickers.' Moreover, the concentrated group contained managers that held 107 stocks at just one standard deviation above the average of the group. This broad view of "concentration" strains most common definitions of the term. Furthermore, the Active Share calculation is highly dependent upon the benchmark selected. In our analysis, we avoided this benchmark-relative problem by using concentration measures based on number of stocks.

We grouped large-cap managers by style into growth, value, and blend. This style grouping rectified the benchmark-variation problem identified by Frazzini (2015). We removed composites that were passive, global, and/or contained bond holdings, short positions or leverage, sector strategies, and buy-write or covered call options strategies. We also removed any managers classified by institutional category with something other than large-cap domestic equity mandates. The style boxes had to be large cap and part of the institutional Morningstar category.

As a robustness check, we duplicated the analysis in Evestment for large-cap and small-cap managers without the style box consistency criteria or analytic output detail. The number of stocks for small-cap managers was slightly different to achieve similar population breakdowns between groups. With this second dataset, we achieved similar results, which appear in the appendix of this paper.

The results shown here are for the five-year period ended March 31, 2015, addressing most survivorship bias issues that long-term time windows of measurement entail. Moreover, this five-year time period is particularly relevant because it covers the out-of-sample period from the original Cremers and Petajisto (2009) paper published in the *Financial Analyst Journal*.

Results

When examining large-cap institutional managers grouped by style, we did not find an inverse relationship between the number of stocks in a manager's portfolio and returns, as would be implied in the Cremers and Petajisto papers. We did not find significant underperformance or outperformance of the category median, but we did find some underperformance of respective benchmarks in some styles for concentrated strategies. In sharp contrast, our results showed outperformance for diversified strategies relative to concentrated peers in all three style groups.

# Stock Holdings	# of Managers	3Yr Total Return	3 Yr % Rank	5 Yr Total Return	5 Yr % Rank	3 Yr Tracking Error	5 Yr Tracking Error	3 Yr Info Ratio	5 Yr Info Ratio	3 Yr Batting Avg	5 Yr Batting Avg	Avg # of Stock Holdings
Fewer than 40	123	14.70%	52nd	13.19%	54th	3.72%	4.13%	-0.37	-0.31	46.74%	47.04%	30
41 to 99	200	15.72%	47th	13.63%	51st	2.98	3.25	-0.17	-0.22	48.51%	47.75%	60
More than 100	66	16.81%	29th	14.99%	26th	1.81	1.93	0.51	0.38	55.47%	55.05%	249

Exhibit 1: Active Large Cap Blend Managers (For Periods Ended March 31, 2015)

Source: Morningstar. Risk statistics versus Russell 1000 Index. Russell Investment Group is the source and owner of the trademarks, service marks and copyrights related to the Russell Indexes. Russell® is a trademark of Russell Investment Group.

# Stock Holdings	# of Managers	3Yr Total Return	3 Yr % Rank	5 Yr Total Return	5 Yr % Rank	3 Yr Tracking Error	5 Yr Tracking Error	3 Yr Info Ratio	5 Yr Info Ratio	3 Yr Batting Avg	5 Yr Batting Avg	Avg # of Stock Holdings
Fewer than 40	92	13.68%	62nd	12.60%	58th	5.04	5.41	-0.40	-0.28	45.65%	46.25%	30
41 to 99	182	15.89%	48th	13.61%	53rd	3.22	3.48	-0.07	-0.24	48.12%	46.97%	62
More than 100	56	17.65%	25th	15.16%	26th	2.71	2.79	0.62	0.29	54.96%	52.50%	168

Exhibit 2: Active Large Cap Value Managers (For Periods Ended March 31, 2015)

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# Stock Holdings	# of Managers	3Yr Total Return	3 Yr % Rank	5 Yr Total Return	5 Yr % Rank	3 Yr Tracking Error	5 Yr Tracking Error	3 Yr Info Ratio	5 Yr Info Ratio	3 Yr Batting Avg	5 Yr Batting Avg	Avg # of Stock Holdings
Fewer than 40	154	16.04%	50th	15.03%	46th	5.06	5.40	-0.05	0.08	50.39%	51.34%	31
41 to 99	210	15.87%	52nd	14.69%	51st	4.37	4.61	-0.10	0.01	51.19%	51.22%	60
More than 100	41	17.40%	32nd	15.97%	32nd	3.65	3.84	0.37	0.37	56.37%	55.24%	157

Exhibit 3: Active Large Cap Growth Managers (For Periods Ended March 31, 2015)

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Over the five-year period, the information ratios for the managers holding 100 or more names were all near or above the statistical t-stat thresholds for 95% significance ($t\text{-stat} = IR * \sqrt{n}$) before fees. That threshold t-stat is 2.00 for 60 months and 2.03 for 36 months. Those with a positive information ratio added value gross of fees versus the benchmark, while negative scores detracted value. The same general patterns and conclusions also held for peer group percentile rankings and monthly batting averages.

The majority of active managers in the Large Cap Blend Category held between 40 and 100 stocks, but there were nearly twice as many managers that held fewer than 40 stocks as those that held more than 100 stocks. The diversified managers were the only group that added value on average over the latest three and five year periods, beating the Russell 1000 Index in more than 55% of the months.

There were slightly fewer active managers in the large-cap value space, but the group distributions were similar, except there were slightly fewer concentrated managers on a relative basis. The peer-relative and benchmark-relative performance stats were similar. Once again, concentrated managers were below-median on average (as measured by percentile rank), with negative information ratios and batting averages less than 50%.

The Large Cap Growth Category demonstrated the highest absolute and relative number of concentrated strategies and the fewest diversified strategies. Although the average relative performance of the concentrated strategies was also best in the large-cap growth style, the benchmark-relative performance was essentially flat, and the peer-relative performance was median. These numbers were largely indistinguishable from the bulk of managers that hold between 40 and 100 stocks, whereas the diversified managers holding 100 stocks or more still stood out as adding more value during this period.

Overall, our results challenge and run counter to the findings of Cremers and Petajisto (2009) and Petajisto (2013) for the retail mutual fund universe. The original paper established a classification framework for managers based on the intersection of tracking error and Active Share, as shown in Exhibit 4 (below). Petajisto (2013) maintains the same classification framework, as does Frazzini (2015), in challenging the methodology of the original work.

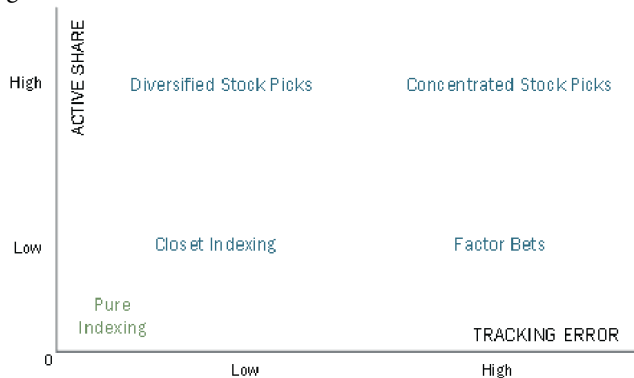


Exhibit 4: Active Share to Tracking Error Quadrant

Source: Cremers and Petajisto (2009)

Our findings challenge even this basic framework, because we found outperformance in the less concentrated (which we use as proxy for low Active Share) and low tracking error strategies. We also challenge this framework’s descriptions of “factor bets,” “closet indexing,” etc.

Our results clearly showed no outperformance, and even underperformance in some cases, for highly concentrated and high tracking error managers before fees. We also found consistent outperformance for low concentration /low tracking error managers across large-cap styles. It is possible these different results can be reconciled to some degree by differences in time period, relative tracking errors, and use of concentration/ Active Share metrics between our groupings and those shown in Petajisto (2013).

Exhibit 5 from that paper (below) shows the tracking error of “stock pickers,” which would be the bulk group, is 8.5%. It also shows they hold 66 stocks on average. The “concentrated” group has a tracking error of 15.8%, on average, and 59 stocks. These large tracking errors can only be explained by the benchmark and grouping problems noted in Frazzini (2015) and Fidelity (2014).

In sharp contrast, our analysis resulted in tracking errors in the 3%-4% range for the “bulk” group and 4%-5% for the “concentrated” group. Despite the fact that the Active Share papers try to correct for misspecification in the analysis with 4-factor Fama-French-Carhart alphas, such grouping problems still severely compromise the empirical analysis. As previously mentioned, the average “concentrated” manager holds 59 stocks, while just one standard deviation higher in the same group holds 107 stocks. That definition of concentration is most likely based on benchmark misspecification. In this framework, for instance, a diversified small-cap core manager with a relatively low tracking error would show up as a high Active Share/high tracking error manager relative to a broad market benchmark and would be labeled as “concentrated.”

Empirical performance statistics based on this type of faulty grouping scheme lack a legitimate interpretation. Would any investor truly consider data based on a manager grouping that has an average tracking error of 15.8%, as shown for the “concentrated” group? That level of tracking error isn’t possible without benchmark misspecification. For example, in the Morningstar separate account composite universe, even the Small Cap Growth Category constituent returns measured against an S&P 500 Index only achieved an average tracking error of 9.2% over the five-year period ended March 31, 2015. Any manager grouping measured against a relevant benchmark should arrive at average tracking errors that are only a fraction of those displayed by Petajisto (2013).

Group	Label	# of Funds	Assets (Millions)	Active Share	Tracking Error	Turnover	Expense Ratio	# of Stocks
A. Mean Values								
5	Stock Pickers	180	\$430	97%	8.5%	83%	1.41%	66
4	Concentrated	45	463	98	15.8	122	1.60	59
3	Factor Bets	179	1,412	79	10.4	104	1.34	107
2	Moderately Active	541	902	83	5.9	84	1.25	100
1	Closest Indexers	180	2,009	59	3.5	69	1.05	161
ALL		1,124	\$1,067	81%	7.1%	87%	1.27%	104
B. Standard Deviations								
5	Stock Pickers		\$858	1.4%	1.9%	78%	0.40%	40
4	Concentrated		1,164	1.5	4.3	132	0.66	48
3	Factor Bets		5,174	12.2	4.2	106	0.49	137
2	Moderately Active		2,575	7.5	1.5	74	0.40	98
1	Closest Indexers		6,003	9.3	0.9	54	0.39	177
All			\$3,846	14.0%	3.7%	83%	0.45%	119

Exhibit 5: Samples Statistics Across Various Fund Categories

Source: Petajisto (2013), Sample Statistics for Fund Categories, 1990 - 2009

Notes: This table shows sample statistics for the fund categories defined in (Petajisto 2013 paper), and subsequently used in the performance tables. The equal-weighted mean and standard deviation of each variable are first computed for each month over the sample period, and the reported numbers are their time-series averages across all the months.

Our analysis provided a relevant benchmark specification and was not driven by comparing small-cap managers or value managers against a broad market benchmark. As such, our findings challenge the fundamental groupings shown in Exhibit 5, which are critical to the original paper's interpretation of manager classification. In particular, we believe the Petajisto definition of "Factor Bets" consistent with high tracking error and low Active Share is more a function of benchmark misspecification than anything else. Largely, our interpretation of this is evidence of diversified portfolios compared with improper benchmarks.

The diversified group in our analysis had similar numbers of stocks and similar tracking errors to their "Closet Indexing" group, and yet it was the only group that added significant value in recent years. Moreover, we believe it most likely that our diversified group is the primary group employing the systematic "Factor Bets" identified in the original classification scheme. Perhaps the problem is the broad definition of "Factor Bets" in the Petajisto paper. He describes factor bets as follows: "involves time-varying bets on broader factor portfolios—for example, overweighting particular sectors of the economy, having a temporary preference for value stocks, and even choosing to keep some assets in cash rather than invest in equities."

This definition is different than how we believe most market participants would define factor-based investing. Factor-based investing should build diversified stock portfolios, sampling from a broad set of stocks to remove stock-specific risk, and focusing on factor exposures. This approach achieves consistent factor bets at relatively low tracking errors, consistent with the Fundamental Law of Active Management.⁷

Based on the answers to investment process questions in Morningstar, more than two-thirds of the concentrated and bulk groups in our analysis are classified as either fundamental or technical, with less than one-third labeling their processes as quantitative. The results were inverted for the diversified stock group, however, with more than two-thirds classifying their process as quantitative.

Most market observers would likely agree that quantitative investing is generally associated with systematic factor bets, diversified stock portfolios, and lower tracking errors, which is inconsistent with the Petajisto Active Share classification of the world.

Conclusion

The Active Share measure and the empirical evidence it is based on have had a strong influence on generational thinking about manager value-added and potential value-added. Most likely, this is because it gave empirical credence to biases that were already in place regarding high-conviction managers. Particularly, after 2007 and the relative short-term underperformance of quantitative approaches thereafter, it also gave a basis for criticism of such strategies in a formal framework. Recently, this entire framework has come under scrutiny from many different venues. The latest work challenges numerous fundamental points of the original paper, as well as its empirical findings and conclusions.

We have shown the empirical evidence for the Active Share papers is based on groupings with benchmark misspecification that do not stand up to logical scrutiny. Recent work, using the original

Active Share dataset but with proper benchmark specification, shows no consistent long-term relationship between Active Share and outperformance.⁸ Moreover, the Active Share measure will be clustered above 95% for most small-cap managers, which allows for little delineation in many manager data sets. Yet, these same managers still can have large differences in numbers of stocks held, tracking error, and other meaningful measures.

Most institutional investors are interested in separate account composite returns of institutional managers and not retail mutual funds. There is also some question as to whether the groupings arrived at in prior Active Share papers and classified as concentrated, high conviction approaches are accurate descriptions. We use an institutional manager dataset and a number of stocks to ascertain any outperformance of clearly concentrated, high conviction strategies. Our results indicate clearly there is no associated outperformance for concentrated strategies in recent years. Our time period of analysis represents a time frame that is out of sample from the original Cremers and Petajisto (2009).

Interestingly, our results do show statistically significant outperformance of diversified strategies. Moreover, the grouping tracking errors and number of stocks challenge the classification scheme of Cremers and Petajisto (2009) and Petajisto (2013). The classification of "factor bets" as high tracking error with low Active Share seems unfounded. There is no reason to assume that a portfolio cannot deploy systematic factor bets that have the potential to add value, while achieving such with a diversified portfolio of stocks at a relatively low tracking error. In fact, the recent appetite for Smart Beta products, whether active or passive, is predicated on just that supposition.

Active Share measures active deviation from a benchmark. As with any benchmark-relative measure, the choice of benchmark matters a great deal. The measure does not take into account where the active bets come from—whether industry deviation or factor bets—so it reflects little qualitative information. Active Share is one measure among many in an analytical toolbox for evaluating managers, but we find little to no information on implications for potential alpha.

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Data shown here represent correlations between number of stocks and excess return to their appropriately specified benchmarks in the Evestment dataset. Correlations would be negative if concentrated strategies were associated with excess returns and positive if diversified strategies were associated with excess returns.

3/31/15 Correlations	# of Managers	3 Yr	5 Yr
ALL LCC	304	0.0819	0.0804
ALL LCG	311	0.1337	0.0710
ALL LCV	350	0.0841	0.0529
ALL SCC	168	0.2021	0.1283
ALL SCG	180	0.0680	-0.0077
ALL SCV	230	0.0885	0.0387

Appendix

Data shown here represent correlations between number of stocks and Active Share (which is self-reported by managers relative to their own preferred benchmark) in each Evestment dataset. Correlations would be negative if as the number of portfolio holdings increased the Active Share reported decreased, indicating a positive relationship between concentration and Active Share.

3/31/15	Correlations
ALL LCC	-0.3965
ALL LCG	-0.5473
ALL LCV	-0.4930
ALL SCC	-0.4565
ALL SCG	-0.4455
ALL SCV	-0.5583

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Data shown here represent averages for groups drawn from the Evestment universe. Returns are average total returns for three- and five-year trailing returns and % rank represents percentile ranks, with 1 being best and 100 being worst. The results are consistent to those found in the Morningstar universe as described above.

3/31/15 Averages	# of Managers	3 Yr Total Return	3 Yr % Rank	5 Yr Total Return	5Yr % Rank
LCC: <=40	54	15.58	55	14.27	54
LCC: 41-99	144	16.18	53	14.26	53
LCC: >=100	106	16.73	38	14.87	39
LCG: <=40	102	15.83	51	15.28	47
LCG: 41-99	163	16.00	52	15.04	52
LCG: >=100	46	17.28	33	14.78	38
LCV: <=40	109	15.62	53	13.59	51
LCV: 41-99	182	16.07	48	13.69	50
LCV: >=100	59	17.03	36	14.35	39
SCC: <=60	42	15.11	65	14.77	63
SCC: 61-139	73	16.76	53	15.97	51
SCC: >=100	53	18.44	35	17.07	39
SCG: <=60	45	16.62	58	17.38	51
SCG: 61-139	107	17.39	50	17.18	52
SCG: >-140	28	18.51	39	17.92	42
SCV: <=60	74	15.46	55	14.73	48
SCV: 61-139	109	15.99	50	14.35	53
SCV: >=140	47	17.09	41	15.36	41

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Mr. Gustafson is a member of Chicago Equity Partners' quantitative analysis group, which is responsible for the firm's proprietary quantitative model and its ongoing developmental efforts. Prior to joining our firm, he held positions at Ibbotson Associates and SEI Corporation. Mr. Gustafson earned bachelor's degrees in history and economics from University of Pennsylvania, an MBA from Loyola University Chicago, and a master's degree in financial economics from the University of London. He holds the Chartered Financial Analyst (CFA) designation, and is a member of the CFA Institute, the CFA Society of Chicago, the Chicago Quantitative Alliance, the American Finance Association, and the American Economics Association.



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