

# Persistence of Public Markets Manager Skill

**RESEARCH NOTE**

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**Persistence is an important factor to consider when assessing the value of active management. The value of an active manager will diminish if there is little guarantee of strong future results after one good year, and it is not practical to replace managers in search of the next outperformer. However, if there is a way of predicting future success with current results, then it is possible that an investor can make a better-educated prediction of a manager's projected performance.**

**We assessed the persistence of success of well-performing actively managed funds and found that past performance is not indicative of future results. These results can help assess the potential quantitative efficacy of using active management and assessing the current performance of active management. One should note, however, that the paper is purely statistical in nature and does not account for qualitative insights, risk, or other economic factors.**

## Persistence

When trying to choose a manager, one may attempt to develop future performance expectations based on past performance, which would seem like a reasonable approach. If a strategy is working, and a fund is currently outperforming its benchmark, it intuitively makes sense that the fund, if properly managed, can continue to generate similar results. In this section, we tried to discern whether or not this sort of thinking is aligned with empirical evidence.

We first analyzed persistence by dividing each asset class's funds' rolling 12 month excess returns from five years ago (September 2014) into percentile ranks from the 0 to 100th percentile.<sup>1</sup> We then analyzed the same data for funds that were around in the next five years (thru September 2019). Persistence in the market would be exhibited by positive correlation between high ranking managers five years ago, and the same high ranking managers now. As an example, if there were a positive correlation, then the scatterplot should look something like Chart 1 on the following page.<sup>2</sup>

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<sup>1</sup> Ranking is decided by alpha outperformance over the standardized benchmark. See our "Manager Alpha" paper for more information on benchmarking.

<sup>2</sup> Data taken from IMDB.com on July 24th, 2019.

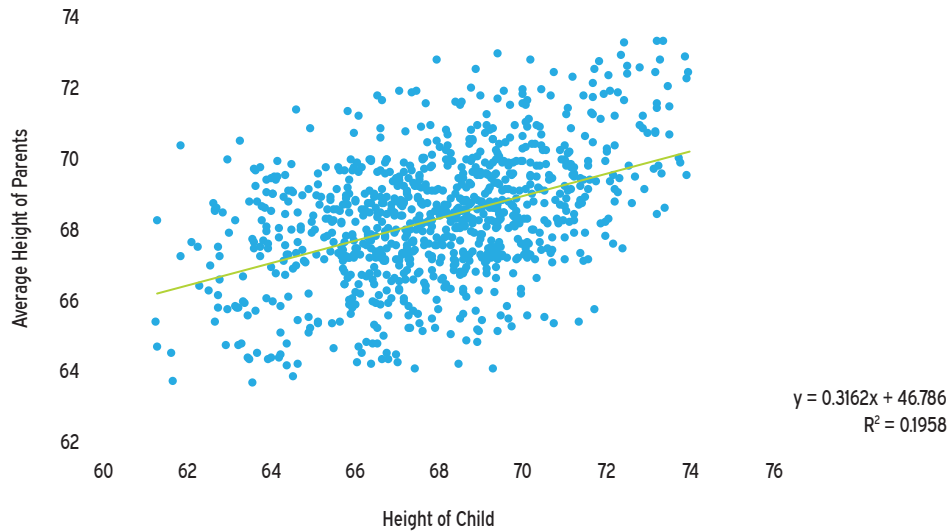


CHART 1

According to the plot above, there seems to be a positive correlation between the height of parents and the height of the child. This allows us to infer that tall parents are more likely to have tall children (and vice versa). To further illustrate this point, we included a linear regression line and an  $R^2$  value. The  $R^2$  value shows the correlation of the data points to the linear regression line. Due to the relatively high dispersion of the data, the linear trend line may not properly illustrate the magnitude of the slope value of the correlation, but it does provide a handy visual aid.

<sup>3</sup> By ranking, 100% means the best manager, 0% is the worst.

<sup>4</sup> Using only funds that survived after 5 years may incur some survivorship bias, but it is the only way to ensure that we can correctly rank the managers (arbitrarily picking a rank for managers under 5 years old or had ended within 5 years of the first time window can cause an unnecessary skewing effect). Instead, we will try to address the bias later in the paper.

On the other hand, the following chart illustrates the percentile rank of managers 5 years ago and their ranking<sup>3</sup> in 2019 in regard to excess returns.<sup>4</sup>

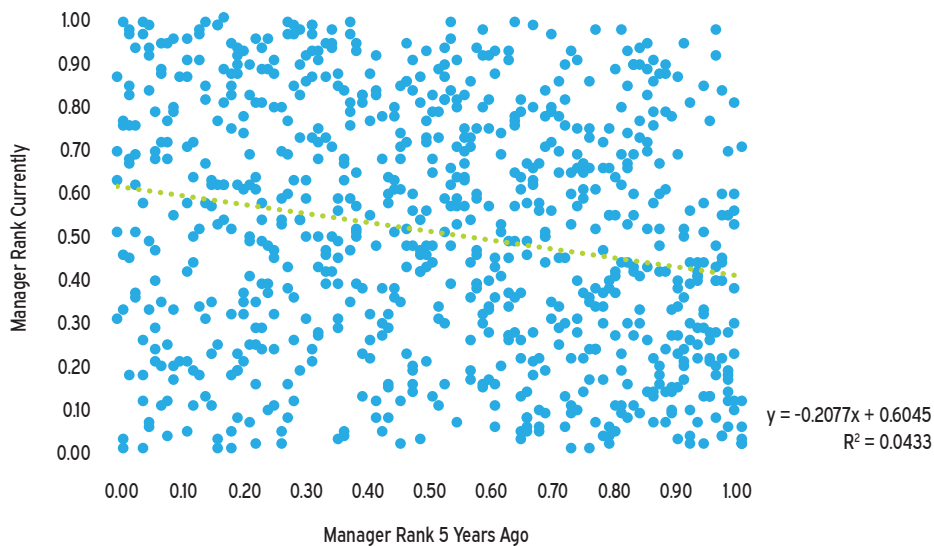


CHART 2  
Large Cap Equity Excess Returns Performance Rank

As the chart illustrates, the distribution looks random, signaling that past outperformance does not imply future outperformance. Consider the  $R^2$  value as well, which is about a fifth of the  $R^2$  value of the positive correlation in the height correlation example (and that the trend line does not seem to follow the scatterplot at all). None of this data has been adjusted for risk, style, or macroeconomic factors. The distribution of the points is still extremely random when removing funds that started after 2014, or ended in the last five years.<sup>5</sup> Even if the competitive advantage of a successful strategy had been declining in value over time, some level of positive correlation should have been present if the funds had some element of persistence. While the above scatterplot only shows the domestic large cap equity asset class, this random behavior is exhibited throughout each of the asset classes (see Appendix D for the rest of the asset classes' scatterplots).

<sup>5</sup> Closed or emerging funds were omitted to streamline the ranking process, but will be covered later in the paper.

The next table shows the average rank (percentage-wise) of the top decile funds after five years and the bottom decile after five years. If there is persistence among active management funds, then the average rank should stay closer to its decile. The following displays the rank of the average top or bottom decile for each asset class out of a 100 place ranking (1 being the best, 100 being the worst) as well as a standard deviation of the ranks after 5 years.

<b>Asset Class</b>	<b>Average Rank of Top Decile After 5 Years</b>	<b>Standard Deviation of Rank</b>	<b>Average Rank of Bottom Decile After 5 Years</b>	<b>Standard Deviation of Rank</b>
Core Bonds	63rd	26	33rd	23
High Yield	37th	26	31st	32
Large Cap	33rd	26	54th	31
Small Cap	45th	29	60th	35
Foreign Large Cap	51st	29	31st	29
Emerging Markets	55th	31	51st	27

For all of the asset classes, neither the top nor bottom decile funds stayed in the top or bottom decile, but instead were close to 50% after the five-year period, perhaps signifying mean reversion at work. Half of the asset classes' top decile funds were below the median after five years, and half of the asset classes' bottom decile funds ended up above the 50% rank. These percentages suggest that recent performance is not a good predictor of future results. In addition, the standard deviation for each asset class and for each decile was at least 26 positions in rank, signifying that there is a wide spread of rankings in the top and bottom decile after 5 years, and that past results will not predict the future.

For the prior calculations, we removed any funds that closed within our observed 5-year window, or opened after 2014. However, this can lead to survivorship bias by not covering the ranking of closed or emerging funds. To analyze the performance of these closing or emerging funds, we next calculated how many funds in the top and bottom decile in 2014 ended their funds within the next five years, as well as how many funds in the top and bottom decile in 2019 were less than five years old. If a small percentage of top decile funds closed after five years, and a large percentage of bottom decile managers closed after five years, survivorship is present in top and bottom decile funds.<sup>6</sup> The percent of all the funds that emerged or ended within the period was also included for reference.

<sup>6</sup> Survivorship is important here because it provides important context to persistence, as it also provides more insight into the state of the funds within the top and bottom deciles. If rank cannot be reliably predicted in the top and bottom deciles after 5 years, then perhaps one can say something about how long a fund in the top or bottom decile will survive in comparison to its peers within an asset class. It is also important to understand the likely ranking of funds that are just starting out. For instance, if a higher concentration of the bottom decile are emerging funds, then it may imply that it can take longer for emerging funds to get their footing and perform well versus peers.

<b>Asset Class</b>	<b>Percent of Top Decile Funds That Ended Their Fund Within 5 Years</b>	<b>Percent of Bottom Decile Funds That Ended Their Fund Within 5 Years</b>	<b>Percent of Funds That Ended Their Fund Within 5 Years</b>
US Core Bonds	38%	50%	27%
US High Yield Bonds	17%	26%	14%
US Large Cap	16%	34%	20%
US Small Cap	6%	25%	15%
Foreign Large Cap	15%	31%	16%
Emerging Markets	13%	19%	14%

<b>Asset Class</b>	<b>Percent of Funds in Top Decile Less Than 5 Years Old</b>	<b>Percent of Funds in Bottom Decile Less Than 5 Years Old</b>	<b>Percent of Funds Less Than 5 Years Old</b>
US Core Bonds	18%	25%	12%
US High Yield Bonds	26%	27%	19%
US Large Cap	18%	21%	13%
US Small Cap	12%	24%	15%
Foreign Large Cap	21%	14%	20%
Emerging Markets	33%	57%	32%

As the above tables indicate, a larger proportion of bottom decile funds ended after five years of the first time window than the top funds. This makes sense, since if a fund is underperforming, then it is more likely that the manager will close it than one that is doing well (even if success is not guaranteed to continue).<sup>7</sup> Except for the US Small Cap space, a non-trivial amount of top decile funds closed as well, albeit at a smaller rate than the bottom decile. Core bonds had the highest proportion of top and bottom decile funds ending within five years, with 38% and 50%, respectively, which were higher than the percentage across the whole asset class universe.

<sup>7</sup> Funds can close for a variety of reasons, including underperformance, mergers, personnel turnover, lack of interest despite relatively good performance, or the inability to buy hard-to-find assets in its asset class. For more information on why funds close and liquidate, see the appendix of the "Manager Alpha" 2019 paper.

For all asset classes, a significant portion of funds in the top and bottom deciles are under five years old. The most significant quantity is the emerging markets class, with 57% of the funds in the bottom decile being relatively new, or less than five years old. However, if the new bottom decile emerging market fund does manage to survive, the average ranking would be 51st with a standard deviation of 27 places. This would be generally higher than where the recent fund started, but it cannot be determined by current results how successful the fund will be.

It is important to note in this case that these percentages are from the last five years and can suffer from recency bias.<sup>8</sup> More research will have to be done before we can definitively say anything about the persistence of older funds, rank, or recently emerging funds. This data is not adjusted for times such as recession periods, style, or other uncontrolled factors. Our prior paper<sup>9</sup> had average ranking values that tended closer to 50%, but the random distribution of manager ranking after five years remained consistent, signifying that past performance is not a good predictor of future performance.

## Conclusion

On the subject of persistence, this analysis provides evidence that past results have not been predictive of future outcomes, and past performance has not informed a manager's performance in the long run. For the top and bottom decile, one can make some predictions about survivability, but not reliably, and without any guarantee of the future results of that surviving manager. An investor may use other metrics to try to ascertain whether an actively managed fund is a good fit for their portfolio, but past performance alone will not likely give any reliable implications about the future.

<sup>8</sup> We define recency bias as bias incurred by only looking at the most recent data and assuming that recent trends will continue to occur in the future.

<sup>9</sup> See our previous Manager Alpha paper for prior research on this subject. The average ranking answers differ, but both the prior paper and this note assess only the most recent period (2013 versus 2019). It is possibly a further testament to the fact that there really is not a good way of predicting the ranking of the top or bottom decile of managers if even the average rank after 5 years shifts depending on the year.

## Appendix A: Bias and areas for improvement

While this data analysis takes lengths to scrub the data and processing from bias, possible skewing is inevitable. With that said, this allows for new opportunities regarding areas for further research and analysis.

We gathered our data from Morningstar Direct's database. The benchmarks used will be located in the appendix following this paper. The magnitudes of the outperformance of the asset classes will inevitably be different depending on the chosen benchmark to compare against outperformance, but the basic trends and spreads should be the same.

While Morningstar Direct allows us to root out selection bias as opposed to a database like eVestment, there were less available funds on Morningstar than on eVestment, thus limiting the amount of data points. However, because we cannot guarantee selection bias or asset class mismatch like we can with Morningstar, we still opted for using Morningstar Direct. eVestment allows managers to self-report their vehicles and asset classes, which can possibly lead to asset class mismatch and selection bias in the case that a manager reports only vehicles that are reporting. Meanwhile, Morningstar sorts asset classes on its own and requires all vehicles to be reported. One could possibly do a comparison of the data between the two and find out if there is any difference when assessing the two databases. If the data skews more positively in the eVestment data, it could be possible evidence of selection bias at play.

See our paper on Manager Alpha for a more detailed explanation of our methodology, including data filtering and benchmarking.

## Appendix B: Benchmarking and time periods

Morningstar Direct only provides single benchmarks per asset class at a time. The following table illustrates the benchmark we used for each asset class. The style benchmarks for US Large Cap, US Small Cap, and Foreign Large Cap have the same inception date.<sup>10</sup>

Asset Class	Benchmark	Inception Date
Core Bonds	Bloomberg Barclays US Aggregate Bond	January 1976
High Yield	BofAML US High Yield	September 1986
US Large Cap	Russell 1000	January 1979
US Small Cap	Russell 2000	January 1979
Foreign Large Cap	MSCI ACWI ex-US	January 1988 <sup>11</sup>
Emerging Markets	MSCI-EM	January 1988 <sup>12</sup>

<sup>10</sup> For asset classes with certain styles (i.e. growth or value), we used the style benchmark for outperformance (such as using the Russell Value for US Value Large Cap Equity). The growth and value variants were applied to the US Large Cap, US Small Cap, and Foreign Large Cap benchmarks when necessary. Unless otherwise noted, the style benchmarks' inception dates were the same as their core counterparts.

<sup>11</sup> The MSCI ACWI ex-US started in January 1988, but the style benchmarks started in January 1997. For uniformity and accuracy when comparing style strategies, the Foreign Large Cap funds were assessed from January 1997 on.

<sup>12</sup> While the Emerging Market Index started in 1988, the graph for outperformance did not start until 1991, as there was not enough fund data.

## Appendix C: Fund numbers

Because this research note is only delving into a certain snapshot in time, not as many funds were evaluated as the main Manager Alpha paper. The chart below displays the number of funds evaluated during the five year period compared to the number of funds used in the manager alpha paper after filtering. More detailed information regarding filtering can be found in the Manager Alpha paper.

<b>Asset Class</b>	<b>Number of Funds</b>	<b>Funds for Persistence</b>
Core Bonds	378	142
High Yield	281	205
US Large Cap	2,259	1,168
US Small Cap	938	565
Foreign Large Cap	619	399
Emerging Markets	316	244



## Appendix D: Other asset class' persistence

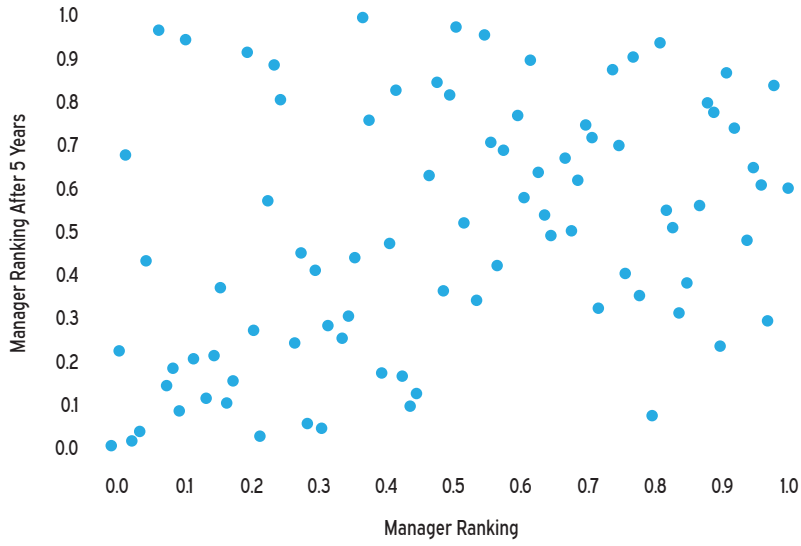


CHART 3  
Core Bonds Manager  
Persistence

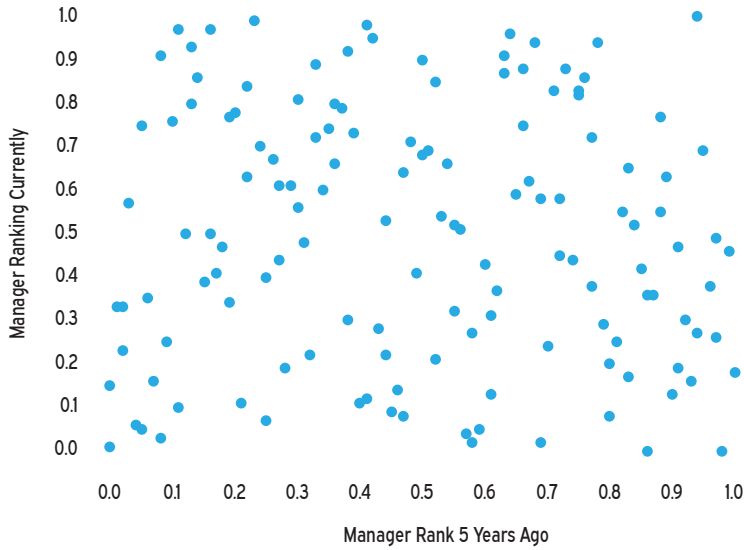


CHART 4  
High Yield Persistence

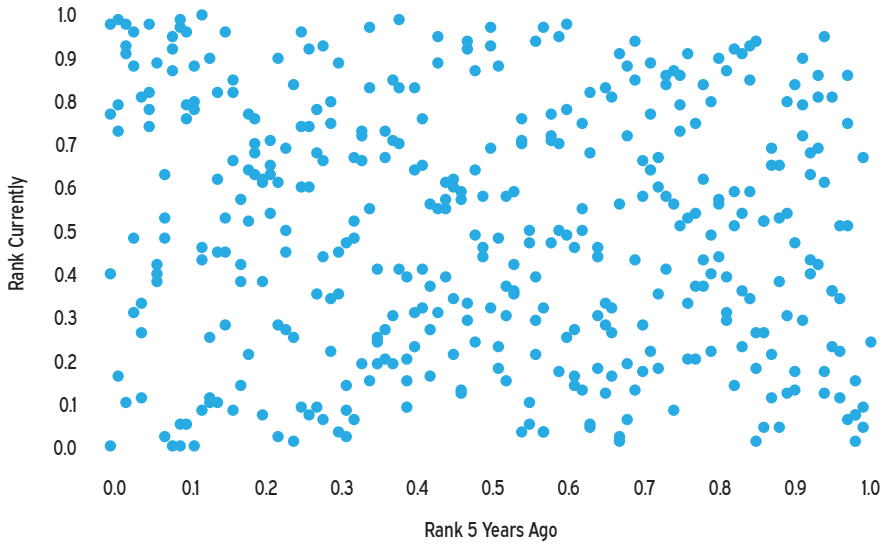


CHART 5  
**Domestic Small Cap  
 Persistence**

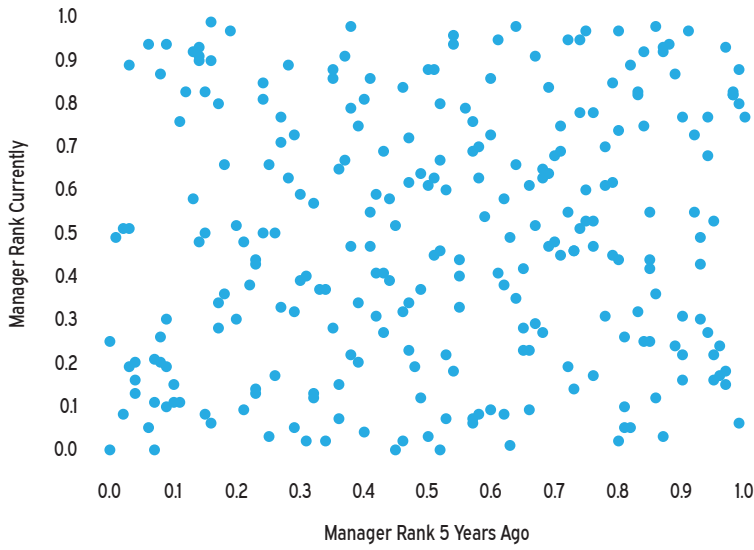


CHART 6  
**Foreign Large Cap  
 Persistence**

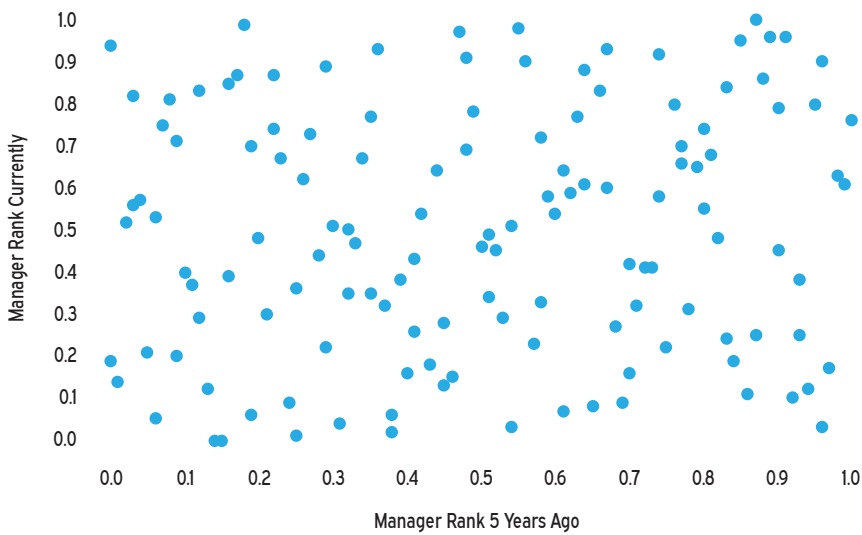


CHART 7  
**Emerging Market  
 Persistence**

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