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Research Paper

The Next Chapter in the Active vs. Passive Debate

An Update to our Analysis of Performance, Consistency, and Persistence

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April 2023

This is our seventh iteration of "The Next Chapter in the Active vs. Passive Debate" in which we evaluate the efficacy of active mutual funds[1] in 17 different categories during the ten-year period ended December 2022. Despite the unprecedented market environments captured in the recent iteration, and variations over time periods since the first edition of the paper in 2007, our primary observations have remained consistent over time.

The constituents of this analysis are all actively-managed strategies as defined by Morningstar. All passively-managed strategies that have achieved ten-year track records are independently analyzed at the end of the paper.

Key Observations:

89% *of ten-year top quartile mutual funds were unable to avoid at least one three-year stretch in the bottom half of their peer group. This result is slightly higher than the median of the historical range of 83 to 92 percent in our past six editions, and up from the 85 percent we observed in our 2021 edition. The higher percentage can be attributed to Fixed Income and Core and Growth equities, which represent a high percentage of the funds analyzed.*

62% *of ten-year top quartile mutual funds were unable to avoid at least one five-year period in the bottom half of their peer group. This result is near the top of our historical range of 54 to 63 percent in our past six editions, and up from the 56 percent we observed in our last edition.*

[1]Distinct portfolio share classes (only) from Morningstar mutual fund database as of December 2022. Not corrected for survivorship bias. All data in all exhibits is sourced as Morningstar and Fiducient Advisors analysis unless stated otherwise.

Top Quartile

Top quartile mutual funds with three-year stretches in the bottom half of their peer group spend, on average, six consecutive quarters below the median. Top quartile funds spent an average of 24 percent of rolling three-year periods in the bottom half of their peer groups, in line with our previous edition of 21 percent.

42nd Percentile

Owning the 42nd percentile mutual fund in categories would have matched the weighted index return for a 70 percent equity and 30 percent fixed income portfolio during the ten-year period. This result is modestly lower than the median of the historical range of 36 to 52 percent in our past six editions, and up modestly from the 39th percentile we observed in our last edition. Thus, the trend that more effective manager selection is required to match the weighted index return continues to persist, including during the recent ten-year period.

Consistent with previous editions, many asset classes generate outperformance in the top quartile of their peer group and to a lesser extent the median manager.

Investing passively does not completely insulate investors from volatility in relative performance compared to active peers and in some asset classes guaranteed sub-par results over the most recent ten-year period.

Long-term Success

Falling prey to natural human behavioral tendencies during the manager selection and termination process generally leads to failure. Investors need to make a concerted effort before investing to understand a manager's investment process, sub-style, and whether they possess competitive advantages over their peers that improve the odds of ranking in the top quartile. We continue to affirm this allows investors to develop the confidence, and more importantly, the patience required for long-term success.

Introduction

The most recent ten year period includes recession, expansion, quantitative easing, quantitative tightening, and both rising and falling markets. Yet, our current findings remain consistent with our previous studies and support our past conclusion that nearly all of the top managers over long periods of time periodically struggle.

Exhibit 1

Ten-year top quartile funds[2,3,4] that fell below median during one or more three- and five-year periods

Category	Number of Funds with 10-Year Track Records[1,2]	Number of 10-Year Top Quartile Active Managers	Number of 10-Year Top Quartile Active Managers Below Median For a 3-Year Period	Percent of 10-Year Top Quartile Active Managers Below Median For a 3-Year Period	Average Number of Consecutive Quarters Spent In Bottom Half of Peer Group	Number of 10-Year Top Quartile Funds Below Median For a 5-Year Period	Percent of 10-Year Top Quartile Active Managers Below Median For a 5-Year Period
Intermediate Bond	84	23	18	78%	4.7	14	61%
High Yield Bond	130	34	30	88%	5.4	20	59%
International/Global Bond	38	10	9	90%	6.4	7	70%
Large Cap Value	241	60	48	80%	4.0	32	53%
Large Cap Core	227	51	46	90%	6.0	34	67%
Large Cap Growth	256	60	49	82%	7.2	34	57%
Mid Cap Value	80	21	20	95%	5.6	12	57%
Mid Cap Core	68	21	19	90%	4.4	16	76%
Mid Cap Growth	113	30	30	100%	6.9	22	73%
Small Cap Value	99	25	23	92%	6.8	18	72%
Small Cap Core	120	29	27	93%	8.2	20	69%
Small Cap Growth	131	34	32	94%	6.4	20	59%
International Value	63	15	15	100%	6.6	13	87%
International Core	116	33	31	94%	5.7	20	61%
International Growth	71	18	17	94%	3.8	7	39%
Emerging Markets	123	33	32	97%	8.0	23	70%
Real Estate	45	12	7	58%	4.0	2	17%
Total	**2005**	**509**	**453**				
Weighted Average				**89%**	**6.0**	**314**	**62%**

Source: Morningstar, Fiducient Advisors' analysis; as of December 31, 2022.

Duration of Manager Underperformance

The duration of below peer group median performance can test the patience of even the most sophisticated investors. We believe many accept the premise that strong long-term performing managers can produce poor results from time to time. However, the length of these poor-performing stretches is often surprising. **Exhibit 1** displays that over the recent ten-year period, the average top quartile manager has six consecutive quarters spent in the bottom half of the peer group based on rolling three-year periods. This suggests that one would need to defend and/or discuss a top quartile manager (and eventual long-term winner) for over a year at some point over the recent ten year period. Depending on the asset class, this ranges from as few as four quarters to as many as seven, so one cannot escape this phenomenon regardless of the asset class.

While the stretch of poor-performance can be long, it can also be frequent across all managers in a diversified asset allocation. **Exhibit 2** shows that ten-year top quartile funds spent about 24 percent of rolling three-year

[2]Many fund families offer multiple versions of the same fund, but with variations of the fees that are charged and investor qualifications. Morningstar's "distinct portfolio only" feature removes all duplicate options. Morningstar normally designates the oldest share class as the distinct portfolio.
[3]Morningstar data is not immune to survivorship bias. Each mutual fund that survived the tenoyear stretch was captured regardless of performance. In addition, the Morningstar data generates returns net of expenses.
[4]All ten-year calculations across the paper reflect the period from December 31 2023 – December 31 2022.

periods (or approximately 6 out of 29 total observations) in the bottom half of their peer group. Therefore, had one possessed enough skill (or luck) to have selected top quartile funds in every single category, one would still have to go through many quarterly performance reviews where at least one of the selected managers achieved below median performance for the recent three-year period. Over rolling five-year periods, top quartile funds spent 18 percent of the time in the bottom half of their peer groups. The ranges are relatively tight and consistent across all 17 analyzed asset classes.

Exhibit 2

Average percent of three- and five-year periods spent in the bottom half by ten-year top quartile funds

Category	Number of 10 year Top Quartile Active Managers	Average Percent of 3-Year Periods Spent in Bottom Half	Average Percent of 5-Year Periods Spent in Bottom Half
Intermediate Bond	23	21%	15%
High Yield Bond	34	19%	14%
International/Global Bond	10	32%	24%
Large Cap Value	60	16%	10%
Large Cap Core	51	25%	18%
Large Cap Growth	60	26%	22%
Mid Cap Value	21	24%	16%
Mid Cap Core	21	20%	14%
Mid Cap Growth	30	31%	22%
Small Cap Value	25	30%	25%
Small Cap Core	29	31%	25%
Small Cap Growth	34	27%	17%
International Value	15	30%	24%
International Core	33	23%	17%
International Growth	18	16%	8%
Emerging Markets	33	31%	25%
Real Estate	12	10%	4%
Weighted Average		**24%**	**18%**

Source: Morningstar, Fiducient Advisors' analysis; as of December 31, 2022.

Once a manager is hired, it is unlikely that performance will always be strong when revisiting trailing performance on a quarterly basis, even if the next ten-year period is strong enough to place the manager in the top quartile of their peer group. In fact, the only way to ensure your portfolio will always consist of managers with strong performance over trailing periods is to constantly replace your recent underperforming managers with recent more favorable performers. As behavioral finance suggests, such behavior is subject to significant recency bias. Such restraint is often easier said than done, however, as it requires discipline and patience. Since even the best performing managers periodically struggle, what are the legitimate reasons to consider termination? We believe the answers to the following questions are the most instructive:

1. Has the portfolio manager or team changed the process, investment constraints, or style?
2. Does the performance align with the historical context of the manager's track record in similar market cycles?
3. Have there been any material personnel or organizational changes?
4. Does the process remain consistent despite near-term struggles?
5. Are incentive alignments in place to retain strong talent and encourage long term thinking?
6. Has the manager's competitive advantage decayed as a result of changing market dynamics?

While it may be easier to avoid these difficult questions by simply terminating (and hiring a recent strong-performing manager), there is some evidence here to suggest that will be a futile exercise.

Style Analysis

It is important to know both when and by how much active managers are expected to both outperform and underperform. Historically, the greater the benchmark return, the more difficult it has been for active managers to keep pace with the benchmark. Index performance rankings are also cyclical and often fluctuate as much as active strategies in the same asset class. In some cycles, indices can be extremely difficult to best not only by the median manager, but even by a top quartile manager. **Exhibit 3** illustrates this concept.

Exhibit 3

Index[5] returns compared to median and top quartile funds

Category	10-Year Index Return	10-Year Index Peer Group Rank	Median Fund Return	Median Fund Excess Return	Top Quartile Fund Return	Top Quartile Fund Excess Return
Intermediate Bond	1.1%	41	1.0%	-0.1%	1.2%	0.2%
High Yield Bond	4.0%	16	3.3%	-0.7%	3.8%	-0.2%
International/Global Bond	-1.6%	86	-0.4%	1.3%	0.1%	1.8%
Large Cap Value	10.3%	50	10.3%	0.0%	11.0%	0.7%
Large Cap Core	12.6%	11	11.8%	-0.8%	12.3%	-0.2%
Large Cap Growth	14.1%	7	11.9%	-2.2%	13.0%	-1.1%
Mid Cap Value	10.1%	36	9.6%	-0.5%	10.4%	0.3%
Mid Cap Core	11.0%	20	10.2%	-0.8%	10.7%	-0.3%
Mid Cap Growth	11.4%	40	10.8%	-0.6%	12.0%	0.6%
Small Cap Value	8.5%	57	8.8%	0.3%	9.7%	1.2%
Small Cap Core	9.0%	59	9.2%	0.2%	10.1%	1.1%
Small Cap Growth	9.2%	73	10.2%	1.0%	11.3%	2.1%
International Value	3.3%	72	3.9%	0.6%	4.4%	1.0%
International Core	4.3%	56	4.3%	0.1%	4.9%	0.6%
International Growth	5.0%	48	4.9%	-0.1%	6.5%	1.5%
Emerging Markets	1.8%	39	1.4%	-0.4%	2.7%	0.9%
Real Estate	6.5%	36	6.2%	-0.3%	6.7%	0.1%

Source: Morningstar, Fiducient Advisors' analysis; as of December 31, 2022.

In the case of International/Global Bond, Small Cap, or International Value and Core, the median manager or higher outperformed its index, making a strong case for active management in the asset classes. However, if you do not possess skill in selecting top quartile managers in certain asset classes, your allocation is likely to underperform its respective index. For asset classes such as International Growth, Emerging Markets, and Real Estate, the median manager underperformed its index while the top quartile manager outperformed.

Use of Indices and Benchmark Return Indices cannot be invested in directly. Index performance is reported gross of fees and expenses and assumes the reinvest dividends and capital gains. Past performance does not indicate future performance and there is a possibility of a loss. See disclosure page for indices representing each asset class.

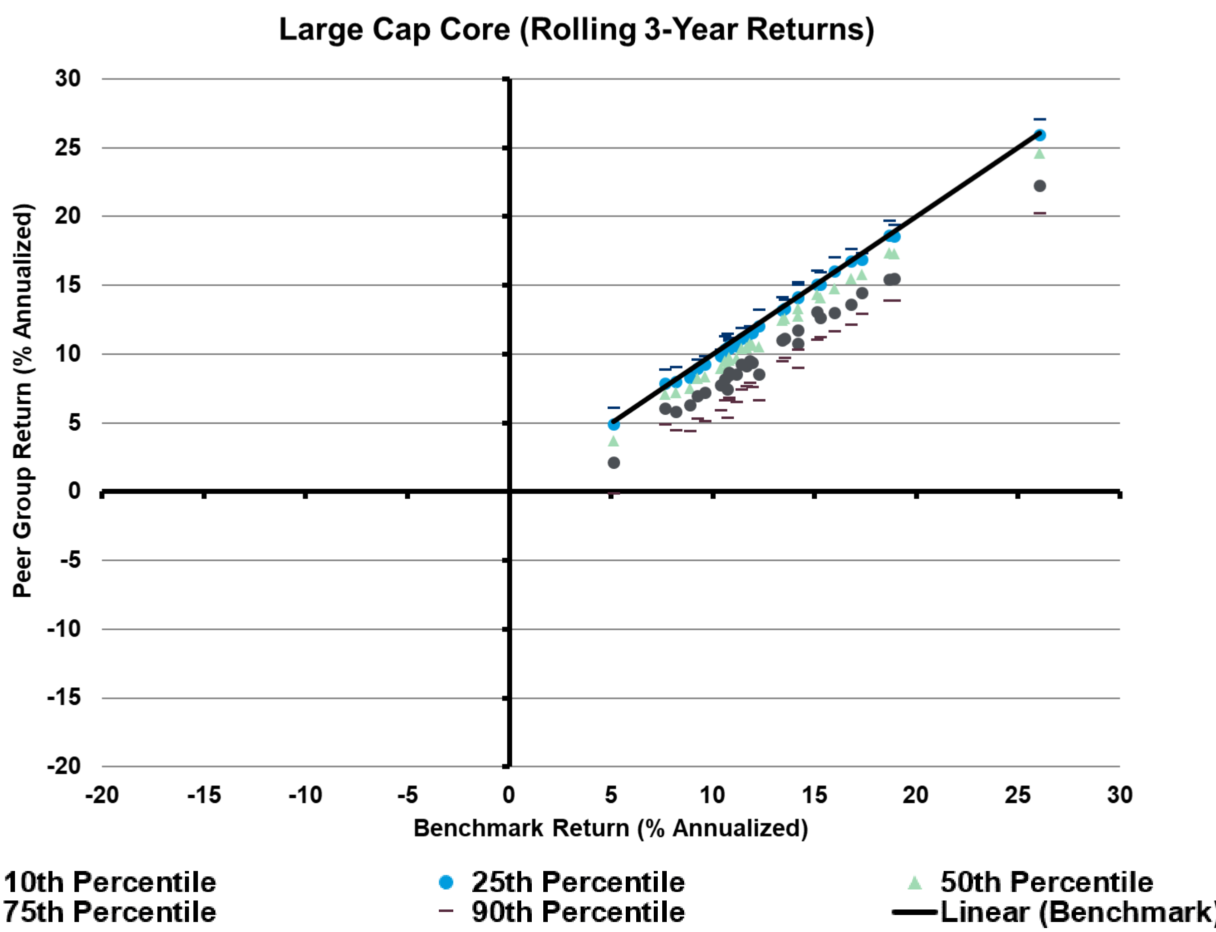
[5]Indices: Barclays Aggregate Bond, Barclays U.S. Corporate High Yield, Barclays Global Aggregate ex U.S., Russell 1000 Value, S&P 500, Russell 1000 Growth, Russell Mid Cap Value, Russell Mid Cap, Russell Mid Cap Growth, Russell 2000 Value, Russell 2000, Russell 2000 Growth, FTSE NAREIT Equity REITs, MSCI EAFE Value, MSCI EAFE, MSCI EAFE Growth, MSCI Emerging Markets.

For other asset classes such as High Yield, outperforming the benchmark was extremely difficult as only fifteen percent of all strategies achieved. To be successful in generating excess return, an investor would have needed to select a top-decile manager. It is worth noting that not all indices can be efficiently replicated by a passive portfolio. Despite the headwind for active managers in High Yield for example, there are two well-known passive ETFs in the space and both underperformed the index by -1.2 percent and -1.4 percent on an annual basis over the last ten years. They ranked 67th and 78th in the peer group over that period, so the decision is not always just to be active or passive, but perhaps should an investor own the asset class at all.

Expanding the analysis further, **Exhibit 4** displays a scatterplot of the benchmark return (on a rolling three-year basis) on the horizontal X-axis and multiple peer group returns on the vertical Y-axis. The diagonal line represents the benchmark return and icons above the line indicate outperformance whereas icons below the line indicate underperformance.

Exhibit 4

Rolling three-year peer group returns vs. S&P 500



Source: Morningstar, Fiducient Advisors' analysis; as of December 31, 2022.

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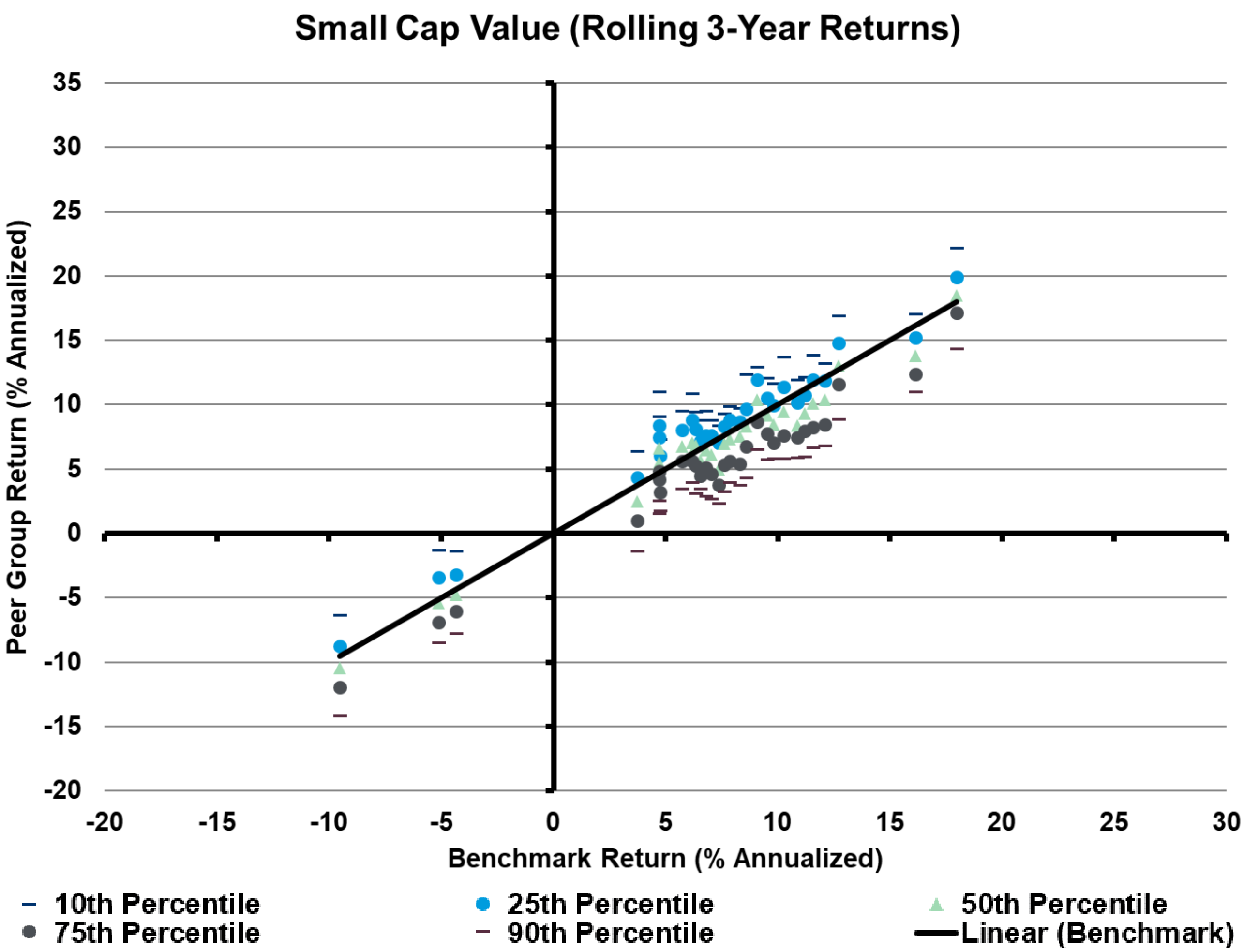
The Large Cap Core space shows very strong and consistent absolute returns on a rolling three-year basis and benchmark performance around the top quartile of peers in each instance. It is noteworthy that for the current ten-year period, every rolling three-year period had positive absolute performance, with the majority of observations being 10 percent annualized returns or greater. Thus, it has been especially difficult for active Large Cap Core managers to outperform the S&P 500 index.

This relationship generally held for domestic core styles across market cap. However, **Exhibit 5** shows outperformance of the top quartile far more often across most levels of benchmark returns for Small Cap Value. Since the light blue dots were usually above the line, a top quartile Small Cap Value manager consistently outperformed the benchmark regardless of the level of benchmark return.

Exhibit 5

Rolling three-year peer group returns vs. Russell 2000 Value



Source: Morningstar, Fiducient Advisors' analysis; as of December 31, 2022.

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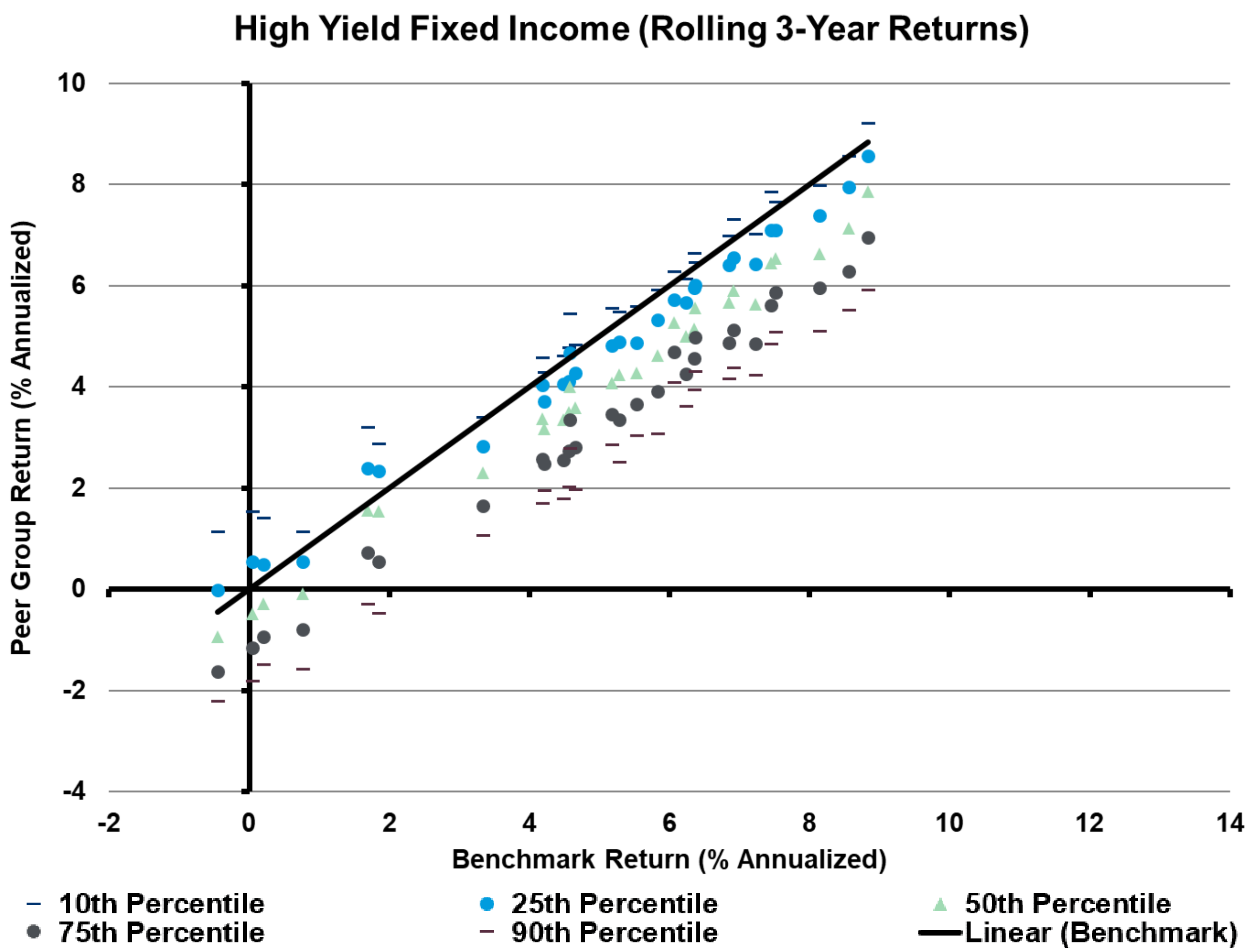
High Yield displayed persistent historical underperformance for the top quartile at various periods and even occasionally show in-line or underperformance of the top decile relative to the benchmark. **Exhibit 6** displays High Yield's results as a prime example of just how difficult it has been for active managers to outperform in certain asset classes.

Exhibit 6

Rolling three-year peer group returns vs. Bloomberg US Corporate High Yield



Source: Morningstar, Fiducient Advisors' analysis; as of December 31, 2022.

However, the High Yield index has survivorship bias, meaning defaulted (and therefore poor performing) credits are dropped from the index. Investors should also be aware that there is no way to replicate or buy the Bloomberg US Corporate High Yield index, so the discussion should center around active managers versus available passive ETFs. **Exhibit 7** displays High Yield's results versus the largest passive alternative, which shows a much stronger case for active management.

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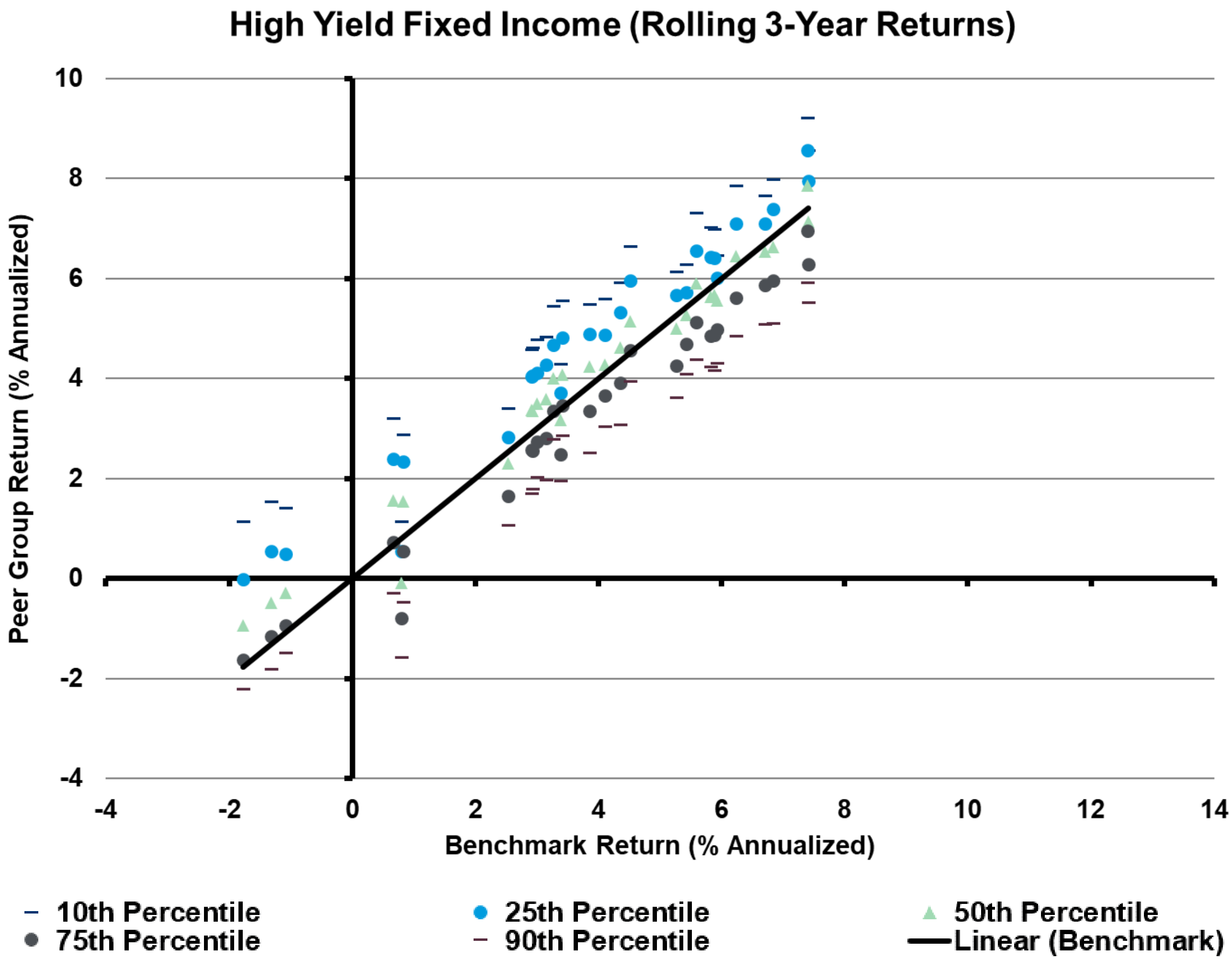
Exhibit 7

Rolling three-year peer group returns vs. iShares High Yield Corporate Bond ETF



Source: Morningstar, Fiducient Advisors' analysis; as of December 31, 2022.

For the remaining asset classes not explored here, please refer to the Appendix for the scatterplots of all 17 asset classes.

Interpreting these results suggests an obvious question: *with many active managers seeking to outperform their benchmarks, why do an overwhelming number fail in a particular asset class?* On the equity side, simany benchmarks are market capitalization weighted and the largest companies in each benchmark greatly influence the benchmark's returns. Domestic equity indices have continued to have some very large and concentrated positions and a manager unwilling to hold an even larger and even more concentrated positions will be at a disadvantage if these stocks happen to perform well. As a recent example, the FAANMG names (Facebook, Amazon, Apple, Alphabet [Google], Netflix and Microsoft) continue to represent a large portion of U.S. Large Cap

Growth universe. Moreover, active managers generally keep some cash on hand to meet redemptions in their funds, so "cash drag" hurts in momentum-driven markets like the recent domestic equity market run.

Exhibit 8 displays each asset class's rolling three-year batting average over the last decade to measure the relationship between relative performance versus the benchmark and peer group rankings. In the example of High Yield, the top quartile active manager generated an excess return of 0 percent to -2 percent during 79 percent of the 29 three-year periods over the last ten years. Large Cap Core was similar as 93 percent of rolling three-year periods produced an excess return of 0 percent to -2 percent. Both serve as reminders that benchmark outperformance is not always guaranteed for strategies that achieve competitive rankings relative to their peers.

Exhibit 8

Batting averages of rolling three-year periods over the last ten years

	% of Rolling 3-year periods:					
	Below -4% excess return	Between -2% and -4% excess return	Between 0% and -2% excess return	Between 0% and +2% excess return	Between +2% and +4% excess return	Above +4% excess return
Intermediate Bond						
25% percentile			14%	**86%**		
50% percentile			**93%**	7%		
75% percentile			**100%**			
High Yield Bond						
25% percentile			**79%**	21%		
50% percentile			**100%**			
75% percentile		10%	**90%**			
International/Global Bond						
25% percentile			17%	**79%**	3%	
50% percentile			69%	31%		
75% percentile		14%	**86%**			
Large Cap Value						
25% percentile			14%	66%	21%	
50% percentile			59%	41%		
75% percentile		17%	**83%**			

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Exhibit 8 Continued

	% of Rolling 3-year periods:					
	Below -4% excess return	Between -2% and -4% excess return	Between 0% and -2% excess return	Between 0% and +2% excess return	Between +2% and +4% excess return	Above +4% excess return
Large Cap Core						
25% percentile			**93%**	7%		
50% percentile			**100%**			
75% percentile		**97%**	3%			
Large Cap Growth						
25% percentile		7%	55%	38%		
50% percentile	7%	28%	66%			
75% percentile	38%	62%				
Mid Cap Value						
25% percentile			17%	**76%**	7%	
50% percentile		10%	72%	17%		
75% percentile		62%	38%			
Mid Cap Core						
25% percentile			48%	52%		
50% percentile		28%	62%	10%		
75% percentile	17%	72%	10%			
Mid Cap Growth						
25% percentile			7%	59%	31%	3%
50% percentile			**76%**	24%		
75% percentile		72%	28%			
Small Cap Value						
25% percentile			17%	62%	21%	
50% percentile		10%	62%	28%		
75% percentile		52%	45%	3%		
Small Cap Core						
25% percentile			24%	62%	14%	
50% percentile		7%	59%	34%		
75% percentile	7%	41%	52%			
Small Cap Growth						
25% percentile			3%	31%	14%	52%
50% percentile			31%	21%	38%	10%
75% percentile		28%	52%	21%		
International Value						
25% percentile			17%	59%	17%	7%
50% percentile		14%	34%	45%	7%	
75% percentile	10%	7%	69%	10%	3%	
International Core						
25% percentile			21%	69%	10%	
50% percentile		3%	69%	24%	3%	
75% percentile		24%	69%	7%		
International Growth						
25% percentile				**86%**	14%	
50% percentile			72%	28%		
75% percentile		17%	**83%**			
Emerging Markets						
25% percentile			3%	59%	31%	7%
50% percentile		3%	52%	45%		
75% percentile		45%	55%			
Real Estate						
25% percentile			21%	52%	28%	
50% percentile			52%	41%	7%	
75% percentile			**90%**	10%		

Source: Morningstar, Fiducient Advisors' analysis; as of December 31, 2022.

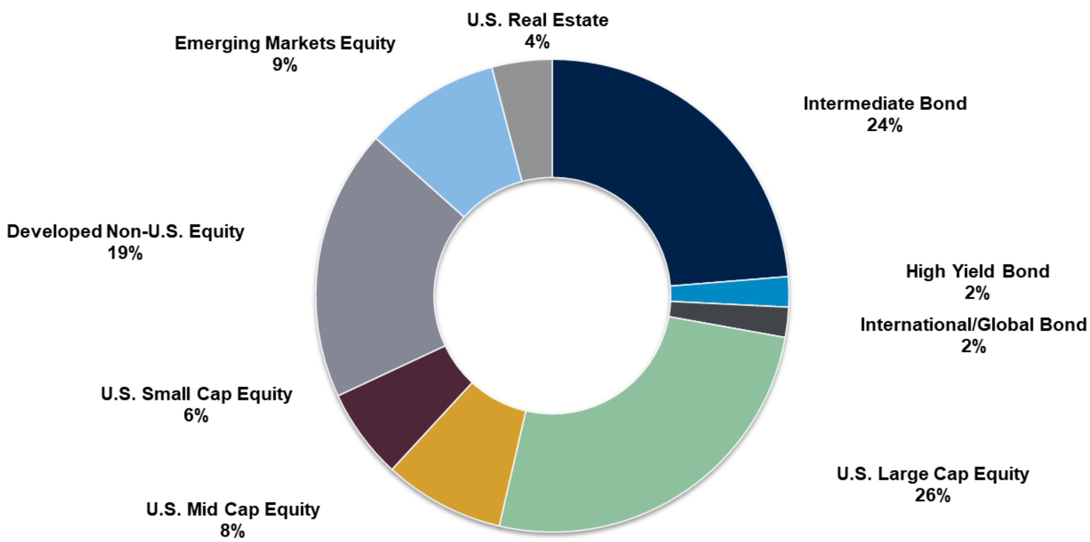
Use of Indices and Benchmark Return Indices cannot be invested in directly. Index performance is reported gross of fees and expenses and assumes the reinvest dividends and capital gains. Past performance does not indicate future performance and there is a possibility of a loss. See disclosure page for indices representing each asset class.

Peer Group Rank Required to Match the Benchmark Return

For a hypothetical 70 percent equity and 30 percent fixed income portfolio highlighted in **Exhibit 9**, the required peer group ranking of each of the 17 asset classes to match the weighted index return[7] is the 42nd percentile. One can see in **Exhibit 10** that simply matching the median return in each asset class was not good enough to beat the weighted benchmark return.

Exhibit 9

Hypothetical 70/30 Portfolio



Source: Fiducient Advisors' Frontier Engineer®

Use of Indices and Benchmark Return Indices cannot be invested in directly. Index performance is reported gross of fees and expenses and assumes the reinvest dividends and capital gains. Past performance does not indicate future performance and there is a possibility of a loss. See disclosure page for indices representing each asset class.

[7]This analysis does not incorporate rebalancing and does not adjust for survivorship bias.

Exhibit 10

Fund Return and Excess Return by Asset Class and Ranking

Category	Asset Mix	10-Year Index Return	Index Peer Group Rank	Absolute Top Funds		Top Quartile Funds		42nd Percentile Funds *(Required to Match Indices)*		Median Funds		Bottom Quartile Funds		Absolute Bottom Funds	
				Return	Excess Return	Return	Excess Return	Return	Excess Return	Return	Excess Return	Return	Excess Return	Return	Excess Return
Intermediate Bond	24%	1.1%	41	2.4%	1.3%	1.2%	0.2%	1.1%	0.0%	1.0%	-0.1%	0.8%	-0.3%	-0.7%	-1.8%
High Yield Bond	2%	4.0%	16	5.7%	1.7%	3.8%	-0.2%	3.5%	-0.5%	3.3%	-0.7%	3.0%	-1.0%	0.3%	-3.7%
International/Global Bond	2%	-1.6%	86	1.5%	3.1%	0.1%	1.8%	-0.1%	1.5%	-0.4%	1.3%	-1.1%	0.6%	-2.4%	-0.8%
Large Cap Value	9%	10.3%	50	12.8%	2.5%	11.0%	0.7%	10.7%	0.4%	10.3%	0.0%	9.6%	-0.7%	4.5%	-5.8%
Large Cap Core	9%	12.6%	11	13.4%	0.8%	12.3%	-0.2%	12.1%	-0.5%	11.8%	-0.8%	10.8%	-1.8%	-0.4%	-12.9%
Large Cap Growth	9%	14.1%	7	15.9%	1.8%	13.0%	-1.1%	12.4%	-1.7%	11.9%	-2.2%	11.1%	-3.0%	2.5%	-11.6%
Mid Cap Value	3%	10.1%	36	12.4%	2.3%	10.4%	0.3%	10.0%	-0.1%	9.6%	-0.5%	8.8%	-1.3%	4.3%	-5.8%
Mid Cap Core	3%	11.0%	20	12.1%	1.2%	10.7%	-0.3%	10.4%	-0.6%	10.2%	-0.8%	9.4%	-1.5%	4.7%	-6.2%
Mid Cap Growth	3%	11.4%	40	16.1%	4.7%	12.0%	0.6%	11.5%	0.1%	10.8%	-0.6%	9.5%	-1.9%	6.3%	-5.1%
Small Cap Value	2%	8.5%	57	11.6%	3.1%	9.7%	1.2%	9.2%	0.7%	8.8%	0.3%	7.9%	-0.6%	1.6%	-6.9%
Small Cap Core	2%	9.0%	59	12.2%	3.2%	10.1%	1.1%	9.6%	0.6%	9.2%	0.2%	8.6%	-0.4%	2.3%	-6.7%
Small Cap Growth	2%	9.2%	73	17.2%	8.0%	11.3%	2.1%	10.8%	1.6%	10.2%	1.0%	9.1%	-0.1%	2.0%	-7.2%
International Value	6%	3.3%	72	6.1%	2.7%	4.4%	1.0%	4.1%	0.7%	3.9%	0.6%	3.1%	-0.2%	0.6%	-2.8%
International Core	6%	4.3%	56	8.0%	3.8%	4.9%	0.6%	4.6%	0.3%	4.3%	0.1%	3.9%	-0.3%	0.0%	-4.3%
International Growth	6%	5.0%	48	8.7%	3.7%	6.5%	1.5%	5.5%	0.5%	4.9%	-0.1%	4.4%	-0.7%	1.8%	-3.2%
Emerging Markets	9%	1.8%	39	6.0%	4.2%	2.7%	0.9%	1.9%	0.1%	1.4%	-0.4%	0.8%	-1.0%	-1.1%	-3.0%
Real Estate	4%	6.5%	36	9.3%	2.8%	6.7%	0.1%	6.5%	0.0%	6.2%	-0.3%	5.4%	-1.1%	3.2%	-3.3%
Aggregate Excess Return of Managers					**2.51%**		**0.41%**		**0.00%**		**-0.30%**		**-0.92%**		**-5.07%**

Source: Morningstar, Fiducient Advisors' analysis; as of December 31, 2022.

In **Exhibit 11**, we calculate a "fee bogey" for active managers (on a weighted basis) by estimating the expense drag of employing all the most competitively priced passive funds for each asset class. The active managers in this example would have to generate approximately 0.74 percent more in annual return to make active management advantageous. Otherwise, an investor would be better off by simply hiring a passive strategy for each portfolio allocation.

Use of Indices and Benchmark Return Indices cannot be invested in directly. Index performance is reported gross of fees and expenses and assumes the reinvest dividends and capital gains. Past performance does not indicate future performance and there is a possibility of a loss. See disclosure page for indices representing each asset class.

Exhibit 11

Difference in fees for an all active vs. all passive portfolio[8]

Category	Allocation	Adjusted Peer Group Median Expense Ratio[5]	Applicable Index Fund Expense Ratio	Δ Expenses
Intermediate Bond	24%	0.49	0.05	0.44
High Yield Bond	2%	0.80	0.10	0.70
International/Global Bond	2%	0.71	0.06	0.65
Large Cap Value	9%	0.80	0.05	0.75
Large Cap Core	9%	0.73	0.02	0.71
Large Cap Growth	9%	0.86	0.05	0.81
Mid Cap Value	3%	0.90	0.07	0.83
Mid Cap Core	3%	0.92	0.05	0.87
Mid Cap Growth	3%	0.97	0.07	0.90
Small Cap Value	2%	1.08	0.07	1.01
Small Cap Core	2%	0.99	0.05	0.94
Small Cap Growth	2%	1.05	0.07	0.98
International Value	6%	0.91	0.07	0.84
International Core	6%	0.82	0.07	0.75
International Growth	6%	0.98	0.07	0.91
Emerging Markets	9%	1.12	0.14	0.98
Real Estate	4%	0.95	0.07	0.88
Total	**100%**			
Weighted Average		**0.80**	**0.06**	**0.74**

Source: Morningstar, Fiducient Advisors' analysis; as of December 31, 2022.

Passive Fund Options

Based solely on fees, passive strategies have their advantages. However, **Exhibit 12** displays the characteristics of all passively-managed funds with ten-year track records in the same manner as **Exhibit 1** does for actively-managed strategies. If we define success as achieving the top quartile over the last ten years, **Exhibit 12** paints a far less rosy picture for passive investing. For example, there are 13 Intermediate-Term Bond passive funds that have achieved ten-year track records and only 8 percent of the time finished in the top quartile over the last ten-year period. Small Cap Growth, International Core, Emerging Markets and Real Estate have 3, 19, 7 and 3 passive funds with ten-year track records, respectively, yet achieved the top quartile less than 10% of the time. In fact, the only asset classes that are the exception are Large Cap Core and Large Cap Growth, which had average ranks of 31st and 28th, respectively. This also came with reasonable persistency too as only 9 and 29 percent of the total rolling three-year periods for each respective group was below the median. In retrospect, hiring a low-cost passive strategy in Large Cap Core was a clear winning strategy over the last ten years, but passively-managed strategies

[8]The fees for the "Example Portfolio" are those of our recommended managers in each asset class utilized for a $150 million nonprofit portfolio with a Discretionary mandate. The applicable passive fund expenses are shown as the lowest cost passive option in each applicable asset class.

in all other asset classes have been significantly less effective to varying degrees. This supports our "pragmatic not dogmatic" thesis that the active vs. passive decision ought to be made asset class by asset class.

Exhibit 12

Passive Strategies (Open-Ended Mutual Funds Only)[9]

		Peer Rank Relative to Respective Morningstar Category			% of Rolling 3-Year Periods			
Asset Class	# of Index Funds with 10 Year Track Records	Best 10-Year Peer Rank	Worst 10-Year Peer Rank	Mean 10-Year Peer Rank	% Top Quartile	% Second Quartile	% Third Quartile	% Bottom Quartile
Intermediate Bond	13	25	91	64	8%	21%	54%	17%
High Yield Bond	-	-	-	-	-	-	-	-
International/Global Bond	-	-	-	-	-	-	-	-
Large Cap Value	11	4	87	48	27%	29%	29%	16%
Large Cap Core	57	0	94	31	34%	57%	6%	3%
Large Cap Growth	16	2	90	28	53%	18%	13%	16%
Mid Cap Value	1	72	72	72	0%	17%	59%	24%
Mid Cap Core	19	17	85	45	25%	35%	35%	5%
Mid Cap Growth	3	47	100	79	0%	28%	23%	49%
Small Cap Value	5	15	93	61	17%	27%	26%	30%
Small Cap Core	19	8	96	49	26%	39%	25%	10%
Small Cap Growth	3	75	98	84	6%	25%	34%	34%
International Value	1	8	8	8	55%	45%	0%	0%
International Core	19	25	83	55	3%	34%	55%	7%
International Growth	-	-	-	-	-	-	-	-
Emerging Markets	7	48	86	62	5%	35%	49%	10%
Real Estate	3	47	87	71	3%	25%	37%	34%

Source: Morningstar, Fiducient Advisors' analysis; as of December 31, 2022.

When further analyzing the performance of passively-managed strategies, we'd expect the gross of fee return to exactly match the underlying index and net of fee the fund should underperform the index solely by its fee. **Exhibit 13** takes all open-ended passively-managed mutual funds track mainstream benchmarks (e.g. Standard & Poor's, Bloomberg Barclays, Russell, MSCI, FTSE, etc.) and calculates the excess return over the last ten years of each strategy over our preferred benchmark in each space[10]. If we then back out each fund's expense ratio, we can determine which asset classes performed in line with the theoretical expectation of passively-managed funds. In some examples such as Large Cap Core and Intermediate Bonds, the average passive fund underperformed its benchmark closely to its fee.

[9]The underlying portfolios included in this exhibit are open-ended mutual funds with ten-year track records that are classified as passive strategies based on Morningstar's definition.
[10]Open-ended mutual funds that Morningstar classified as passively managed were included in the analysis, as well as the three previously mentioned Corporate High Yield ETFs. Given the theoretical construct that a passively-managed fund ought to underperform its benchmark by its fees, we calculate each fund's excess return over the last ten years relative to our preferred benchmark for the asset class and subtract the expense ratio to determine whether a passive strategy achieved its theoretical expectation.

Further, Emerging Markets and Real Estate underperformed by far more than the average fee, which ought to underwhelm investors favoring passive strategies across the board.

Exhibit 13

Passive Performance[11]

Category	Number of Index Funds with 10-Year Track Records	Average Index Fund Fee Last Ten Years	Average Excess Return Last 10 Years	Average Excess Return less 10 Year Avg Fee
Short Term Bond	5	0.07	0.14	0.21
Intermediate Bond	13	0.22	-0.21	0.01
TIPS	5	0.09	0.00	0.08
Intermediate Muni	3	0.12	0.09	0.21
Long Term Bond	2	0.08	0.32	0.39
High Yield Bond	3	0.38	-1.15	-0.77
Large Cap Value	11	0.75	0.15	0.90
Large Cap Core	56	0.31	-0.45	-0.14
Large Cap Growth	16	0.83	-0.65	0.18
Mid Cap Value	1	1.78	-1.23	0.55
Mid Cap Core	19	0.42	-0.77	-0.35
Mid Cap Growth	3	1.25	-2.87	-1.62
Small Cap Value	5	1.09	-0.31	0.78
Small Cap Core	19	0.49	0.16	0.65
Small Cap Growth	3	1.16	-0.89	0.27
International Value	1	0.29	1.89	2.18
International Core	19	0.30	-0.02	0.28
International Small Cap	2	0.13	-1.05	-0.92
Emerging Markets	6	0.30	-0.60	-0.30
Real Estate	3	0.34	-1.01	-0.67
Global Real Estate	4	0.30	-1.11	-0.81
Commodities	2	1.14	-0.88	0.26
Total / Average	**201**	**0.54**	**-0.48%**	**0.06%**

Source: Morningstar, Fiducient Advisors' analysis; as of December 31, 2022.

Use of Indices and Benchmark Return Indices cannot be invested in directly. Index performance is reported gross of fees and expenses and assumes the reinvest dividends and capital gains. Past performance does not indicate future performance and there is a possibility of a loss. See disclosure page for indices representing each asset class.

Conclusion

Regardless of whether an active or passive strategy is selected, an investor should understand that poor results are not an "if", but rather a "when." Performance lulls are inevitable. Patience will eventually be tested whether an active or passive strategy is employed. Simply choosing a passive strategy, or moving to one during difficult periods, does not insulate from poor peer group rankings and might even guarantee exclusion from top quartile performance over longer periods. In due course, great long-term performing managers will fall to the bottom half of peer groups over multiple three- and five-year periods. To generate strong long-term results, investors must stay invested through the lulls, and in some cases possess the skill in selecting a top quartile manager. No matter what path an investor takes, patience continues to prove to be a prerequisite for success.

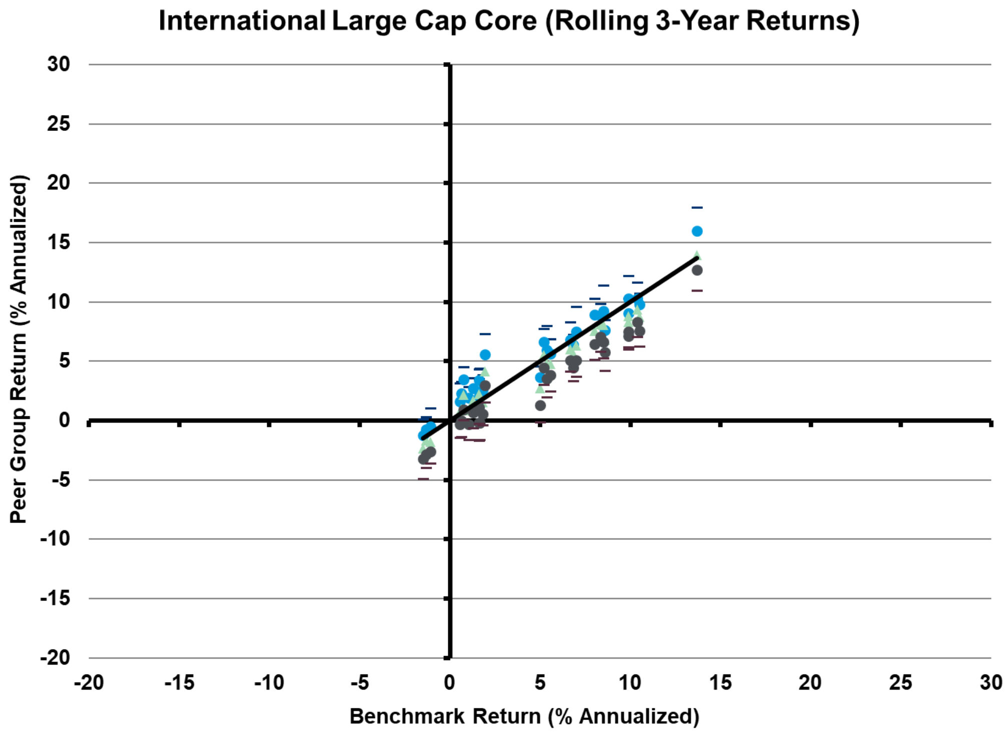
For more information, please contact any of the professionals at Fiducient Advisors.

Appendix

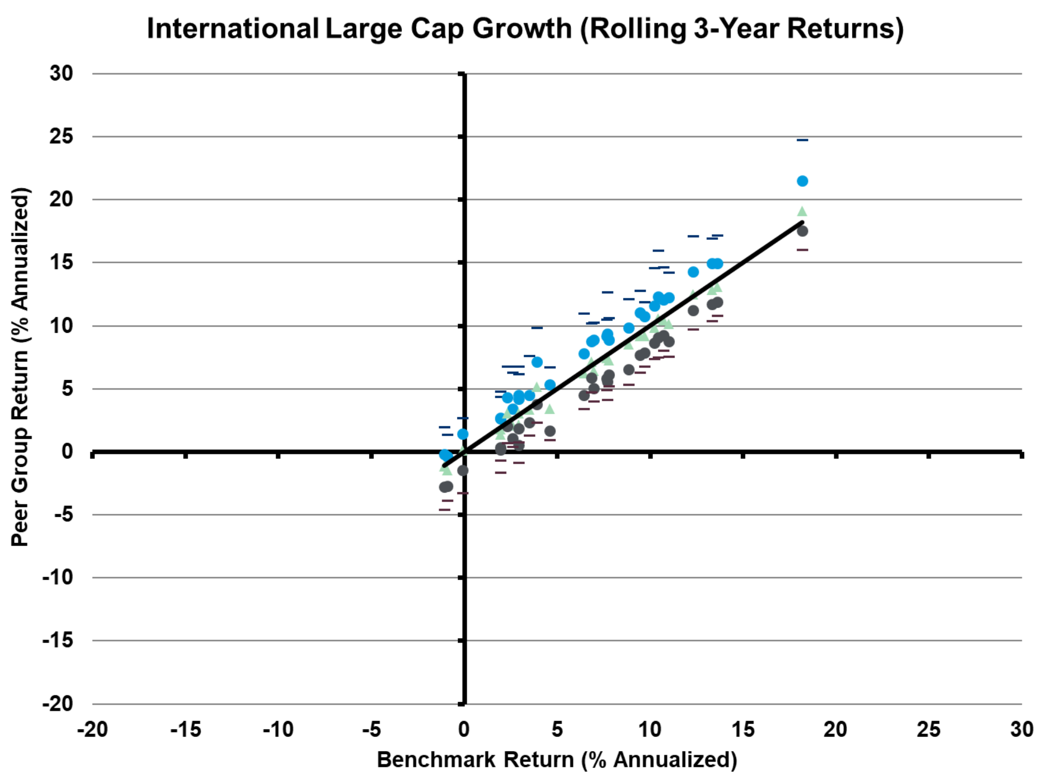
Rolling three-year percentile ranks for all 17 asset classes

(10 years ending December 31, 2022)

– 10th Percentile ● 25th Percentile ▲ 50th Percentile
● 75th Percentile – 90th Percentile — Linear (Benchmark)

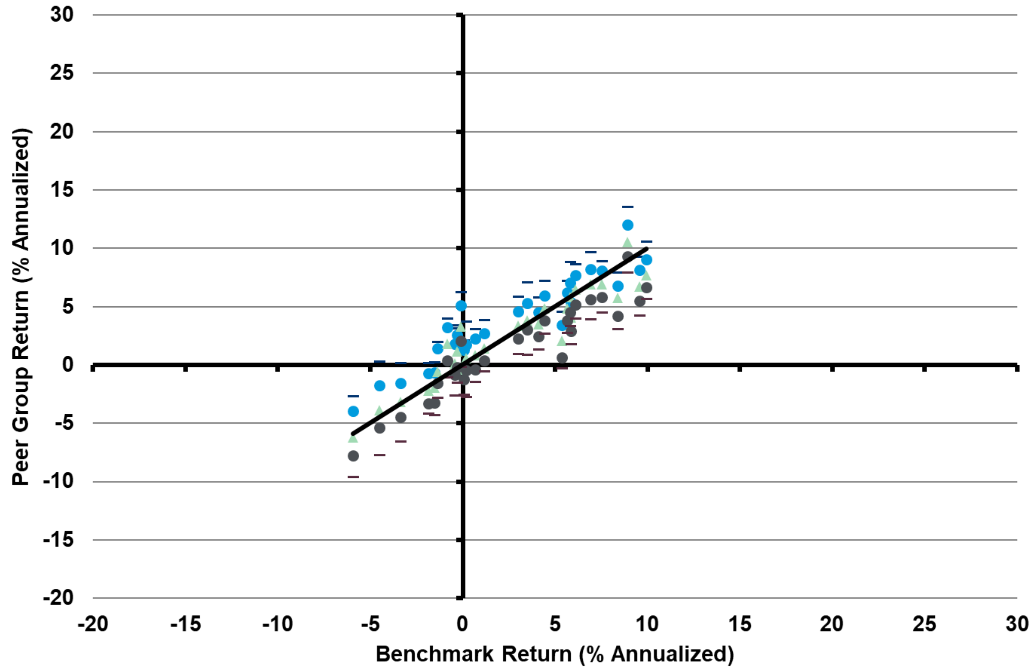


Source: Morningstar, Fiducient Advisors' analysis; as of December 31, 2022.



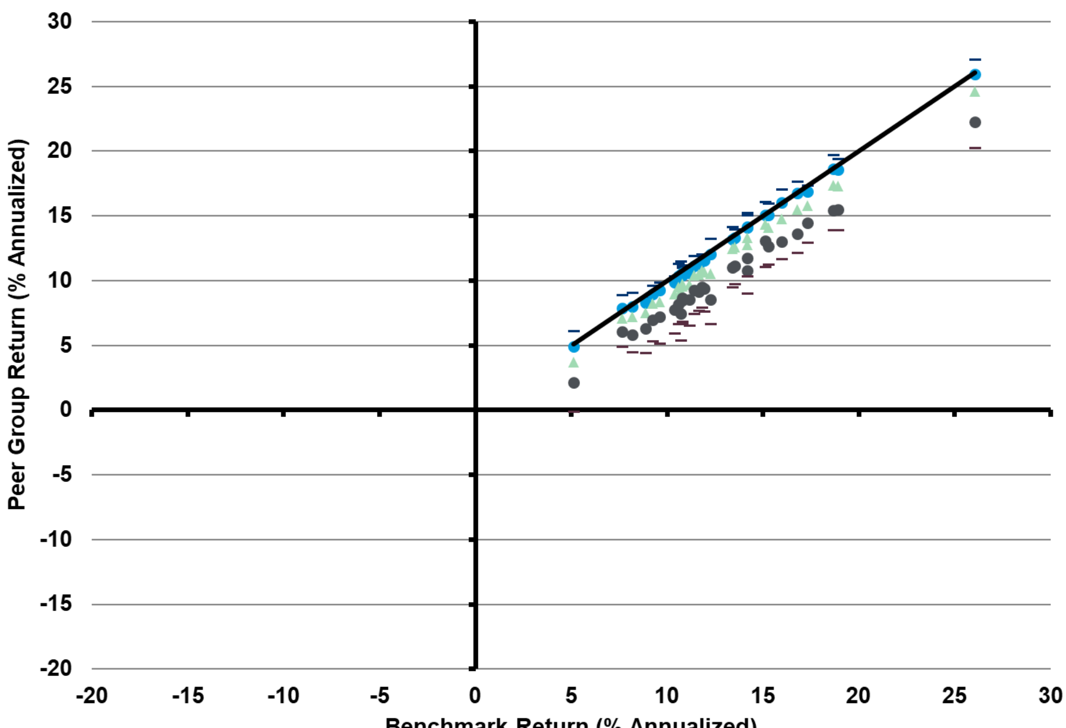
Source: Morningstar, Fiducient Advisors' analysis; as of December 31, 2022.

International Large Cap Value (Rolling 3-Year Returns)

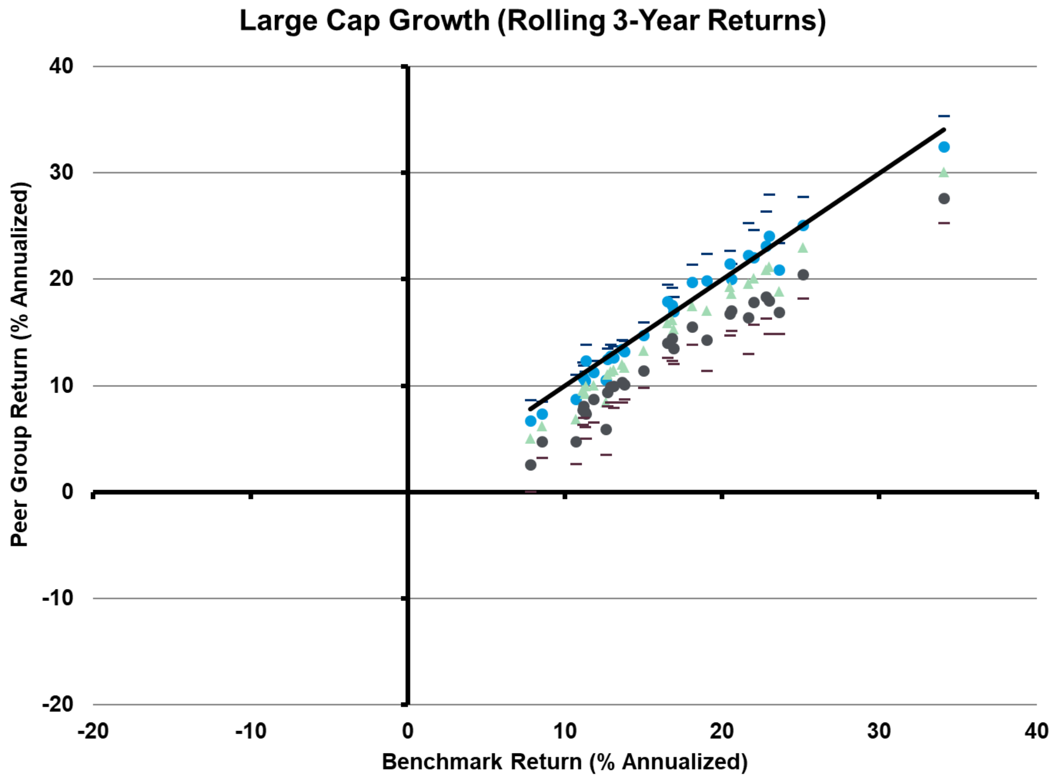


Source: Morningstar, Fiducient Advisors' analysis; as of December 31, 2022.

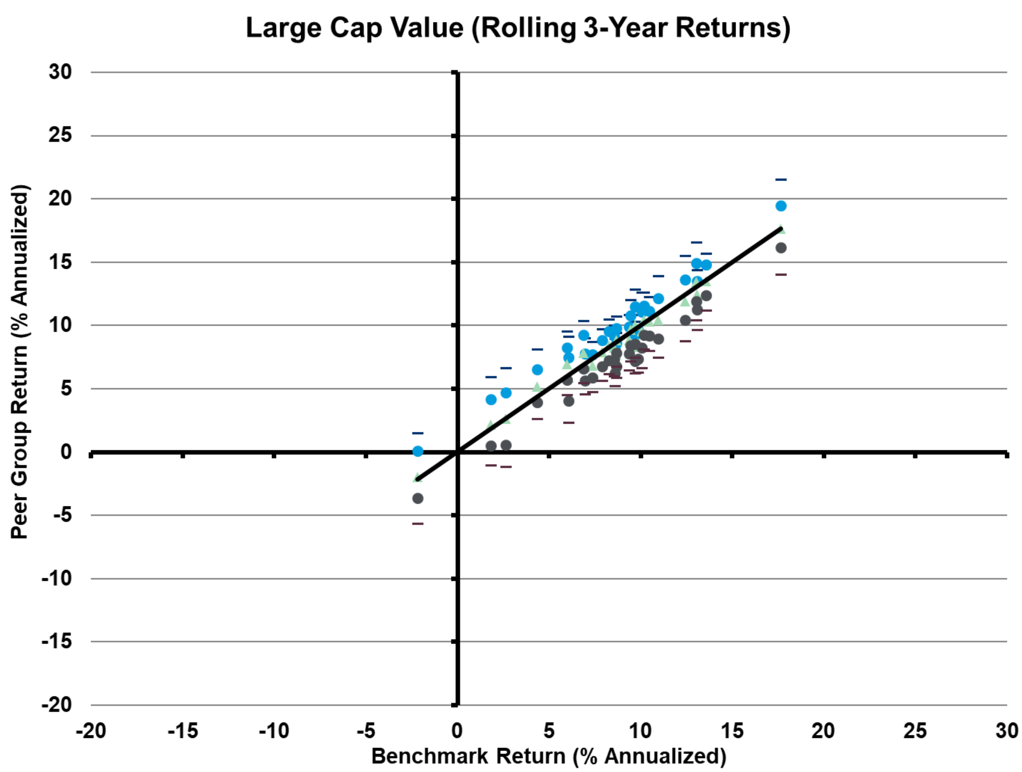
Large Cap Core (Rolling 3-Year Returns)



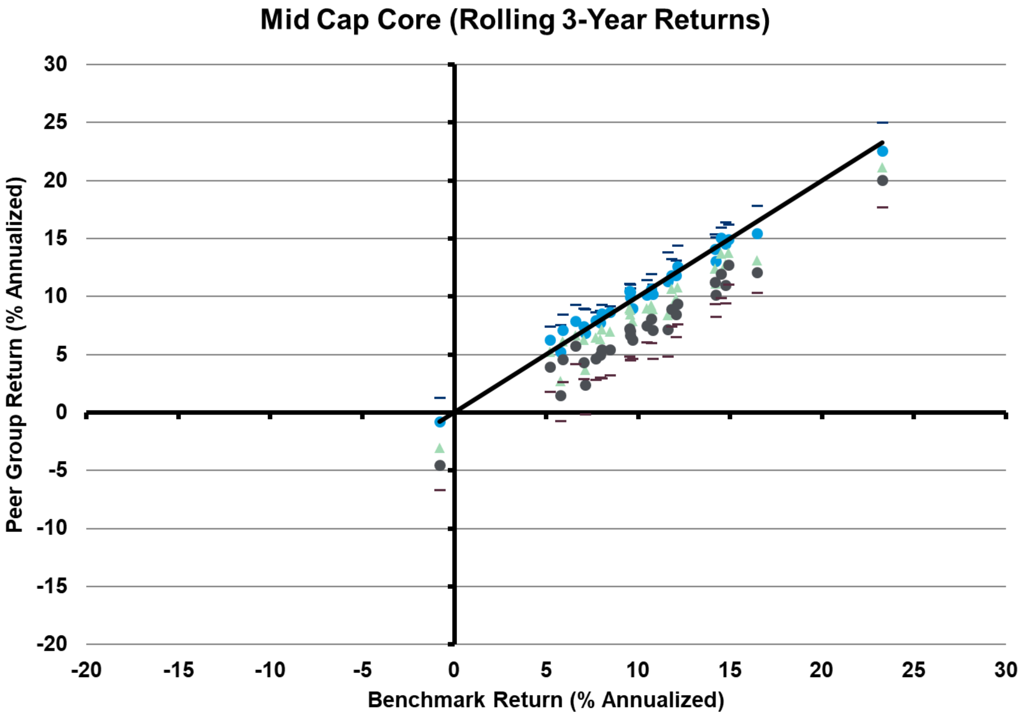
Source: Morningstar, Fiducient Advisors' analysis; as of December 31, 2022.



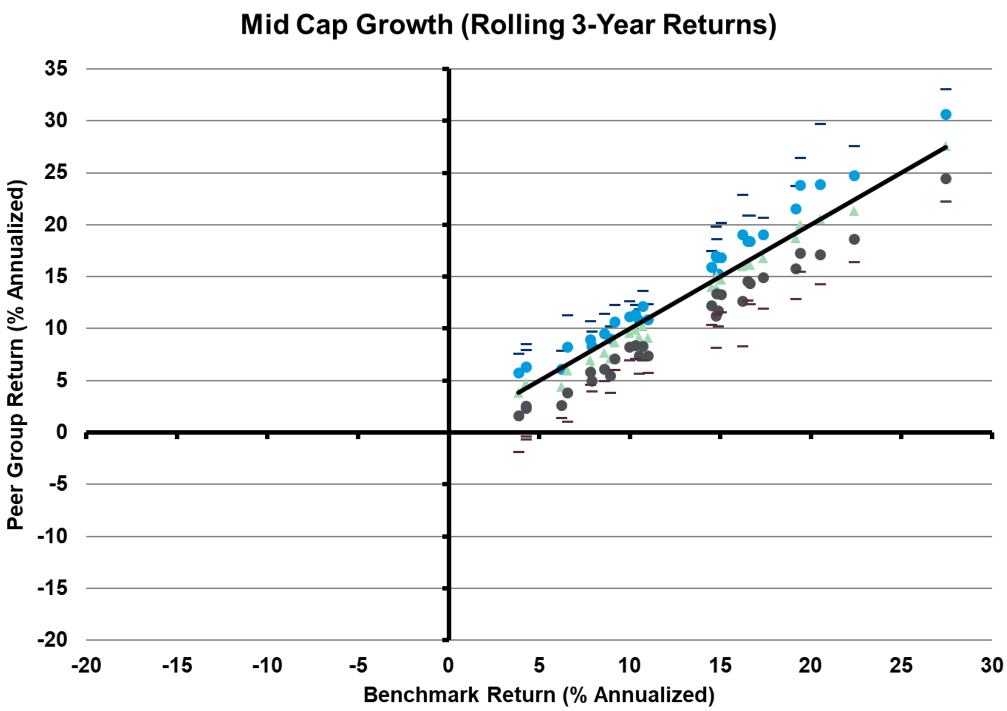
Source: Morningstar, Fiducient Advisors' analysis; as of December 31, 2022.



Source: Morningstar, Fiducient Advisors' analysis; as of December 31, 2022.

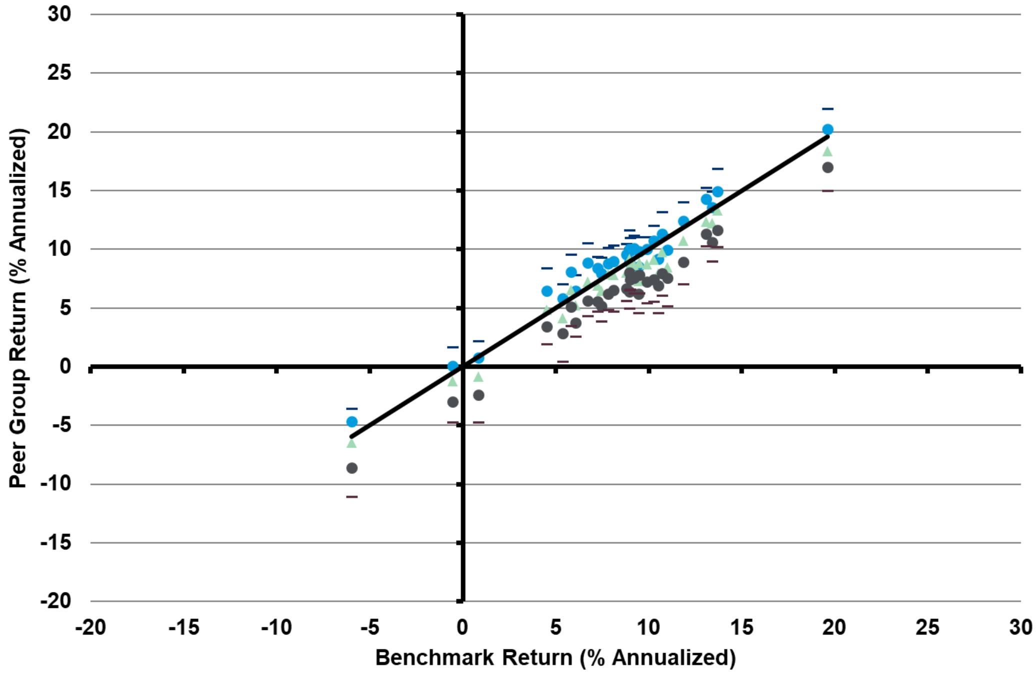


Source: Morningstar, Fiducient Advisors' analysis; as of December 31, 2022.



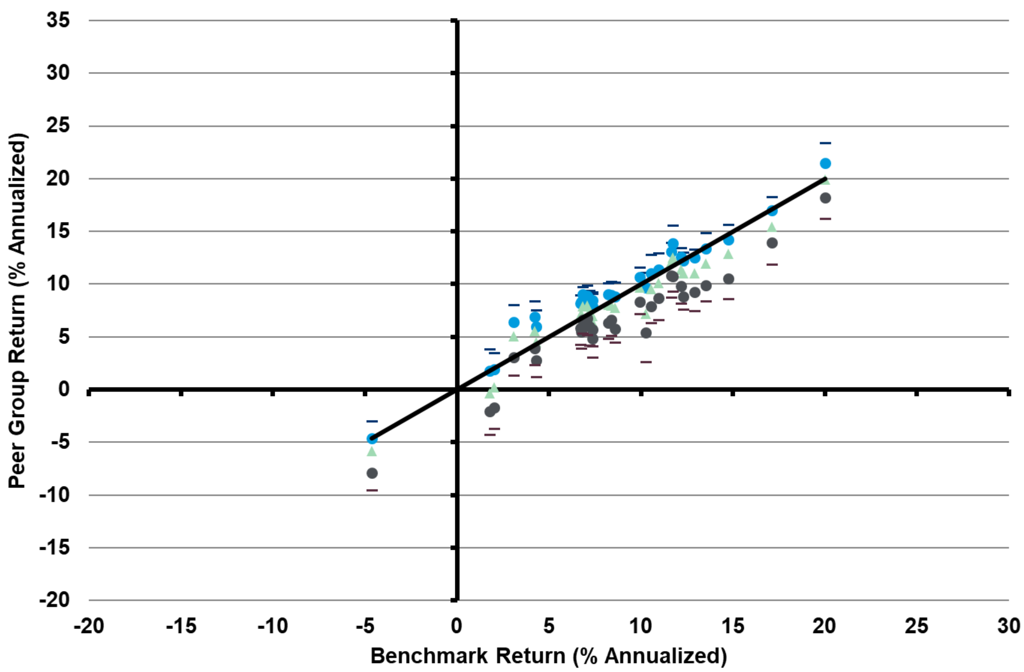
Source: Morningstar, Fiducient Advisors' analysis; as of December 31, 2022.

Mid Cap Value (Rolling 3-Year Returns)



Source: Morningstar, Fiducient Advisors' analysis; as of December 31, 2022.

Small Cap Core (Rolling 3-Year Returns)



Source: Morningstar, Fiducient Advisors' analysis; as of December 31, 2022.

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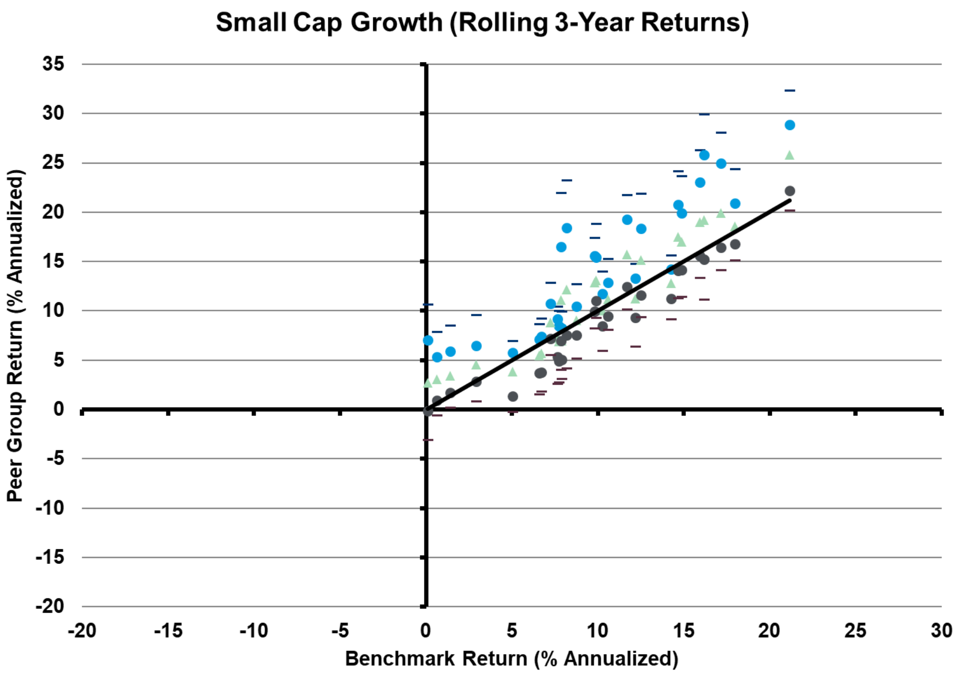
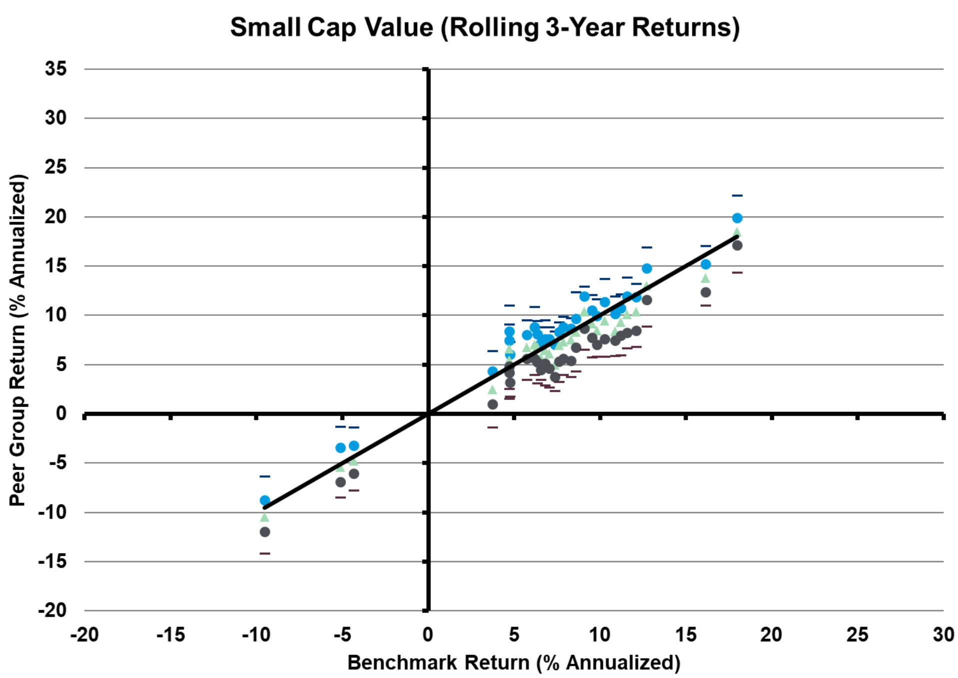
Small Cap Growth (Rolling 3-Year Returns)

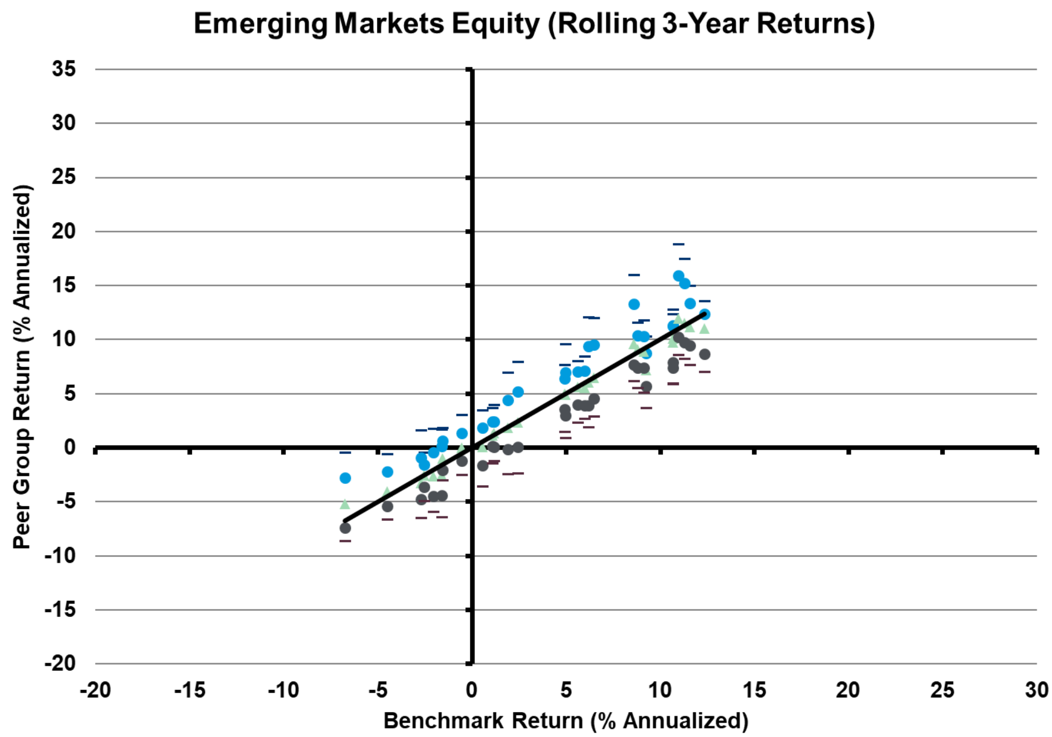


Source: Morningstar, Fiducient Advisors' analysis; as of December 31, 2022.

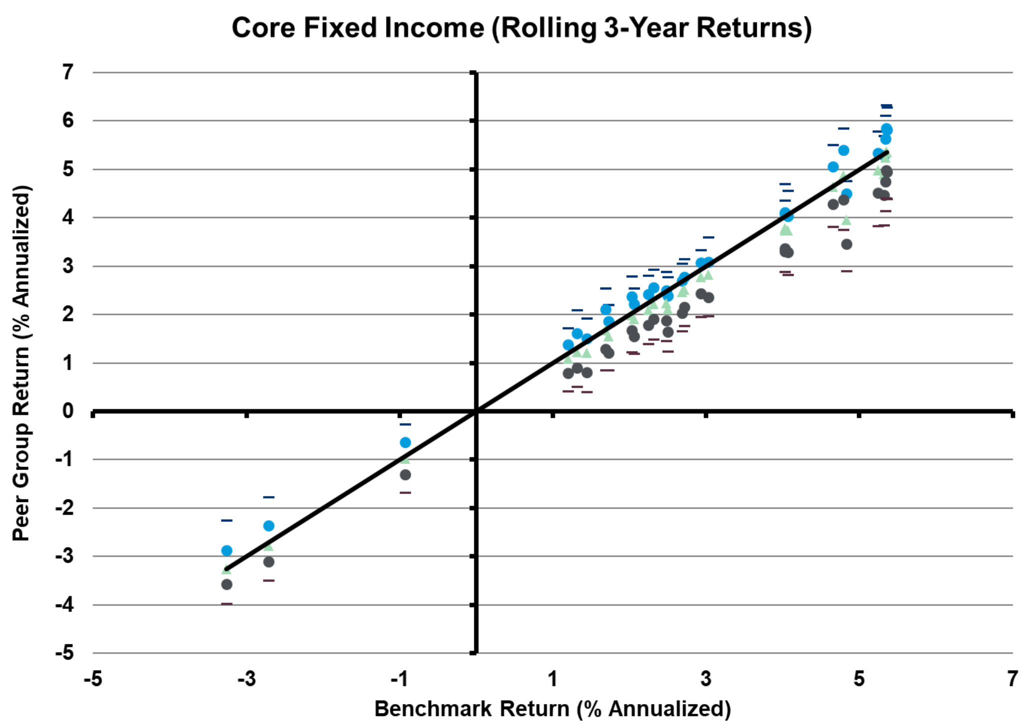
Small Cap Value (Rolling 3-Year Returns)



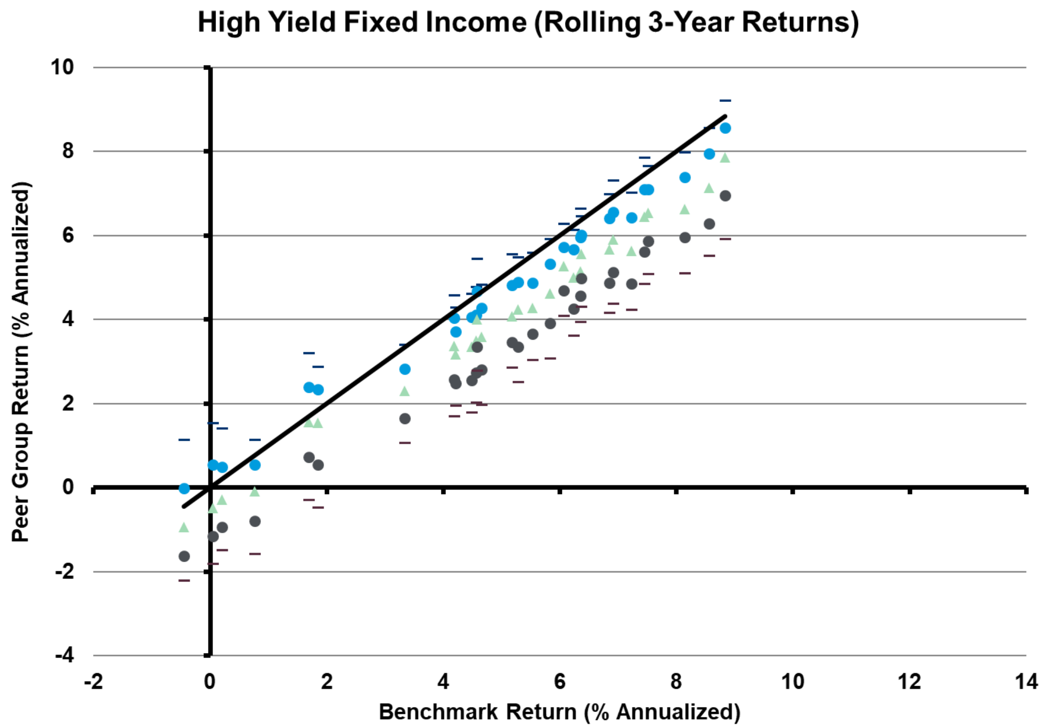
Source: Morningstar, Fiducient Advisors' analysis; as of December 31, 2022.



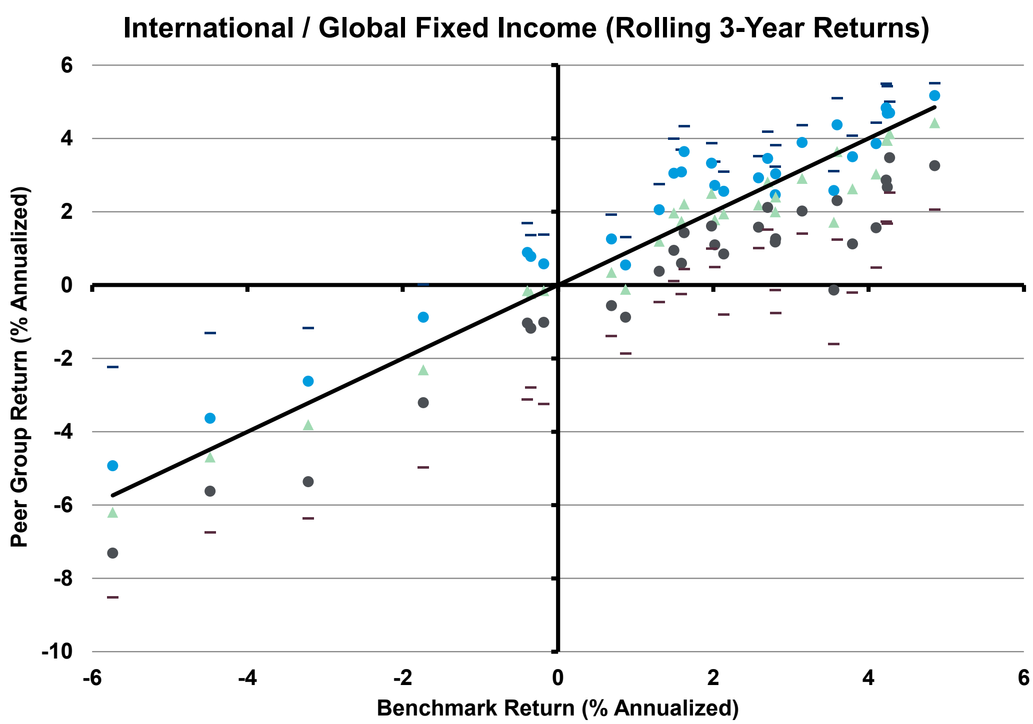
Source: Morningstar, Fiducient Advisors' analysis; as of December 31, 2022.



Source: Morningstar, Fiducient Advisors' analysis; as of December 31, 2022.

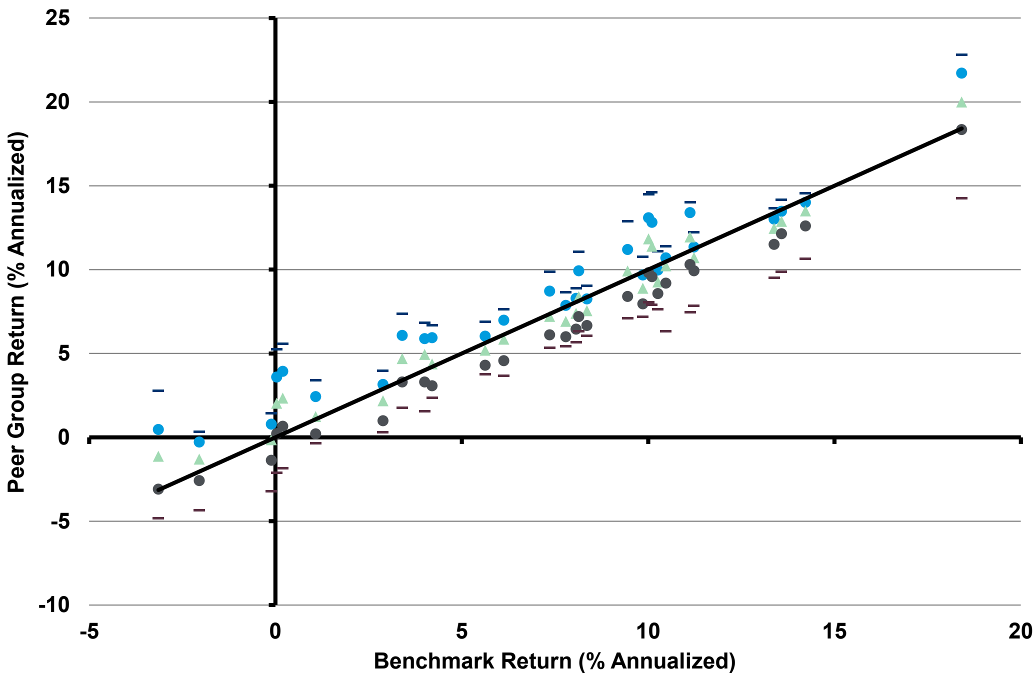


Source: Morningstar, Fiducient Advisors' analysis; as of December 31, 2022.



Source: Morningstar, Fiducient Advisors' analysis; as of December 31, 2022.

Domestic Real Estate (Rolling 3-Year Returns)



Source: Morningstar, Fiducient Advisors' analysis; as of December 31, 2022.

About the Authors

Collin researches and performs due diligence on investment managers and is a member of the firm's Global Public Markets Team and Mission-Aligned Investing Committee. Collin joined the firm in 2015 as a performance analyst after working as a portfolio administration analyst at McDonnell Investment Management. Collin graduated from the University of Iowa with a BBA in Finance and Minor in Economics. He is a CFA® charterholder and a member of the CFA Society of Chicago. In his free time, Collin enjoys skiing, cooking and performing guitar throughout Chicago.

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Anthony joined Fiducient Advisors in 2011. Anthony directs the firm's Marketable Alternatives research effort and chairs the firm's Capital Markets Team. He is a member of the firm's Investment Committee, Discretionary Committee, Research Forum and Marketable Alternatives Research Team. Prior to joining the firm, Anthony held various roles at National City, Conversus Asset Management and William Blair & Company. Anthony received a Master of Business Administration from the University of Chicago Booth School of Business with concentrations in Analytic Finance, Economics & Entrepreneurship and a Bachelor of Arts in Finance from the Eli Broad College of Business at Michigan State University. He is a CFA® charterholder and member of the CFA Society Chicago and CFA Institute. Anthony is actively involved with YearUp, a nonprofit providing urban young adults with the skills, experience and support to pursue professional careers and higher education. He is also on the Advisory Board for the Michigan State University Financial Markets Institute and serves as Midwest Regional Director of the Hedge Fund Association. In his free time, Anthony enjoys playing guitar, golf, running after his two young sons and all things Michigan State Spartans.

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Matt joined Fiducient Advisors in 2001. As Fiducient Advisors' Chief Investment Officer, Matt leads the firm's investment strategy and research efforts. He also advises a number of the firm's nonprofit and corporate clients. Matt is on the firm's Executive Committee, Research Forum, Investment Committee, Discretionary Committee and Capital Markets Committee. Matt has co-authored two books, including Nonprofit Asset Management (John Wiley & Sons), which was published in 2012 and The Practical Guide to Managing Nonprofit Assets (John Wiley & Sons), published in 2005. Matt is a CFA® charterholder and member of the CFA Society Chicago and a Chartered Alternative Investment Analyst (CAIA®). Matt received a BA in Economics from Northwestern University, where he also played on the 1995 and 1996 Big Ten championship football teams. Matt now leads an easier lifestyle chasing after his two young children.

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Managing Partner, Chief Investment Officer

Disclosures

Comparisons to any indices referenced herein are for illustrative purposes only and are not meant to imply that actual returns or volatility will be similar to the indices. Indices cannot be invested in directly. Unmanaged index returns assume reinvestment of any and all distributions and do not reflect our fees or expenses.

Material Risks Disclosures

Fixed Income securities are subject to interest rate risks, the risk of default and liquidity risk. U.S. investors exposed to non-U.S. fixed income may also be subject to currency risk and fluctuations.

Domestic Equity can be volatile. The rise or fall in prices take place for a number of reasons including, but not limited to changes to underlying company conditions, sector or industry factors, or other macro events. These may happen quickly and unpredictably.

International Equity can be volatile. The rise or fall in prices take place for a number of reasons including, but not limited to changes to underlying company conditions, sector or industry impacts, or other macro events. These may happen quickly and unpredictably. International equity allocations may also be impact by currency and/or country specific risks which may result in lower liquidity in some markets.

Private Real Estate involves higher risk and is suitable only for sophisticated investors. Real estate assets can be volatile and may include unique risks to the asset class like leverage and/or industry, sector or geographical concentration. Declines in real estate value may take place for a number of reasons including, but are not limited to economic conditions, change in condition of the underlying property or defaults by the borrow.

Index and Benchmark Definitions

Fixed Income

- **Bloomberg 1-3 Month U.S. Treasury Bill Index** is designed to measure the performance of public obligations of the U.S. Treasury that have a remaining maturity of greater than or equal to 1 month and less than 3 months.
- **Bloomberg U.S. Aggregate Index** covers the U.S. investment grade fixed rate bond market, with index components for government and corporate securities, mortgage pass-through securities, and asset-backed securities.
- **Bloomberg Global Aggregate ex. USD Indices** represent a broad-based measure of the global investment-grade fixed income markets. The two major components of this index are the Pan-European Aggregate and the Asian-Pacific Aggregate Indices. The index also includes Eurodollar and Euro-Yen corporate bonds and Canadian government, agency and corporate securities.

- **Bloomberg U.S. Corporate High Yield Index** covers the universe of fixed rate, non-investment grade debt. Eurobonds and debt issues from countries designated as emerging markets (sovereign rating of Baa1/BBB+/BBB+ and below using the middle of Moody's, S&P, and Fitch) are excluded, but Canadian and global bonds (SEC registered) of issuers in non-EMG countries are included.
- **Bloomberg US Government/Credit 1-3 Year Index** is the 1-3 year component of the U.S. Government/Credit Index, which includes securities in the Government and Credit Indices. The Government Index includes treasuries and agencies, while the credit index includes publicly issued U.S. corporate and foreign debentures and secured notes that meet specified maturity, liquidity, and quality requirements.
- **Bloomberg US Government/Credit Long Index** is the Long component of the U.S. Government/Credit Index, which includes securities in the Government and Credit Indices. The Government Index includes treasuries and agencies, while the credit index includes publicly issued U.S. corporate and foreign debentures and secured notes that meet specified maturity, liquidity and quality requirements.
- **Bloomberg US Treasury Inflation Protected Securities Index** consists of Inflation-Protection securities issued by the U.S. Treasury.
- **Bloomberg Muni Index** is a rules-based, market-value-weighted index engineered for the long-term tax-exempt bond market. Bonds must be rated investment-grade by at least two ratings agencies.
- **Bloomberg High Yield Municipal Bond Index** covers the universe of fixed rate, non-investment grade debt.
- **Bloomberg Intermediate U.S. Gov't/Credit** is the Intermediate component of the U.S. Government/Credit index, which includes securities in the Government and Credit Indices. The Government Index includes treasuries and agencies, while the credit index includes publicly issued U.S. corporate and foreign debentures and secured notes that meet specified maturity, liquidity, and quality requirements.

Equity

- **The S&P 500 Index** is a capitalization-weighted index designed to measure performance of the broad domestic economy through changes in the aggregate market value of 500 stocks representing all major industries.Russell 3000 Index is a market-cap-weighted index which consists of roughly 3,000 of the largest companies in the U.S. as determined by market capitalization. It represents nearly 98% of the investable U.S. equity market.
- **Russell 1000 Index** consists of the largest 1000 companies in the Russell 3000 Index.
- **Russell 1000 Growth Index** measures the performance of those Russell 1000 companies with higher P/B ratios and higher forecasted growth values.
- **Russell 1000 Value Index** measures the performance of those Russell 1000 companies with lower P/B ratios and lower forecasted growth values.

- **Russell Mid Cap Index** measures the performance of the 800 smallest companies in the Russell 1000 Index.
- **Russell Mid Cap Growth Index** measures the performance of those Russell Mid Cap companies with higher P/B ratios and higher forecasted growth values.
- **Russell Mid Cap Value Index** measures the performance of those Russell Mid Cap companies with lower P/B ratios and lower forecasted growth values.
- **Russell 2000** consists of the 2,000 smallest U.S. companies in the Russell 3000 index.
- **Russell 2000 Growth Index** measures the performance of the Russell 2000 companies with higher P/B ratios and higher forecasted growth values.
- **Russell 2000 Value Index** measures the performance of those Russell 2000 companies with lower P/B ratios and lower forecasted growth values.
- **MSCI ACWI (All Country World Index) ex. U.S. Index** captures large and mid-cap representation across Developed Markets countries (excluding the United States) and Emerging Markets countries. The index covers approximately 85% of the global equity opportunity set outside the U.S.
- **MSCI EAFE Index** is an equity index which captures large and mid-cap representation across Developed Markets countries around the world, excluding the U.S. and Canada. The index covers approximately 85% of the free float-adjusted market capitalization in each country.
- **MSCI Emerging Markets Index** captures large and mid-cap representation across Emerging Markets countries. The index covers approximately 85% of the free-float adjusted market capitalization in each country.
- **MSCI EAFE Large Value Index** captures large cap securities exhibiting overall value style characteristics across Developed Markets countries around the world, excluding the US and Canada. The value investment style characteristics for index construction are defined using three variables: book value to price, 12-month forward earnings to price and dividend yield.
- **MSCI EAFE Large Cap Index** is an equity index which captures large cap representation across Developed Markets countries around the world, excluding the US and Canada. The index covers approximately 70% of the free-float adjusted market capitalization in each country.
- **MSCI EAFE Large Growth Index** captures large cap securities exhibiting overall growth style characteristics across Developed Markets countries around the world, excluding the US and Canada. The growth investment style characteristics for index construction are defined using five variables: long-term forward EPS growth rate, short-term forward EPS growth rate, current internal growth rate and long-term historical EPS growth trend and long-term historical sales per share growth trend.
- **MSCI EAFE Mid Value Index ca**ptures mid cap securities exhibiting overall value style characteristics across Developed Markets countries around the world, excluding the US and Canada. The value investment style characteristics for index construction are defined using three variables: book value to price, 12-month forward earnings to price and dividend yield.

- **MSCI EAFE Mid Cap Index i**s an equity index which captures mid cap representation across Developed Markets countries around the world, excluding the US and Canada. The index covers approximately 15% of the free-float adjusted market capitalization in each country.
- **MSCI EAFE Mid Cap Growth Index** captures mid cap securities exhibiting overall growth style characteristics across Developed Markets countries around the world, excluding the US and Canada. The growth investment style characteristics for index construction are defined using five variables: long-term forward EPS growth rate, short-term forward EPS growth rate, current internal growth rate and long-term historical EPS growth trend and long-term historical sales per share growth trend.
- **MSCI EAFE Small Cap Value Index** captures small cap securities exhibiting overall value style characteristics across Developed Markets countries around the world, excluding the US and Canada. The value investment style characteristics for index construction are defined using three variables: book value to price, 12-month forward earnings to price and dividend yield.
- **MSCI EAFE Small Cap Index** is an equity index which captures small cap representation across Developed Markets countries around the world, excluding the US and Canada. The index covers approximately 14% of the free float adjusted market in each country.
- **MSCI EAFE Small Cap Growth Index** captures small cap securities exhibiting overall growth style characteristics across Developed Markets countries around the world, excluding the US and Canada. The growth investment style characteristics for index construction are defined using five variables: long-term forward EPS growth rate, short-term forward EPS growth rate, current internal growth rate and long-term historical EPS growth trend and long-term historical sales per share growth trend.
- **MSCI ACWI (All Country World Index) ex USA Large Value Index** captures large-cap securities exhibiting overall value style characteristics across Developed Markets countries (excluding the US) and Emerging Markets (EM) countries. The value investment style characteristics for index construction are defined using three variables: book value to price, 12-month forward earnings to price and dividend yield.
- **MSCI ACWI (All Country World Index) ex USA Large Index** captures large cap representation across Developed Markets countries (excluding the US) and Emerging Markets countries. The index covers approximately 70% of the free float-adjusted market capitalization in each country.
- **MSCI ACWI (All Country World Index) ex USA Large Growth Index** captures large-cap securities exhibiting overall growth style characteristics across Developed Markets countries (excluding the US) and Emerging Markets countries. The growth investment style characteristics for index construction are defined using five variables: long-term forward EPS growth rate, short-term forward EPS growth rate, current internal growth rate and long-term historical EPS growth trend and long-term historical sales per share growth trend.
- **MSCI ACWI (All Country World Index ex USA Mid Value Index** captures mid cap securities exhibiting overall value style characteristics across Developed Markets countries (excluding the US) and

Emerging Markets (EM) countries. The value investment style characteristics for index construction are defined using three variables: book value to price, 12-month forward earnings to price and dividend yield.

- **MSCI ACWI (All Country World Index) ex USA Mid Cap Index** captures mid cap representation across Developed Markets countries (excluding the US) and Emerging Markets (EM) countries. The index covers approximately 15% of the free float-adjusted market capitalization in each country.
- **MSCI ACWI (All Country World Index) ex USA Mid Growth Index** captures mid-cap securities exhibiting overall growth style characteristics across Developed Markets countries (excluding the US) and Emerging Markets countries. The growth investment style characteristics for index construction are defined using five variables: long-term forward EPS growth rate, short-term forward EPS growth rate, current internal growth rate and long-term historical EPS growth trend and long-term historical sales per share growth trend.
- **MSCI ACWI (All Country World Index) ex USA Small Value Index** captures small cap securities exhibiting overall value style characteristics across Developed Markets countries (excluding the US) and Emerging Markets (EM) countries. The value investment style characteristics for index construction are defined using three variables: book value to price, 12-month forward earnings to price and dividend yield.
- **MSCI ACWI (All Country World Index) ex. U.S. Small Cap Index** captures small cap representation across Developed Markets countries (excluding the US) and Emerging Markets countries. The index covers approximately 14% of the global equity opportunity set outside the U.S.
- **MSCI ACWI (All Country World Index) ex U.S. Small Growth Index** captures mid-cap securities exhibiting overall growth style characteristics across Developed Markets countries (excluding the US) and Emerging Markets countries. The growth investment style characteristics for index construction are defined using five variables: long-term forward EPS growth rate, short-term forward EPS growth rate, current internal growth rate and long-term historical EPS growth trend and long-term historical sales per share growth trend.
- **MSCI Emerging Markets (EM) Large Value Index** captures large-cap securities exhibiting overall value style characteristics across Emerging Markets (EM) countries. The value investment style characteristics for index construction are defined using three variables: book value to price, 12-month forward earnings to price and dividend yield.
- **MSCI Emerging Markets (EM) Large Index** includes large-cap representation across Emerging Markets countries. The index covers approximately 70% of the free float-adjusted market capitalization in each country.
- **MSCI Emerging Markets (EM) Large Growth Index** captures large-cap securities exhibiting overall growth style characteristics across Emerging Markets (EM) countries. The growth investment style characteristics for index construction are defined using five variables: long-term forward EPS growth rate, short-term forward EPS growth rate, current internal growth rate and long-term historical EPS growth trend and long-term historical sales per share growth trend.

- **MSCI Emerging Markets (EM) Mid Value Index** captures mid cap securities exhibiting overall value style characteristics across Emerging Markets (EM) countries. The value investment style characteristics for index construction are defined using three variables: book value to price, 12-month forward earnings to price and dividend yield.
- **MSCI Emerging Markets (EM) Mid Index** includes mid-cap representation across Emerging Markets countries. The index covers approximately 15% of the free float-adjusted market capitalization in each country.
- **MSCI Emerging Markets (EM) Mid Growth Index** captures mid cap securities exhibiting overall growth style characteristics across Emerging Markets (EM) countries. The growth investment style characteristics for index construction are defined using five variables: long-term forward EPS growth rate, short-term forward EPS growth rate, current internal growth rate and long-term historical EPS growth trend and long-term historical sales per share growth trend.
- **MSCI Emerging Markets (EM) Small Value Index** captures small cap securities exhibiting overall value style characteristics across Emerging Markets (EM) countries. The value investment style characteristics for index construction are defined using three variables: book value to price, 12-month forward earnings to price and dividend yield.
- **MSCI Emerging Markets (EM) Small Cap Index i**ncludes small cap representation across Emerging Markets countries. The index covers approximately 14% of the free float-adjusted market capitalization in each country. The small cap segment tends to capture more local economic and sector characteristics relative to larger Emerging Markets capitalization segments.
- **MSCI Emerging Markets (EM) Small Growth Index** captures small cap securities exhibiting overall growth style characteristics across Emerging Markets (EM) countries. The growth investment style characteristics for index construction are defined using five variables: long-term forward EPS growth rate, short-term forward EPS growth rate, current internal growth rate and long-term historical EPS growth trend and long-term historical sales per share growth trend.

Alternatives & Miscellaneous

- **S&P Real Asset Index** is designed to measure global property, infrastructure, commodities, and inflation-linked bonds using liquid and investable component indices that track public equities, fixed income, and futures. In the index, equity holds 50% weight, commodities 10%, and fixed income 40%.
- **FTSE Nareit Equity REITs Index** contains all Equity REITs not designed as Timber REITs or Infrastructure REITs.