

Wilshire

Manager Research

2020 Active Management Review

March 16, 2021

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2020 Active Management Review

Executive Summary

The following observations provide a summary of several key findings from this year's review of active management. The analysis was conducted across various manager universes, including a review of how the underlying market environment can impact manager performance.

Manager Universe Highlights/Lowlights (Exhibits 19 and 20):

- US Equity Universes: As can be seen in the following list, which is sorted by median excess gross-of-fee returns, only the REITs & small growth universes delivered strong relative performance in 2020. Both large & small value and the core segments underperformed versus their respective benchmarks, as did large growth but to a lesser degree.
 - +4.77% REITs
 - +3.93% Small Growth
 - -0.43% Large Growth
 - -1.52% Small Value
 - -2.60% Large Value
 - -4.92% Large Core
 - -7.58% Small Core
- Non-US Equity Universes: Most non-US equity segments were negative during 2020, with three of four groups posting negative median gross-of-fee excess returns. As can be seen through the sorting below, the Developed ex-US universe produced the only outperformance relative to their respective benchmarks.
 - +1.87% Developed ex-US
 - -0.04% Emerging Markets
 - -0.75% Developed ex-US Small Cap
 - -6.28% Global
- Fixed Income Universes: The US Core fixed income universe had positive median gross-of-fee excess returns in 2020, with high yield managers delivering particularly poor relative results.
 - +0.07% US Core
 - -1.30% US High Yield
- There is little evidence of manager consistency through time beyond what would be expected from random outcomes. This is not to imply that performance consistency is unachievable, but rather that the successful use of active management cannot solely rely on picking past winners (Pages 67-70). Extracting long-term value from an active management program requires robust qualitative analysis to properly inform the interpretation of quantitative results. It is for these reasons that Wilshire continues to invest significant resources in our manager research process and has developed a research model that is heavily qualitative in nature.

Systematic Market/Factor Currents:

- Despite surging during the fourth quarter, US small cap stocks underperformed large cap stocks by -3.7% in 2020, generally hampering strategies that incorporate more of an equal weighting of securities versus their capitalization-weighted indexes (Exhibits 1, 2 and 3).
- US value stocks significantly underperformed growth by -25.8% in 2020 (Exhibits 1, 4 and 5).
- "High quality" stocks significantly underperformed "low quality" stocks in 2020 with the Quality factor posting a -14.3% return (Exhibits 6 and 7).
- The Volatility factor had a strong positive return (+14.0%) in 2020, which generally served as a headwind to strategies that prefer low volatility stocks (Exhibits 9 and 10).

- The Momentum factor experienced negative returns (-1.2%) in 2020, potentially hampering strategies that attempt to ride momentum trades (Exhibits 11 and 12).
- Emerging markets stocks outperformed the developed markets (+10.5% net), boosting the returns of international managers with persistent tilts towards the emerging markets. (Exhibits 1, 13 and 14).
- A falling US Dollar in 2020 had a strong impact (+4.7%) on the US Dollar-based returns of international equities relative to local returns as foreign currencies strengthened (Exhibit 1, 15 and 16).
- High yield bonds modestly underperformed the core fixed income market (-0.4% net), hampering the relative returns of managers who systematically hold bonds of lower credit quality (Exhibits 17 and 18).

Introduction

The purpose of this paper is to provide a review of active management in traditional asset classes. The report is intended to serve as a resource document for reference when conducting manager searches and contemplating the role of active management within various areas of the capital markets. As such, it is constructed to be heavy on statistical information with some brief commentary to make specific observations. This is the eleventh annual installment of the report; whose structure we expect will continue to evolve through time.

Wilshire's general expectations across the capital markets are for the average/median manager to generate long-term gross-of-fees performance that is market-like. As such, once accounting for fees, we would expect average active results to trail passive indexes. While much of the quantitative universe data contained within this report support that general expectation, we do not view this as an indictment against the pursuit of active management. Instead, we note that the challenges revealed through historical analysis are the consequence of the "arithmetic of active management," where the market return simply reflects the accumulation of all investors, and underscores the importance of incorporating a robust qualitative manager due diligence process within an active management program. It is for these reasons that Wilshire continues to invest significant resources in our manager research process and has developed a research model that is heavily qualitative in nature.

The Wilshire CompassSM analytical tool was utilized as the primary resource engine for generating manager universe statistics included in the paper. Wilshire Compass is an investment technology system with capabilities in asset allocation, investment structure, as well as manager and total fund evaluation. Wilshire does not charge any fee, direct or indirect, for manager participation in our database. As of December 2020, the Wilshire Investment Database covers over 12,000 separate account products for which data are obtained directly from investment managers who fill out Wilshire's quantitative and qualitative questionnaires on a regular basis. Wilshire has a dedicated operations team that works directly with managers to assist in ensuring the timeliness and quality of manager-supplied information.

Unless otherwise stated, all returns used throughout the analysis reflect gross-of-fee performance, so the results will overstate actual realized returns. However, the use of gross-of-fee returns allows for a more direct comparison of performance across investment products within a specific universe. As with any study conducted on a database populated by investment managers, it is subject to familiar biases such as survivorship bias, backfill bias and misclassification of strategies. While we believe it can be instructive to analyze the contents of our database, readers should be aware of the possible biases in this study.

Except for the US REIT and Developed Non-US Small Cap Equity segments, all manager universes used in this paper are Wilshire Defined Universes¹, which represent manager segmentations constructed from returns-based and holdings-based style analysis. The methodology for Wilshire Defined Universe construction is included in the appendix. In the case of the two exceptions noted above, which do not have preset Wilshire Defined Universes, customized database filters were utilized to populate the respective universes.

¹ Two additional filters were applied to the manager universes used in this study: 1) a filter to include only strategies identified as Active Bottom-up or Active Top-down to eliminate the impact of passive strategies, 2) exclude strategies that identify their returns as being net-of-fees.

The layout of the paper begins with a study of systematic returns and the underlying factors driving market returns over the last ten years. We then shift to a review of active management results within various segments of the equity and fixed income markets.

Market Environment

It is difficult to glean an accurate perspective of the performance of active management without a clear understanding of the underlying market environment. Most active strategies, even those driven by bottom-up, security-specific processes, carry some persistent exposure to one or more systematic factors of the market. In this section we leave aside statistics that measure active management and instead focus on the general market environment, the relative behavior of various market segments and the underlying currents of certain systematic market factors. We hope to present a high-level perspective of important market drivers during the one-, three-, five- and ten-year time periods that can be applied to reaching a better understanding of individual manager performance during these intervals.

In Exhibit 1 below, we provide a comparison of periodic returns for various indicative market indexes, including a comparison of related index pairs.

Exhibit 1

Systematic Market/Factor Returns (Annualized)

Index Returns (thru Dec 2020)	1 Year	3 Years	5 Years	10 Years
Wilshire US Large Cap	21.2%	15.0%	15.8%	14.1%
Wilshire US Small Cap	17.4%	9.8%	12.9%	11.5%
Large minus Small	3.7%	5.2%	2.9%	2.5%
Wilshire US 2500 Value	7.3%	8.5%	11.4%	11.5%
Wilshire US 2500 Growth	33.0%	19.9%	19.1%	15.9%
Value minus Growth	-25.8%	-11.4%	-7.7%	-4.5%
MSCI Emerging Markets (\$ Net)	18.3%	6.2%	12.8%	3.6%
MSCI EAFE (\$ Net)	7.8%	4.3%	7.4%	5.5%
Emerging minus Developed	10.5%	1.9%	5.4%	-1.9%
MSCI ACWI-X US (LC Net)	6.0%	4.6%	7.7%	6.7%
MSCI ACWI-X US (\$ Net)	10.7%	4.9%	8.9%	4.9%
Local minus USD	-4.7%	-0.3%	-1.3%	1.8%
Bloomberg Barclays US High Yield	7.1%	6.2%	8.6%	6.8%
Bloomberg Barclays US Aggregate	7.5%	5.3%	4.4%	3.8%
High Yield minus Core	-0.4%	0.9%	4.2%	3.0%

Source: Wilshire Compass

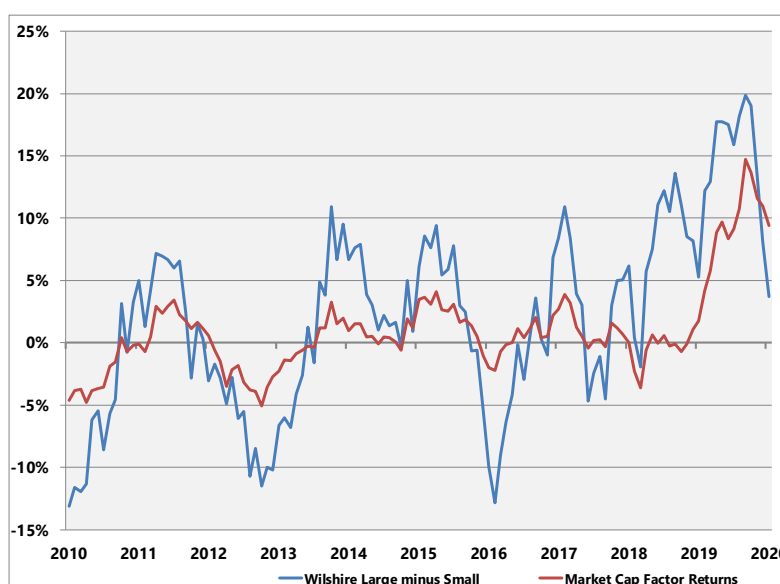
For each index pair in the table above (e.g., Large vs. Small), we provide a summary row to highlight the arithmetic difference between index returns. This orientation of the data can be helpful in identifying areas of relative performance differences and how these patterns may have created a headwind or tailwind for individual active strategies with tilts into or away from a market segment. For example, the -25.8%, -11.4%, -7.7% and -4.5% relative returns highlighted in the second panel correspond, respectively, to the one-, three-, five- and ten-year return differences between the Wilshire US 2500 Value Index and the Wilshire US 2500 Growth Index. This demonstrates that US growth stocks consistently outperformed value stocks across all four holding periods. This suggests that managers carrying a consistent relative bias towards value stocks were likely to have been hampered versus their benchmark and/or peers. We will take a deeper dive into the performance of specific market factors in the remainder of this section.

US Equity: Size

The relative behavior of stocks of various capitalization sizes is a key market dynamic that can influence the performance of some active strategies in a material way. Below, we review the size factor during various time periods from two different perspectives. First, we contrast the returns of large cap stocks to smaller stocks through a comparison of the Wilshire US Large Cap Index vs. the US Small Cap Index. The blue line in the chart below reflects this relative performance on a one-year rolling basis, rising when large cap stocks outperformed smaller stocks and falling when they lag. The red line in the exhibit displays the Log Market Cap factor from the Wilshire GR6 US Equity Risk ModelSM. The underlying factor returns of the risk model are derived from a multi-factor regression of security returns against a variety of factors and, therefore, reflect the net impact of capitalization differences among securities' behavior outside of what is explained by other model factors.² The Log Market Cap factor's impact on relative portfolio performance would depend on the portfolio's net exposure versus its benchmark. For perspective on the scaling magnitude of the Log Market Cap factor, at the end of December 2020, the net exposure of the Wilshire US Large Cap Index relative to the Wilshire US Small Cap Index was 1.94, suggesting that a Log Market Cap factor return of 1.00% would contribute 1.94% to relative index performance.

Exhibit 2

US Equity: Size Factor: 1-Year Rolling Returns



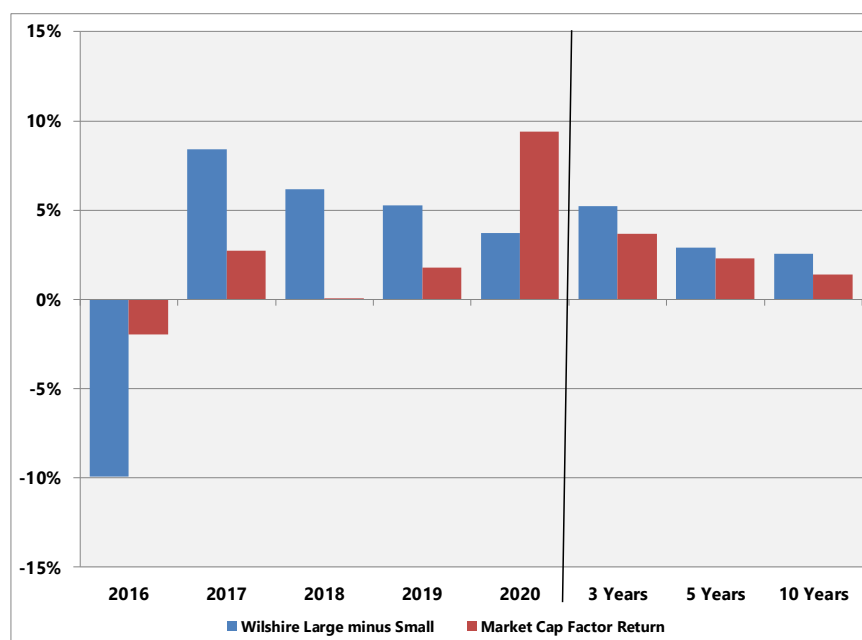
Source: Wilshire Compass and Wilshire Atlas

In the following exhibit, we show the two size measures during the three-, five- and ten-year intervals reviewed earlier for active performance as well as the individual annual returns over the past five years. Both measures demonstrate the strong relative performance edge of large cap stocks over the past three- and five-year periods. Except for the significant outperformance of smaller cap stocks in 2016, large cap stocks have enjoyed notable outperformance (i.e. 5%-plus) in three of the past five years, which has propelled them to outperform small cap stocks by an annualized 5.2% and 2.9% over the past three and five years, respectively.

² The Wilshire GR6 Equity Risk Model includes six fundamental factors (Log Market Cap, BP Ratio, EP Ratio, Volatility, Momentum, Historic Beta) and industry classifications.

Exhibit 3

US Equity: Size Factor: Annual and 3, 5, 10 Year Annualized Returns



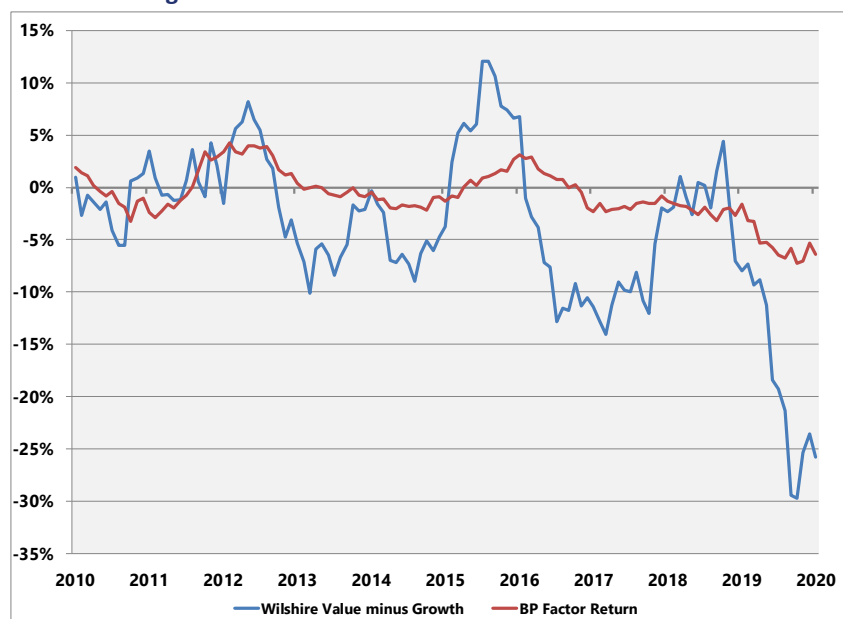
Source: Wilshire Compass and Wilshire Atlas

US Equity: Style

Various style factors can have an important impact on the relative behavior of stocks. As we presented above for the size factor, we examine the behavior of the style factor during various time periods from the same two perspectives; directly from index returns and with components from the Wilshire GR6 US Equity Risk Model. The blue line in the chart below reflects the relative performance of the Wilshire 2500 Value IndexSM versus the Wilshire 2500 Growth IndexSM on a one-year rolling basis, rising when value stocks outperformed growth stocks and falling when they lag. Second, we review the book-to-price (BP) factor, a fundamental ratio that plays a key role in the index methodologies of various index providers when separating stocks between "growth" and "value." The red line in the exhibit displays the BP factor from the Wilshire GR6 US Equity Risk Model. As with the Log Market Cap factor, the BP factor's impact on relative portfolio performance would depend on a portfolio's net exposure versus its benchmark. For perspective on the scaling magnitude of the BP factor, at the end of December 2020, the net exposure of the Wilshire US 2500 Value Index relative to the Wilshire US 2500 Growth Index was 0.73 suggesting that a BP factor return of 1.00% would contribute 0.73% to relative index performance.

Exhibit 4

US Equity: Style Factor: 1-Year Rolling Returns

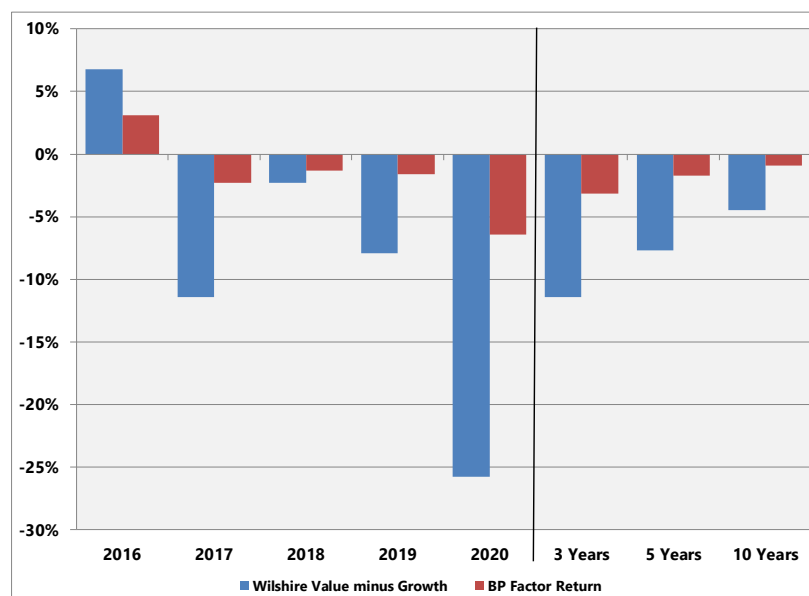


Source: Wilshire Compass and Wilshire Atlas

In the following exhibit, we show the two style measures during the three-, five- and ten-year intervals reviewed earlier for active performance as well as the individual annual returns over the past five years. As can be seen from the chart, value stocks significantly lagged growth stocks in 2020 (-25.8%), building on their significant negative relative performance accumulated over the past four years. These recent results contribute to dismal relative performance for value stocks over the past three, five and even ten years. This divergence suggests that other factors, such as capitalization and sector differences, for example, are contributing to growth stocks' decade-long return advantage over value stocks.

Exhibit 5

US Equity: Style Factor: Annual and 3, 5, 10 Year Annualized Returns



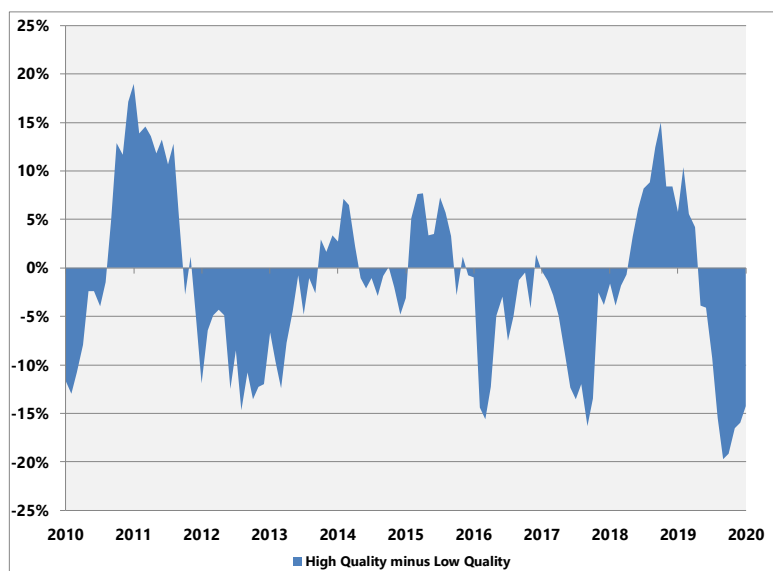
Source: Wilshire Compass and Wilshire Atlas

US Equity: Quality

Bias towards high- or low-quality companies can affect the relative performance of strategies at various points in a business cycle. The graphs below examine the difference in performance of high-quality companies versus low-quality companies in the Wilshire 5000 Total Market IndexSM. We utilized the S&P equity quality ratings and define High Quality as stocks rated B and above and Low Quality as those rated B- and below. Exhibit 6 depicts high quality company returns minus low quality company returns on a one-year rolling basis. The solid area on the chart is positive when high quality companies outperform and negative when low quality companies outperform.

Exhibit 6

US Equity: Quality: 1-Year Rolling Returns

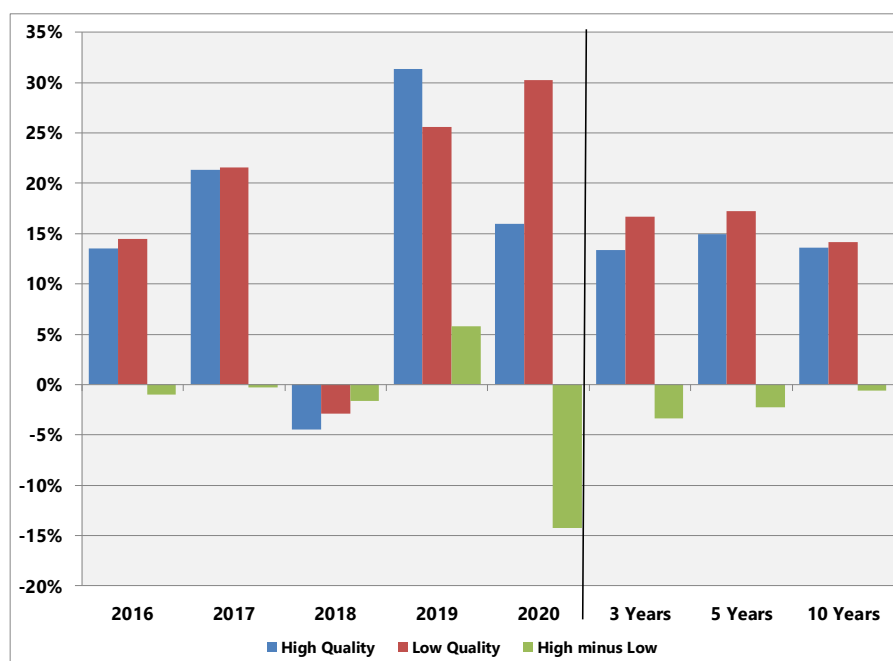


Source: Wilshire Atlas

In Exhibit 7 below, we show the return differences between the two quality measures during the three-, five- and ten-year intervals as well as the individual annual return differentials during the past five years. The chart displays that, based on this measure of quality, lower quality stocks outperformed higher quality stocks in 2020 (+14.3%), bringing their annualized performance edge to 3.4% over the past three years. Lower quality stocks maintain a narrow return advantage over the five- and ten-year periods as well.

Exhibit 7

US Equity: Quality: Annual and 3, 5, 10 Year Annualized Returns



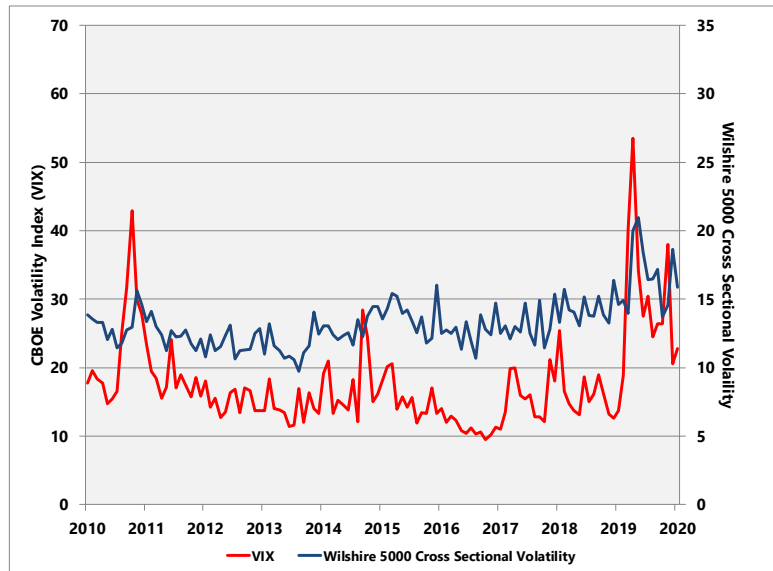
Source: Wilshire Atlas

US Equity: Volatility

Security price volatility is not only a key market indicator of risk regimes but can also be an important signal as to the general environment for active management. In Exhibit 8, we begin first by looking at the US stock market's general level of volatility across two dimensions to assess the level of pricing risk over recent years. First, the red line in the exhibit below graphs the monthly price of the CBOE Volatility Index (VIX), a widely followed measure of market risk. As can be seen, market volatility remains slightly elevated in late 2020 after spiking to its highest point ever in March 2020.

The blue line in the exhibit shows the level of monthly cross-sectional volatility of all stocks in the Wilshire 5000 Total Market IndexSM. Unlike the VIX, which provides a view of the risk of the overall market across time periods, the cross-sectional risk statistic helps to reveal the underlying risk of securities to one another over a discrete period. This can be particularly useful in identifying those periods of time that may have provided an attractive environment for skillful active managers. For example, when cross-sectional risk is low, it suggests that there is a relatively low level of price differentiation among individual securities, providing scarce opportunity for security selection to contribute meaningfully to excess returns. As can be seen in the exhibit, though cross-sectional risk is correlated to general shifts in the VIX level, it demonstrated a less pronounced increase in risk than did the VIX in early-2020, though has been generally trending higher over the past couple years.

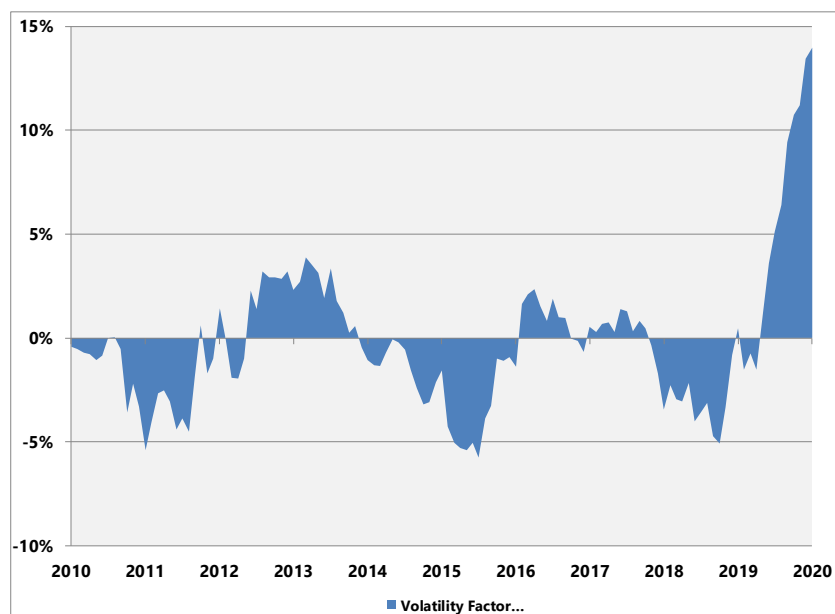
Exhibit 8
Equity Market Volatility: Levels



Source: Wilshire Compass and Wilshire Atlas

Another important perspective regarding volatility is its role as a systematic risk factor in explaining elements of security pricing. In this way, volatility as a factor can be examined similarly to our discussion of the Log of Market Cap and BP factors above. In the following exhibit, we chart the Volatility factor from the Wilshire GR6 US Equity Risk Model. When the line is moving upward, more volatile stocks are enjoying relative outperformance versus less volatile securities and vice versa when the line is moving lower.

Exhibit 9
US Equity: Volatility Factor: 1-Year Rolling Returns

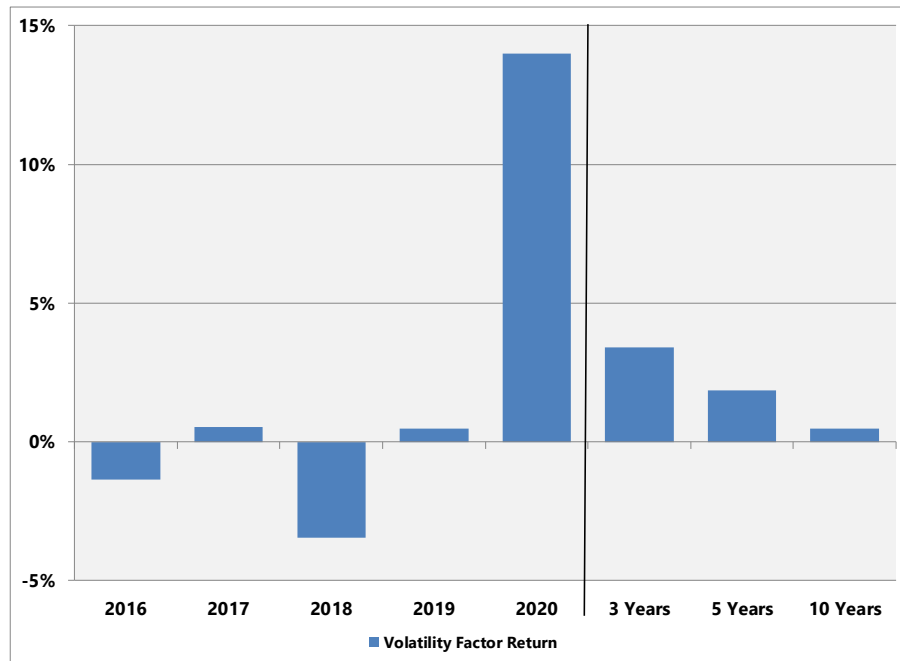


Source: Wilshire Atlas

Exhibit 10, below, shows the Volatility factor during the three-, five- and ten-year intervals reviewed earlier for active performance as well as the individual annual returns during the past five years. The Volatility factor suggests that strategies pursuing a low volatility investment approach would have endured a notable headwind versus traditional capitalization-weighted benchmarks, especially in 2020, but also over the past three-, five- and ten-year periods.

Exhibit 10

US Equity: Volatility Factor: Annual and 3, 5, 10 Year Annualized Returns



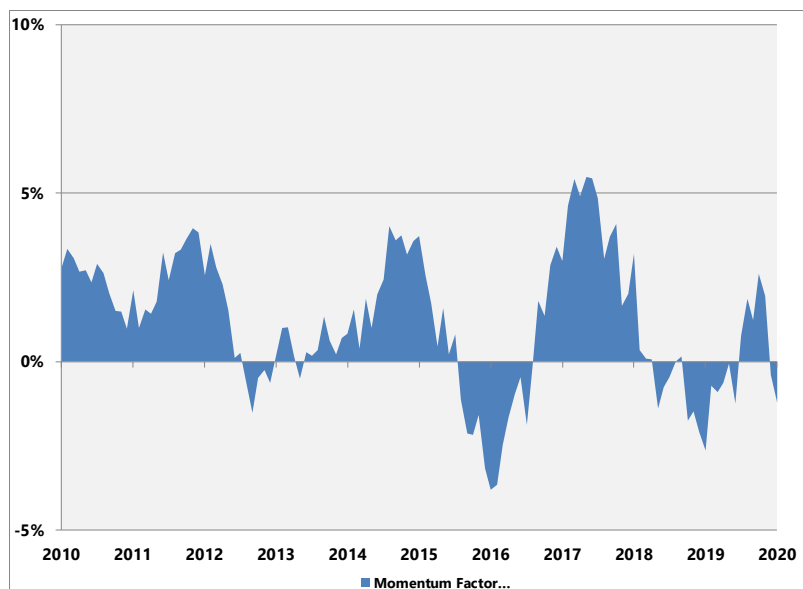
Source: Wilshire Atlas

US Equity: Momentum

Momentum, or the tendency for securities that have gone up or down in value to continue moving in the same direction, is another commonly measured and investable factor. In the following exhibit, we chart the Momentum factor from the Wilshire GR6 US Equity Risk Model. When the line is moving upward, recent higher-returning stocks are continuing to enjoy relative outperformance versus recent lower-returning securities, and vice versa when the line is moving lower (i.e., performance results are reversing or demonstrating mean-reverting tendencies).

Exhibit 11

US Equity: Momentum Factor: 1-Year Rolling Returns

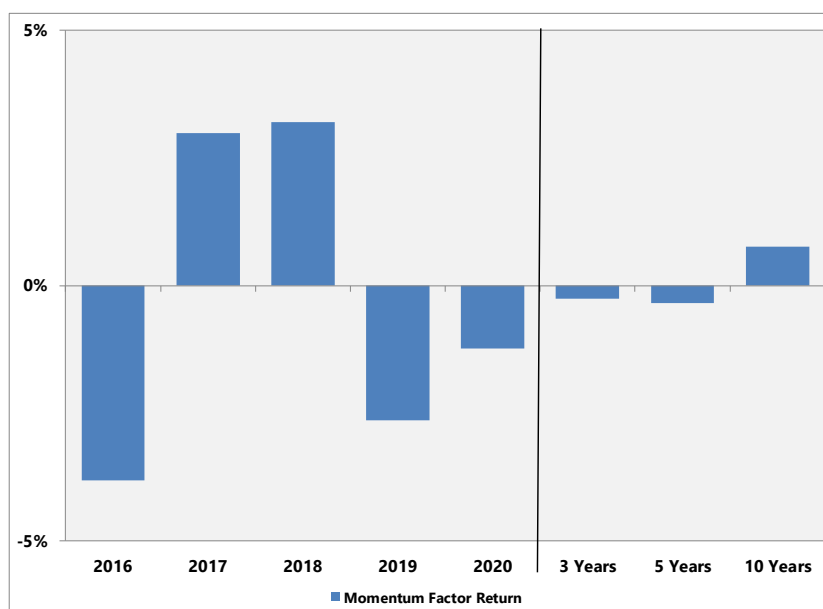


Source: Wilshire Atlas

In the following exhibit, we show the Momentum factor during the three-, five- and ten-year intervals as well as the individual annual returns during the past five years. After another negative return in 2020, the momentum factor's returns are now negative in three of the previous five years (i.e. 2016, 2019 and 2020). While the momentum factor still has strong positive relative results over a ten-year interval, the three- and five-year intervals are now negative.

Exhibit 12

US Equity: Momentum Factor: Annual and 3, 5, 10 Year Annualized Returns

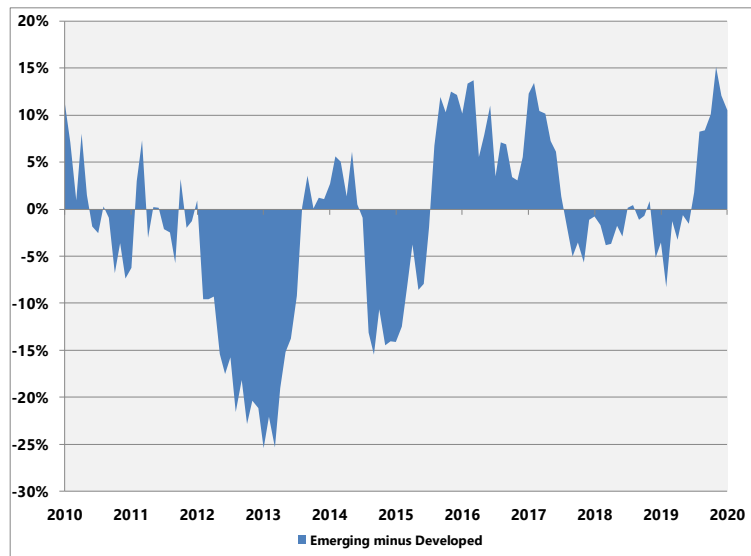


Source: Wilshire Atlas

Non-US Equity: Emerging vs. Developed Markets

In the area of international equity investing, a manager's general approach to the emerging markets can have a large impact on the strategy's relative performance versus their benchmark and peers. Even developed market, EAFE-type strategies can take a "plus" approach that leads to persistent exposure to the emerging markets despite the absence of such names in the stated reference benchmark. As such, it is important to monitor the relative performance of the emerging versus developed markets to understand how a persistent tilt towards the emerging markets can influence manager returns during various market environments. The following chart displays the rolling one-year performance difference of the MSCI Emerging Markets Index against the MSCI EAFE Index over the last ten years.

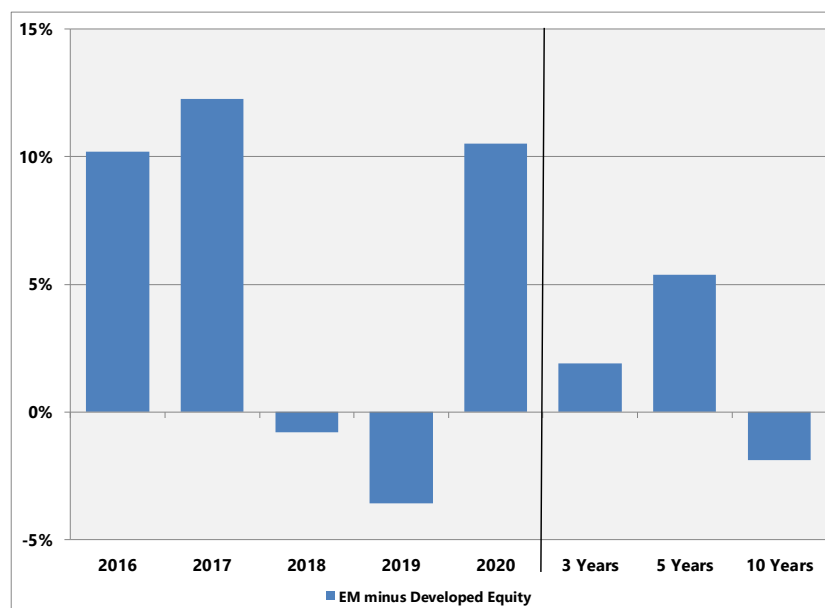
Exhibit 13
Emerging Markets vs. Developed Non-US Equity: 1-Year Rolling Returns



Source: Wilshire Compass

In the following exhibit, we display the emerging markets factor during the past five individual years as well as for the three-, five- and ten-year periods through December 2020. After experiencing negative relative returns in 2018 and 2019 (-0.8% and -3.6%, respectively), the emerging markets experienced strong outperformance in 2020. While EM's significant outperformance in 2020 maintains its edge over the three- and five- year periods, relative performance has trailed by an annualized -1.9% over the past ten years.

Exhibit 14
Emerging Markets vs. Developed Non-US Equity: Annual and 3, 5, 10 Year Annualized Returns



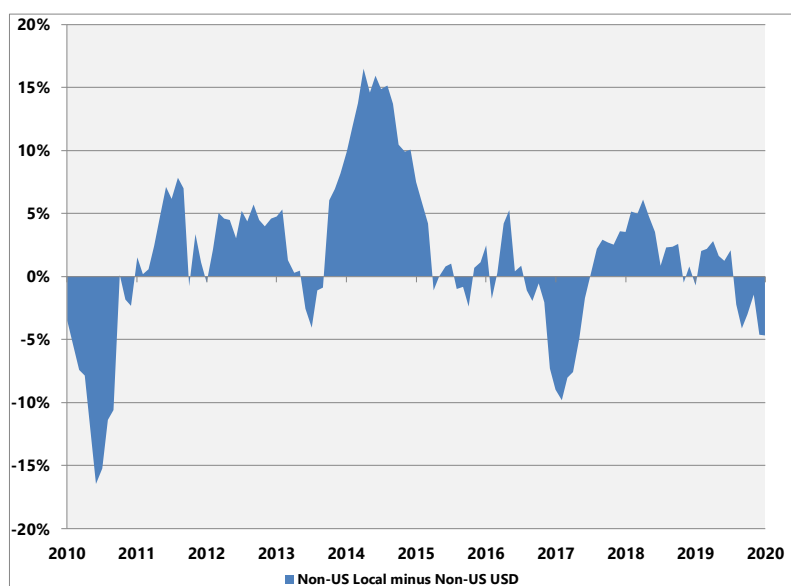
Source: Wilshire Compass

Non-US Equity: Currency

Currency fluctuations can have a dramatic impact on the returns realized by investors holding assets denominated in a foreign currency. While it is not common, some international equity strategies employ various levels of currency hedging to control some of the volatility associated with holding foreign currency denominated securities. The magnitude and persistence of these hedges can have meaningful contributions to the returns of such strategies. In Exhibit 15, we show this currency effect from the perspective of a US Dollar-based investment in the MSCI ACWI ex-US Index. The line represents the one-year rolling difference between the index's local currency return versus its return expressed in US Dollars. When the line plots above zero, indicative of a rising US Dollar environment, a currency hedged strategy should experience a positive relative advantage versus the benchmark and other unhedged international strategies.

Exhibit 15

Non-US Equity: Currency Effect: 1-Year Rolling Returns

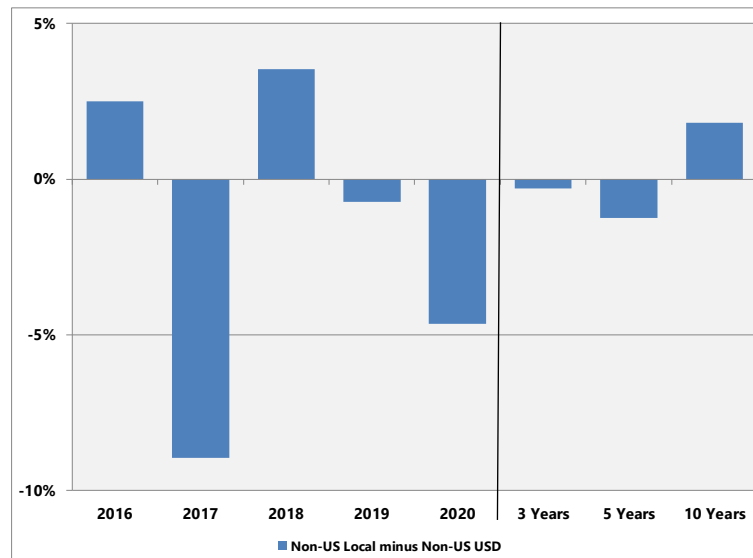


Source: Wilshire Compass

In the following exhibit, we display the variance between the MSCI ACWI ex-US in local currency terms versus US Dollar terms during the past five individual years as well as for the three-, five- and ten-year periods through December 2020. Following modest return contribution and volatility in 2019, the impact of currency fluctuations on the equity returns of USD-based investors was more significant in 2020 (-4.7%).

Exhibit 16

Non-US Equity: Currency Effect: Annual and 3, 5, 10 Year Annualized Returns



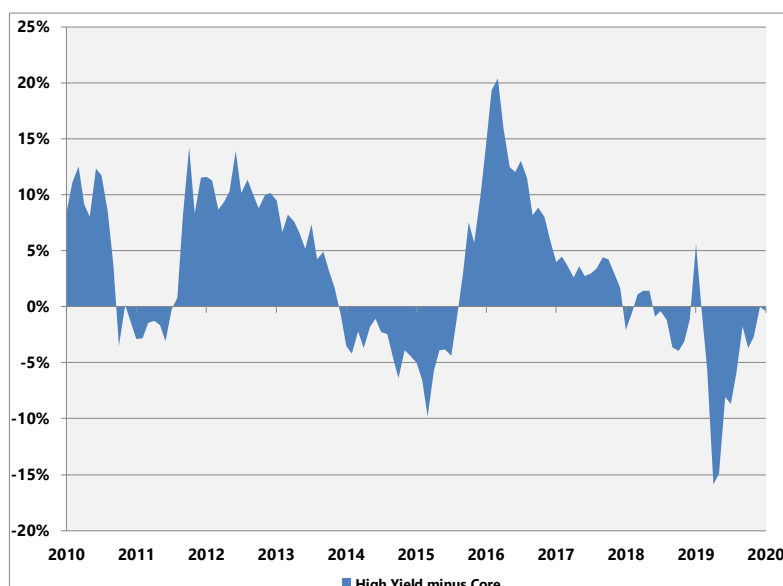
Source: Wilshire Compass

Fixed Income: High Yield vs. Investment Grade

While there are many systematic factors that can drive the relative performance of fixed income strategies, the extent of credit risk taken can have a notable impact on benchmark and peer comparisons. This point becomes abundantly clear during times of credit stress, such as during the 2007 to 2008 global financial crisis, as Core and Core Plus managers who reach for yield through lower-rated holdings suffer significant relative losses. In Exhibit 17, we chart this factor influence with a simple rolling one-year return comparison of the Bloomberg Barclays High Yield Index versus the Bloomberg Barclays US Aggregate Index.

Exhibit 17

Fixed Income: High Yield Factor: 1-Year Rolling Returns

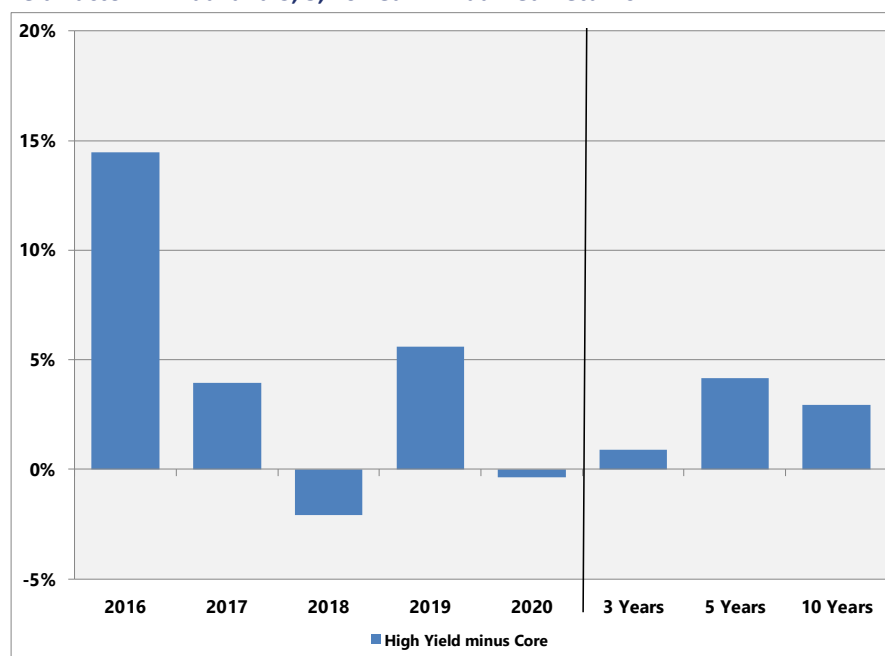


Source: Wilshire Compass

In the following exhibit, we examine the same relative performance comparison between high yield and core bonds during the past five individual years and for the three-, five- and ten-year periods through December 2020. High yield bonds and credit risk in general followed a strong 2019 with a slightly negative relative performance in 2020. Relative to the core market, high yield bonds underperformed by -0.4% in 2020 but still hold a 0.9%, 4.2% and 3.0% annualized return edge, respectively, over the trailing three-, five- and ten-year periods.

Exhibit 18

Fixed Income: High Yield Factor: Annual and 3, 5, 10 Year Annualized Returns



Source: Wilshire Compass

The remainder of the report focuses on active management results within various universe segments of the markets.

Active Management Summary

We now shift to a review of active management by presenting Exhibit 19 below, which displays the index's percentile universe ranking in each traditional asset class. A high ranking, colored in red, reflects a benchmark that performed well versus the universe of active managers, suggesting poor relative performance for active management. A low ranking, colored in green, means the opposite and indicates that a high proportion of managers were able to outperform the benchmark.

Exhibit 19

Benchmark Percentile Rankings

Index Quartile:	1st Quartile	Index Percentile Ranking (thru 2020)			
	2nd Quartile				
	3rd Quartile				
	4th Quartile	1 Year	3 Years	5 Years	10 Years
Equity Segments					
Large Core Wilshire US Large Cap Index	16	22	18	32	
Large Growth Wilshire US Large Growth Index	47	55	42	46	
Large Value Wilshire US Large Value Index	33	32	35	39	
Small Core Wilshire US Small Cap Index	24	19	27	35	
Small Growth Wilshire US Small Growth Index	61	65	62	73	
Small Value Wilshire US Small Value Index	41	30	50	54	
REIT Wilshire REIT Index	83	88	89	90	
EAFE MSCI EAFE Index (\$N)	60	48	58	86	
EAFE Small Cap MSCI - EAFE Small Index (\$Net)	49	46	39	68	
Emerging Markets MSCI Emerging Markets Index (\$N)	50	53	53	81	
Global MSCI - AC World Index (\$N)	39	32	31	41	
Fixed Income Segments					
Core Fixed Income Bloomberg Barclays US AG Index	53	42	39	42	
US High Yield Bloomberg Barclays US HY Index	30	34	19	38	

Source: Wilshire Compass

The next table shows the excess returns within each universe broken out by selected percentile breakpoints and serves as an alternative perspective to the previous table. This orientation of the data helps to identify at what point within the universe distribution that managers were able to generate positive excess returns.

Exhibit 20
Universe Breakpoints

Market Segment	Percentile	Universe Excess Return Breakpoints (thru 2020)			
		1 Year	3 Years	5 Years	10 Years
Large Core Wilshire US Large Cap Index	10%	1.56	0.97	0.70	0.73
	25%	-1.54	-0.19	-0.46	0.17
	50%	-4.92	-2.08	-1.52	-0.57
	75%	-8.50	-4.20	-2.80	-1.38
	90%	-10.17	-6.20	-4.10	-2.39
Large Growth Wilshire US Large Growth Index	10%	12.16	5.78	3.00	2.09
	25%	5.35	3.42	1.24	0.80
	50%	-0.43	0.56	-0.59	-0.18
	75%	-5.29	-2.66	-2.59	-1.48
	90%	-9.91	-5.11	-3.90	-2.43
Large Value Wilshire US Large Value Index	10%	4.57	2.98	2.35	1.27
	25%	1.25	0.86	0.62	0.47
	50%	-2.60	-1.49	-0.78	-0.40
	75%	-5.21	-3.03	-1.98	-1.28
	90%	-8.32	-4.29	-2.67	-1.79
Small Core Wilshire US Small Cap Index	10%	5.98	2.94	1.85	1.52
	25%	-0.87	-0.61	0.14	0.35
	50%	-7.58	-4.07	-2.20	-0.65
	75%	-13.38	-6.15	-3.65	-1.69
	90%	-17.63	-7.81	-4.84	-2.73
Small Growth Wilshire US Small Growth Index	10%	32.60	15.75	9.06	4.66
	25%	18.97	9.53	5.22	3.28
	50%	3.93	3.26	1.82	1.70
	75%	-5.70	-2.85	-1.87	-0.15
	90%	-10.80	-5.87	-4.41	-1.73
Small Value Wilshire US Small Value Index	10%	7.18	1.82	3.62	1.89
	25%	3.02	0.25	1.62	0.88
	50%	-1.52	-1.13	0.00	0.09
	75%	-5.18	-2.65	-1.11	-0.56
	90%	-9.03	-4.10	-2.60	-1.25
REIT Wilshire REIT Index	10%	9.09	4.89	3.81	2.29
	25%	7.50	3.45	2.66	1.58
	50%	4.77	2.37	1.57	0.99
	75%	1.15	1.05	0.99	0.58
	90%	-1.69	-0.31	-0.08	0.00

Source: Wilshire Compass

Exhibit 20 (Continued)
Universe Breakpoints

Market Segment	Percentile	Universe Excess Return Breakpoints (thru 2020)			
		1 Year	3 Years	5 Years	10 Years
EAFE MSCI EAFE Index (\$ Net)	10%	11.79	5.76	4.55	3.76
	25%	7.71	3.17	2.83	2.84
	50%	1.87	-0.22	0.83	1.69
	75%	-3.66	-2.90	-1.20	0.48
	90%	-8.13	-3.94	-2.54	-0.40
EAFE Small Cap MSCI EAFE Small Index (\$ Net)	10%	18.60	8.40	4.83	2.42
	25%	7.39	2.64	1.38	1.63
	50%	-0.75	-0.34	-0.57	0.62
	75%	-5.25	-3.64	-2.33	-0.37
	90%	-9.61	-5.59	-3.94	-1.12
Emerging Markets MSCI Emerging Markets Index (\$ Net)	10%	11.78	5.26	3.66	4.30
	25%	7.03	2.93	2.35	2.96
	50%	-0.04	0.06	0.13	1.67
	75%	-5.36	-2.55	-1.61	0.28
	90%	-11.49	-4.89	-3.20	-0.88
Global MSCI - AC World Index (\$ Net)	10%	17.95	6.73	4.72	2.89
	25%	5.33	1.24	0.72	1.33
	50%	-6.28	-2.92	-1.37	-0.68
	75%	-10.14	-6.05	-3.42	-1.64
	90%	-14.71	-7.08	-4.72	-2.46
Core Fixed Income Bloomberg/Barclays US Aggregate	10%	1.83	0.86	0.74	0.80
	25%	1.23	0.63	0.57	0.54
	50%	0.07	-0.18	-0.23	-0.20
	75%	-0.99	-0.63	-0.70	-0.51
	90%	-1.45	-0.85	-1.14	-0.90
US High Yield Bloomberg/Barclays High Yield Index	10%	1.97	1.04	0.34	0.57
	25%	0.26	0.21	-0.21	0.21
	50%	-1.30	-0.63	-1.13	-0.36
	75%	-3.33	-1.57	-2.92	-1.52
	90%	-4.48	-2.25	-3.46	-2.20

Source: Wilshire Compass

Active Management Universe Statistics

In this section of the report we will step through each of the investment categories individually to provide a more detailed understanding of manager performance within each universe. The following exhibits are provided within three-page sub-sections for each individual universe.

Universe Statistics Table: The Universe Statistics Table at the top of the first page provides the number of products included, index rankings and the average and median excess returns and information ratios for the preceding one-, three-, five- and ten-year time periods. This table is helpful in identifying the breadth of coverage and general level of active management success within each universe.

Manager Consistency Table (Excess Returns): The Manager Consistency Table in the bottom-left panel of the first page compares the consistency of relative manager success in delivering excess returns across two consecutive, non-overlapping three-year market intervals. The data are presented to identify the percentage breakdown of all the managers within a given quartile in the previous three-year period across performance quartiles in the most recent three-year period. Using an example to understand the table, if one reads across the 1st quartile ranking row and down the 4th quartile column, the intersection indicates the percentage of 1st quartile managers in the three years through 2017 that fell to the 4th quartile in the three years through 2020. Rows where the Total column sums to less than 100% indicate situations where managers have dropped out of the database (i.e., stopped reporting) within the last three years. As a point of reference, if manager performance was completely random in nature (i.e., no positive or negative consistency), one would expect to see an equal distribution of manager percentages (i.e., ~ 25%) in each grid.

Manager Consistency Table (Information Ratio): Unlike the Excess Returns Consistency Table described above, the Manager Consistency Table in the bottom-right of the first page attempts to normalize performance by risk when testing for consistency. The table compares the consistency of relative manager success by information ratios across two consecutive, non-overlapping three-year market intervals. As with the Excess Returns Consistency Table, the data are presented to identify the percentage breakdown of all the managers within a given quartile in the previous three-year period across performance quartiles in the most recent three-year period. As was described for the manager consistency table above, if manager performance was completely random in nature (i.e. no positive or negative consistency), one would expect to see an equal distribution of manager percentages (i.e., ~ 25%) in each grid.

Rolling Excess Return Percentiles Chart: The Rolling Excess Return Percentiles Chart at the top of the second page displays the 10th, 25th, 50th (median), 75th and 90th percentile excess returns through time. The chart includes three-year rolling data (36 months) from December 2013 through December 2020 and is helpful in seeing the consistency of 3-year excess returns across the distribution of managers.

Rolling Information Ratio Percentiles Chart: The Rolling Information Ratio Percentiles Chart at the bottom of the second page displays the 10th, 25th, 50th (median), 75th and 90th percentile information ratios through time. The chart includes three-year rolling data (36 months) from December 2013 through December 2020 and is helpful in seeing the consistency of 3-year risk-adjusted excess returns across the distribution of managers. This presentation of manager results can be quite useful in assisting in the development of excess return expectations for managers of varying risk levels (i.e. by multiplying a forecasted information ratio by the manager's expected tracking error).

Excess Return vs. Excess Risk Scatter Plot: The Excess Return vs. Excess Risk Scatter Plot on the third page provides a graphical representation of the trade-off between excess return and excess risk (tracking error) for all managers in the universe during the previous ten years. Median return and risk lines are included to clearly display the mid-point across these two dimensions.

US Large Core Equity³

(Benchmark: Wilshire US Large Cap Index)

(Universe: Wilshire Defined US Large Core)

Large Core managers delivered disappointing performance versus the Wilshire US Large Cap Index in 2020. The group has produced median excess returns of -4.92%, -2.08% and -1.52% for the one-, three- and five-year time periods respectively. The ten-year average and median excess returns of -0.75% and -0.57%, respectively, demonstrate that the “average” active manager has had difficulty adding value over the long-term.

Universe Statistics

Periods Ending 12/31/2020	1 Year	3 Years	5 Years	10 Years
Number of Products	138	138	137	122
Index Ranking (Percentile)	16	22	18	32
Average Excess Return	-4.88	-2.26	-1.68	-0.75
Median Excess Return	-4.92	-2.08	-1.52	-0.57
Average Information Ratio	-1.13	-0.59	-0.45	-0.19
Median Information Ratio	-0.96	-0.48	-0.46	-0.20

Universe Index: Wilshire - U.S. Large Cap Index

Consistency of Excess Returns

3 Yr Qtile Rank 2017	3 Year Quartile Rank 2020				
	1st	2nd	3rd	4th	Total
1st	27%	27%	24%	21%	100%
2nd	27%	24%	27%	21%	100%
3rd	26%	26%	32%	15%	100%
4th	18%	18%	18%	44%	97%

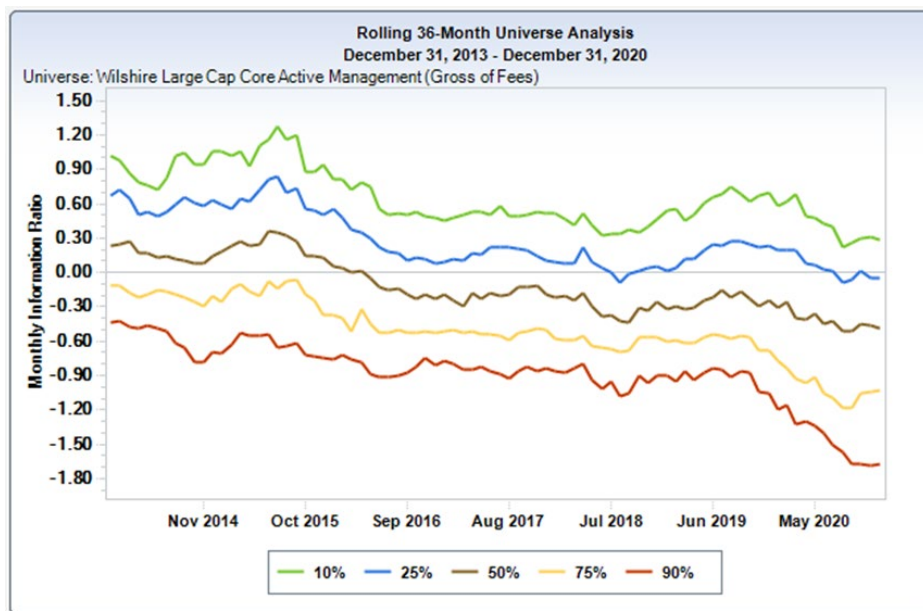
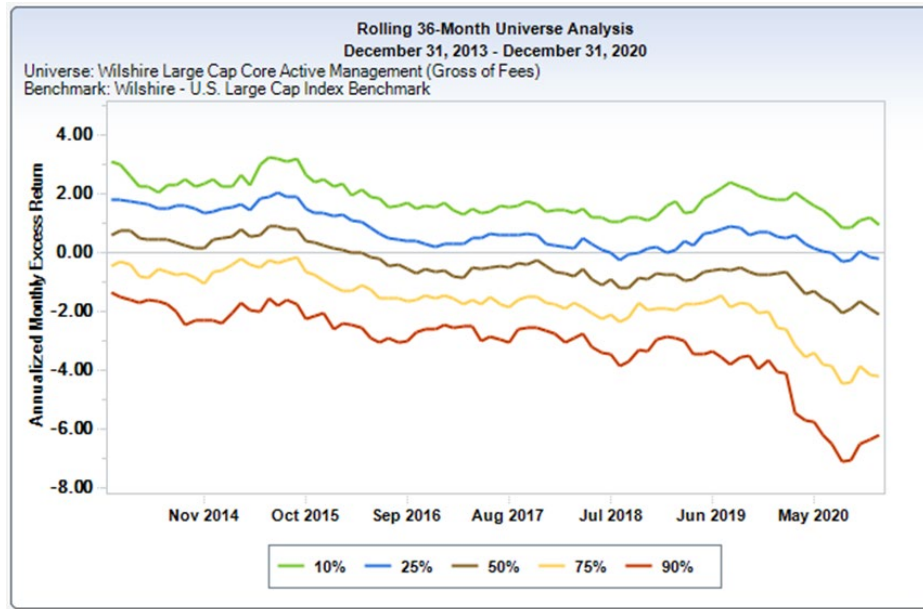
Consistency of Information Ratios

3 Yr Qtile Rank 2017	3 Year Quartile Rank 2020				
	1st	2nd	3rd	4th	Total
1st	27%	24%	24%	24%	100%
2nd	18%	27%	27%	27%	100%
3rd	32%	21%	24%	24%	100%
4th	21%	24%	26%	26%	97%

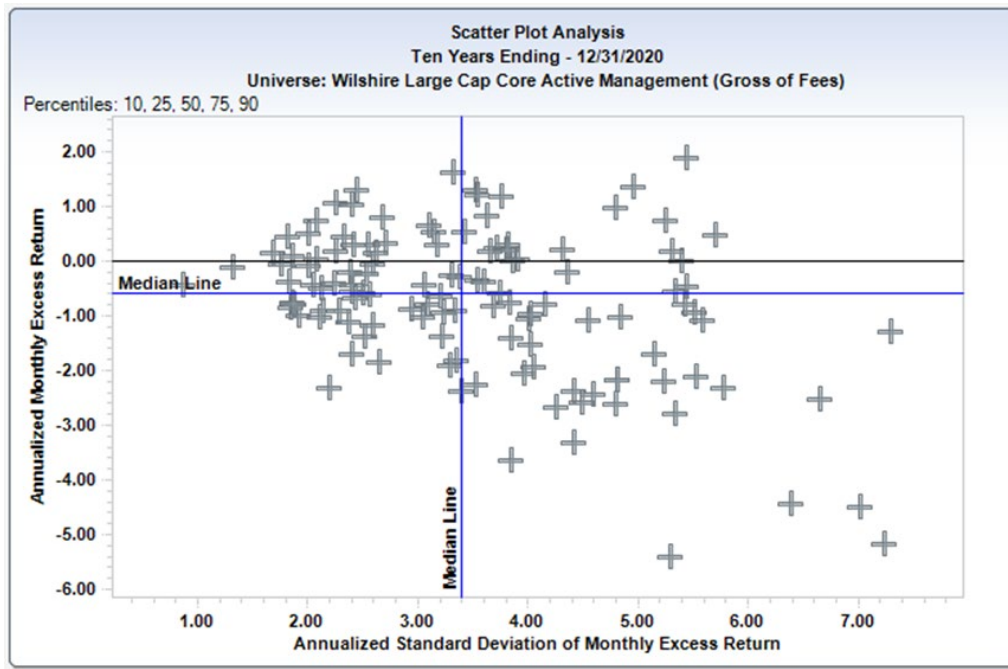
Based on 134 products through 2017, 1 (0.7%) of which dropped out of the database by 2020

³ Source: Wilshire Compass

US Large Core Equity (Source: Wilshire Compass)



US Large Core Equity (Source: Wilshire Compass)



US Large Growth Equity⁴

(Benchmark: Wilshire US Large Cap Growth Index)

(Universe: Wilshire Defined US Large Growth)

The Large Growth universe had another disappointing year, underperforming the index in 2020 for a second straight year. As a group, Large Growth managers delivered a -0.43% median excess return for the year. However, due to double-digit excess returns by the top managers, the average excess return was +1.51% last year. Large growth managers have been underwhelming over the past three and five years, with median excess returns of 0.56% and -0.59%, respectively. The average and median excess returns versus the Wilshire US Large Cap Growth Index over the past ten years are both -0.18%.

Universe Statistics

Periods Ending 12/31/2020	1 Year	3 Years	5 Years	10 Years
Number of Products	205	205	200	188
Index Ranking (Percentile)	47	55	42	46
Average Excess Return	1.51	0.76	-0.36	-0.18
Median Excess Return	-0.43	0.56	-0.59	-0.18
Average Information Ratio	0.07	0.06	-0.14	-0.06
Median Information Ratio	-0.07	0.12	-0.12	-0.05

Universe Index: Wilshire - U.S. Large Growth Index

Consistency of Excess Returns

3 Yr Qtile Rank 2017	3 Year Quartile Rank 2020				
	1st	2nd	3rd	4th	Total
1st	46%	20%	22%	8%	96%
2nd	24%	31%	22%	22%	98%
3rd	15%	13%	33%	35%	96%
4th	8%	33%	21%	35%	96%

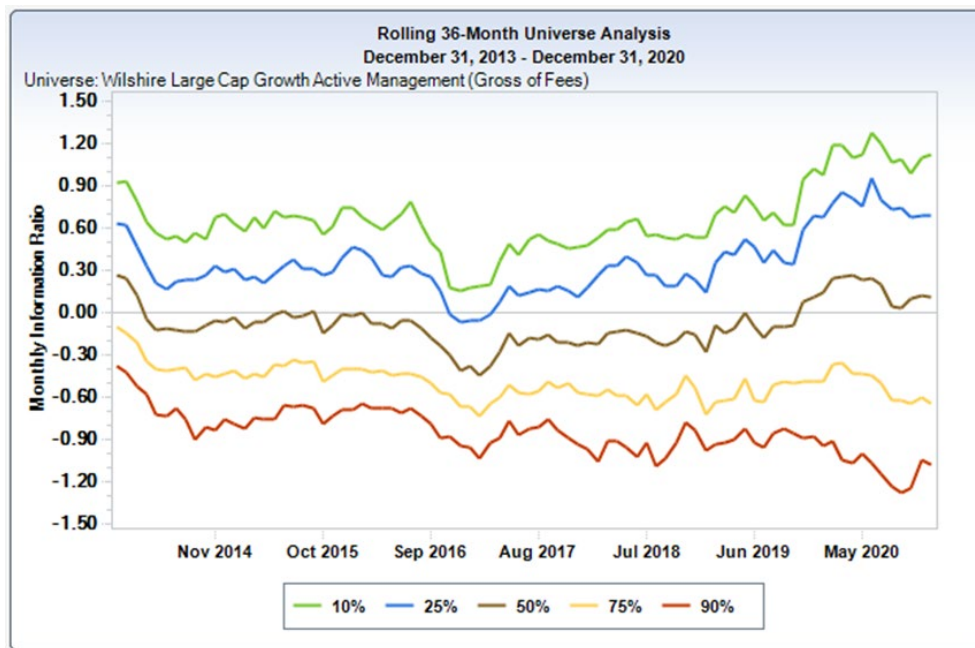
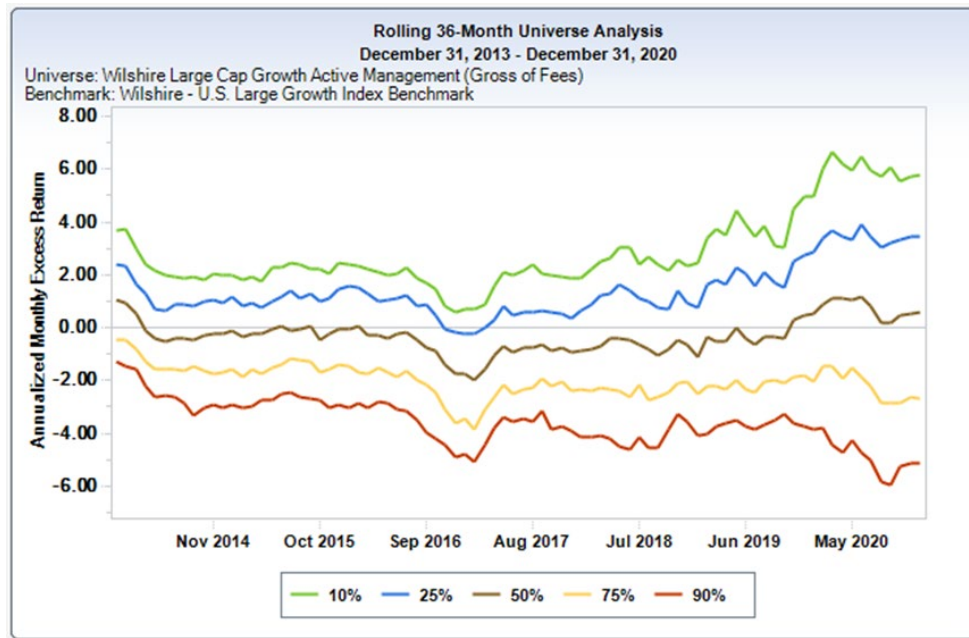
Consistency of Information Ratios

3 Yr Qtile Rank 2017	3 Year Quartile Rank 2020				
	1st	2nd	3rd	4th	Total
1st	44%	24%	18%	10%	96%
2nd	29%	25%	24%	20%	98%
3rd	17%	21%	29%	27%	94%
4th	4%	25%	29%	40%	98%

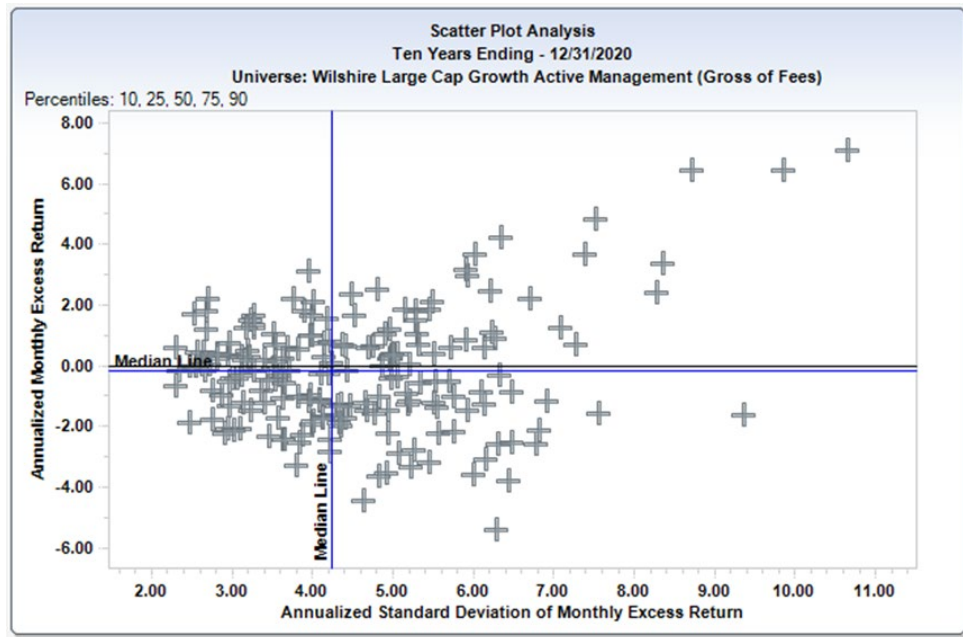
Based on 205 products through 2017, 7 (3.4%) of which dropped out of the database by 2020

⁴ Source: Wilshire Compass

US Large Growth Equity (Source: Wilshire Compass)



US Large Growth Equity (Source: Wilshire Compass)



US Large Value Equity⁵

(Benchmark: Wilshire US Large Cap Value Index)

(Universe: Wilshire Defined US Large Value)

The Large Value manager universe delivered disappointing results across the board in 2020, producing median excess returns of -2.60%, -1.49%, and -0.78%, over the one, three, and five-year periods. Further demonstrating the struggles of active management in the Large Value space, the gross-of-fee excess returns over the past ten years had an average and median excess return of -0.38% and -0.40%, respectively.

Universe Statistics

Periods Ending 12/31/2020	1 Year	3 Years	5 Years	10 Years
Number of Products	182	182	181	164
Index Ranking (Percentile)	33	32	35	39
Average Excess Return	-2.13	-1.20	-0.58	-0.38
Median Excess Return	-2.60	-1.49	-0.78	-0.40
Average Information Ratio	-0.40	-0.26	-0.12	-0.09
Median Information Ratio	-0.45	-0.39	-0.21	-0.10

Universe Index: Wilshire - U.S. Large Value Index

Consistency of Excess Returns

3 Yr Qtile Rank 2017	3 Year Quartile Rank 2020				
	1st	2nd	3rd	4th	Total
1st	46%	15%	22%	13%	96%
2nd	19%	31%	15%	33%	98%
3rd	15%	25%	29%	23%	92%
4th	15%	23%	29%	27%	94%

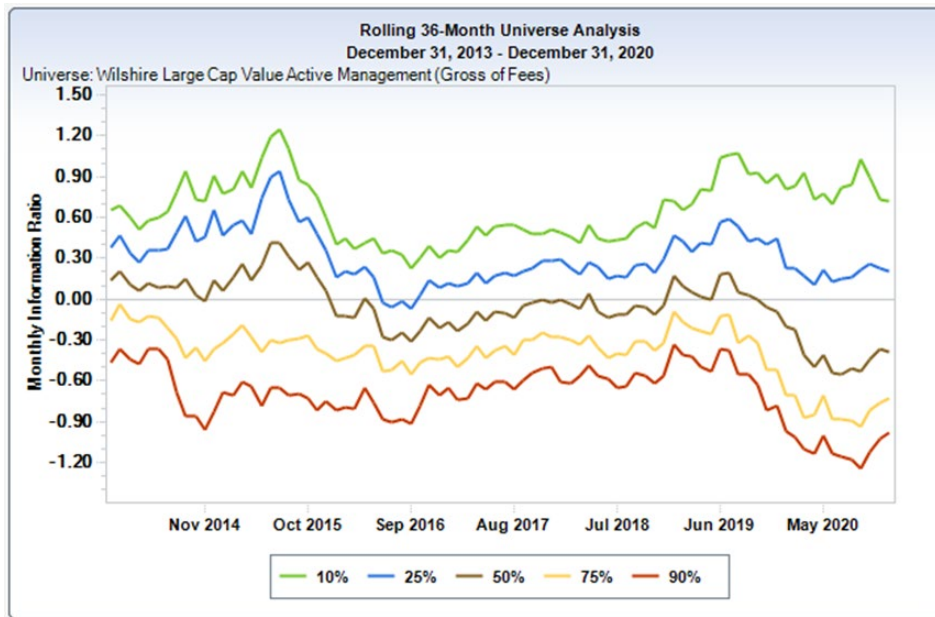
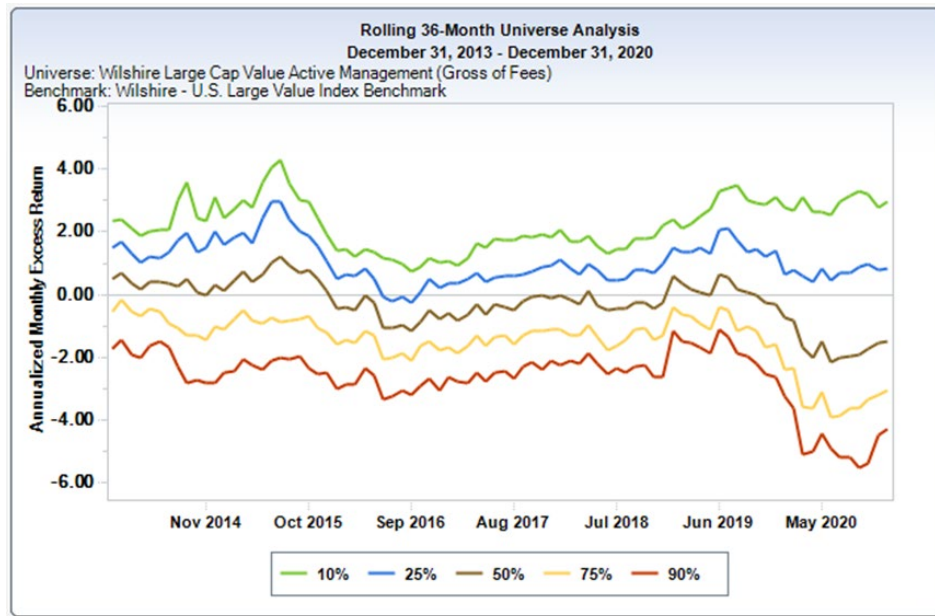
Consistency of Information Ratios

3 Yr Qtile Rank 2017	3 Year Quartile Rank 2020				
	1st	2nd	3rd	4th	Total
1st	50%	11%	24%	13%	98%
2nd	17%	35%	17%	27%	96%
3rd	10%	29%	27%	23%	90%
4th	17%	19%	29%	31%	96%

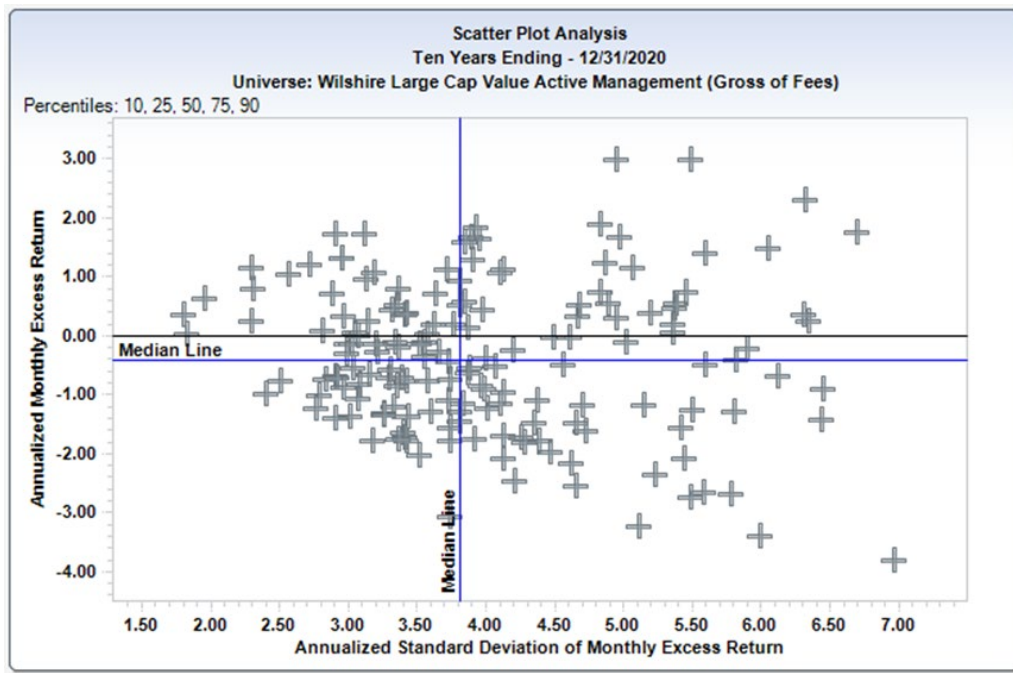
Based on 190 products through 2017, 10 (5.3%) of which dropped out of the database by 2020

⁵ Source: Wilshire Compass

US Large Value Equity (Source: Wilshire Compass)



US Large Value Equity (Source: Wilshire Compass)



US Small Core Equity⁶

(Benchmark: Wilshire US Small Cap Index)

(Universe: Wilshire Defined US Small Cap)

US Small Core Equity managers continued to struggle mightily in 2020 after a particularly difficult past two years. The group posted average and median excess returns of -6.43% and -7.58%, respectively. The Small Core manager universe delivered disappointing results during the three and five-year periods, as well, with median excess returns of -4.07% and -2.20%, respectively. The group's poor recent performance leaves the average and median excess returns in the red, gross-of-fees, during the past ten years.

Universe Statistics

Periods Ending 12/31/2020	1 Year	3 Years	5 Years	10 Years
Number of Products	143	143	139	128
Index Ranking (Percentile)	24	19	27	35
Average Excess Return	-6.43	-3.04	-1.67	-0.71
Median Excess Return	-7.58	-4.07	-2.20	-0.65
Average Information Ratio	-1.14	-0.59	-0.34	-0.13
Median Information Ratio	-1.32	-0.74	-0.39	-0.15

Universe Index: Wilshire - U.S. Small Cap Index

Consistency of Excess Returns

3 Yr Qtile Rank 2017	3 Year Quartile Rank 2020				
	1st	2nd	3rd	4th	Total
1st	32%	32%	12%	24%	100%
2nd	20%	23%	34%	23%	100%
3rd	29%	17%	29%	26%	100%
4th	14%	29%	29%	26%	97%

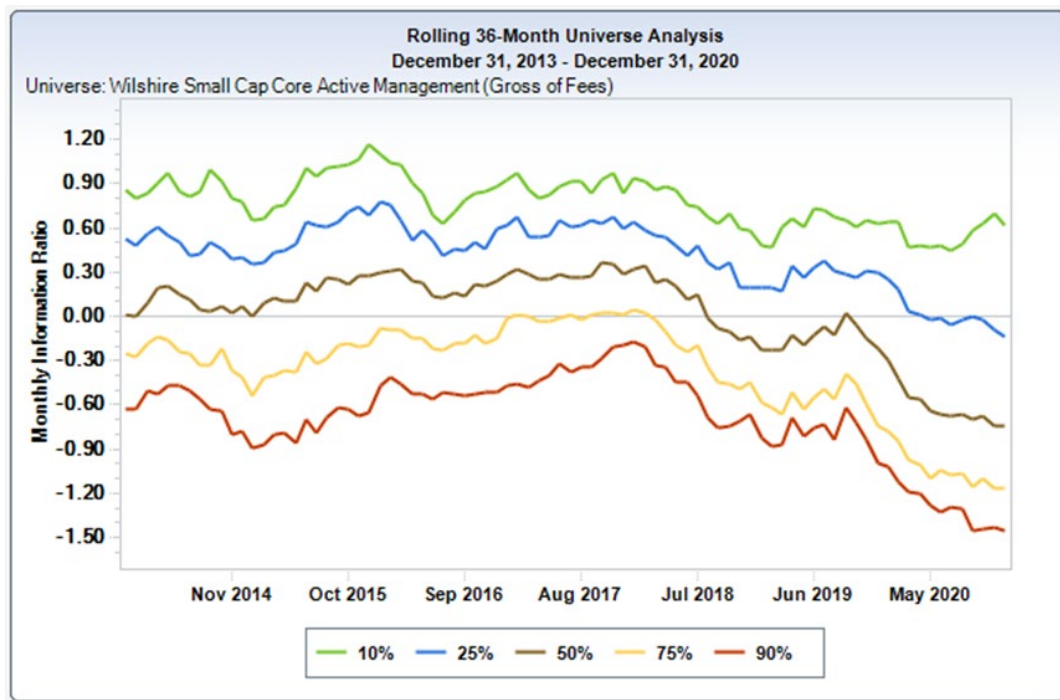
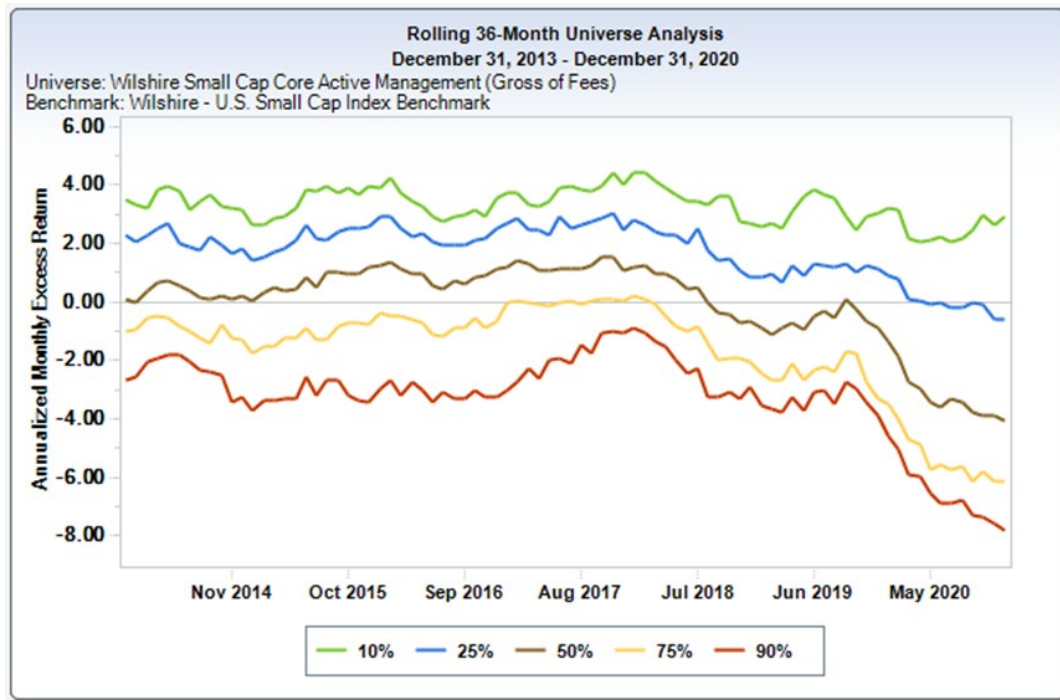
Consistency of Information Ratios

3 Yr Qtile Rank 2017	3 Year Quartile Rank 2020				
	1st	2nd	3rd	4th	Total
1st	29%	24%	24%	24%	100%
2nd	20%	23%	29%	29%	100%
3rd	29%	31%	14%	26%	100%
4th	17%	23%	34%	23%	97%

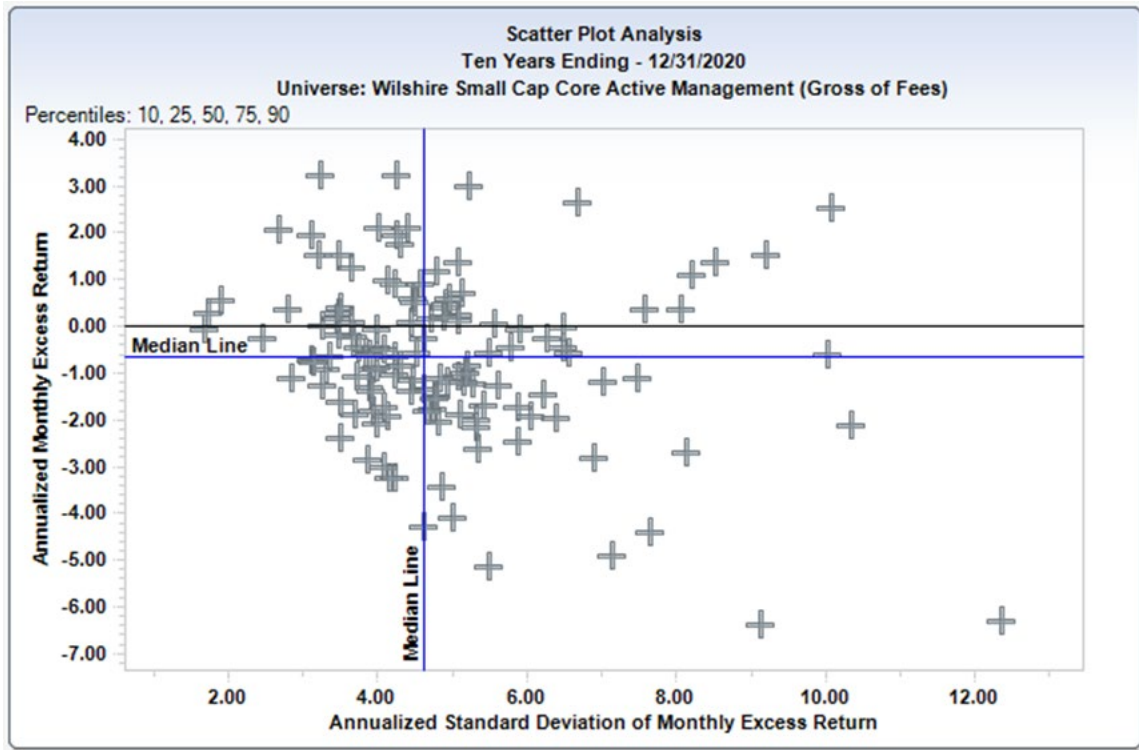
Based on 139 products through 2017, 1 (0.7%) of which dropped out of the database by 2020

⁶ Source: Wilshire Compass

US Small Core Equity (Source: Wilshire Compass)



US Small Core Equity (Source: Wilshire Compass)



US Small Growth Equity⁷

(Benchmark: Wilshire US Small Cap Growth Index)

(Universe: Wilshire Defined US Small Cap Growth)

Small Growth managers rebounded strongly in 2020 with average and median excess returns of 8.26% and 3.93%, respectively. The universe experienced robust relative results over the intermediate horizon, with median excess returns of 3.26% and 1.82%, over the trailing three and five-year periods, respectively. The Wilshire US Small Growth Equity Index placed below the 60th percentile within the universe in all four time periods, demonstrating positive benchmark-relative performance by managers over the longer time periods.

Universe Statistics

Periods Ending 12/31/2020	1 Year	3 Years	5 Years	10 Years
Number of Products	144	144	140	126
Index Ranking (Percentile)	61	65	62	73
Average Excess Return	8.26	4.15	1.86	1.70
Median Excess Return	3.93	3.26	1.82	1.70
Average Information Ratio	0.81	0.40	0.21	0.24
Median Information Ratio	0.61	0.57	0.34	0.28

Universe Index: Wilshire - U.S. Small Growth Index

Consistency of Excess Returns

3 Yr Qtile Rank 2017	3 Year Quartile Rank 2020				
	1st	2nd	3rd	4th	Total
1st	30%	27%	24%	15%	97%
2nd	14%	20%	23%	43%	100%
3rd	26%	15%	35%	24%	100%
4th	26%	31%	20%	23%	100%

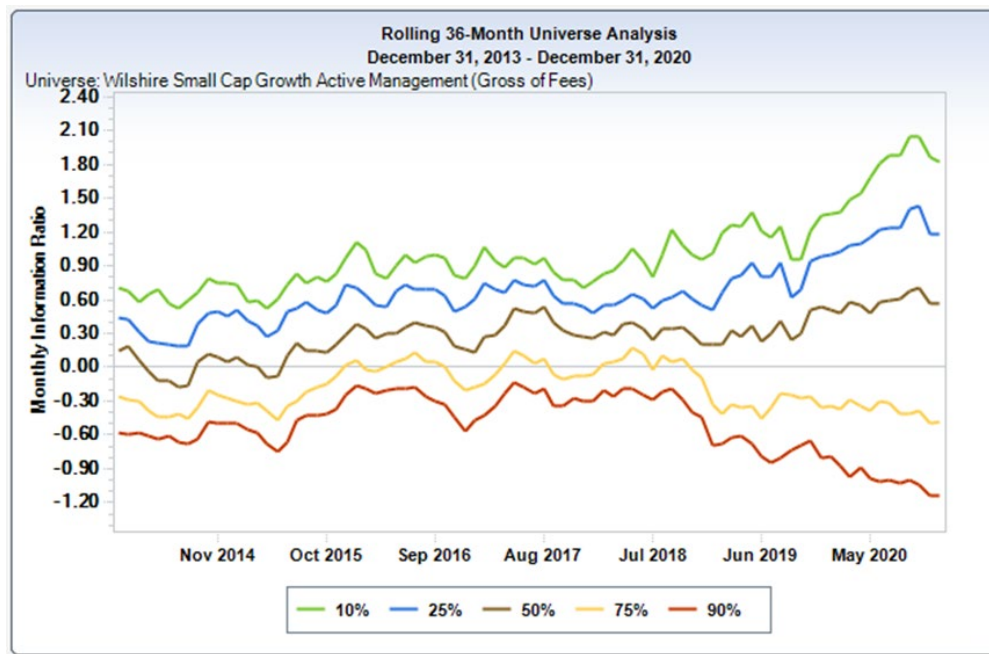
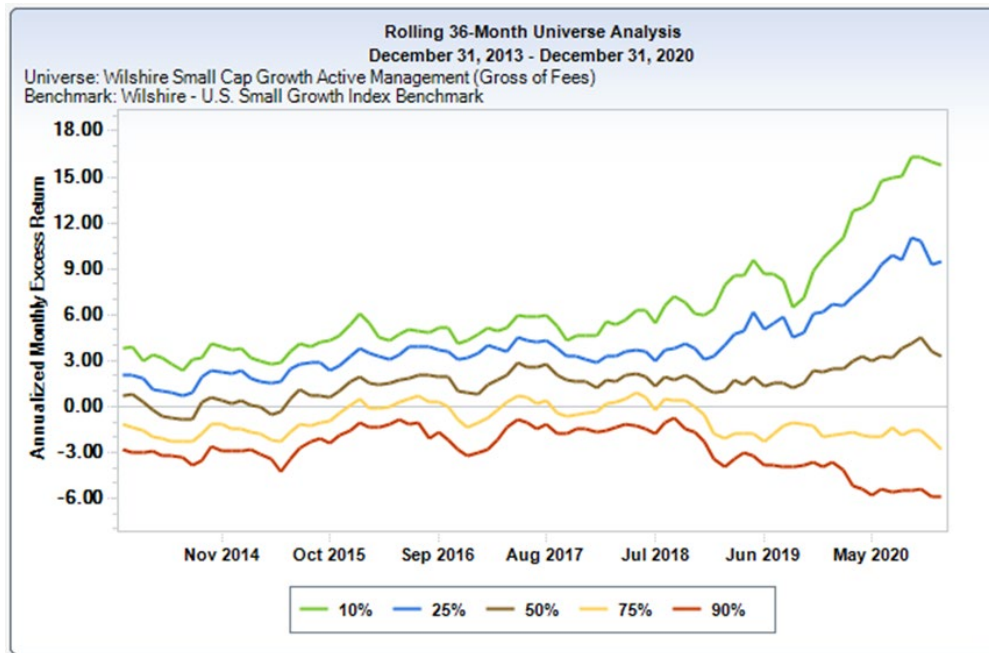
Consistency of Information Ratios

3 Yr Qtile Rank 2017	3 Year Quartile Rank 2020				
	1st	2nd	3rd	4th	Total
1st	21%	18%	42%	15%	97%
2nd	20%	29%	9%	43%	100%
3rd	24%	24%	26%	26%	100%
4th	34%	20%	26%	20%	100%

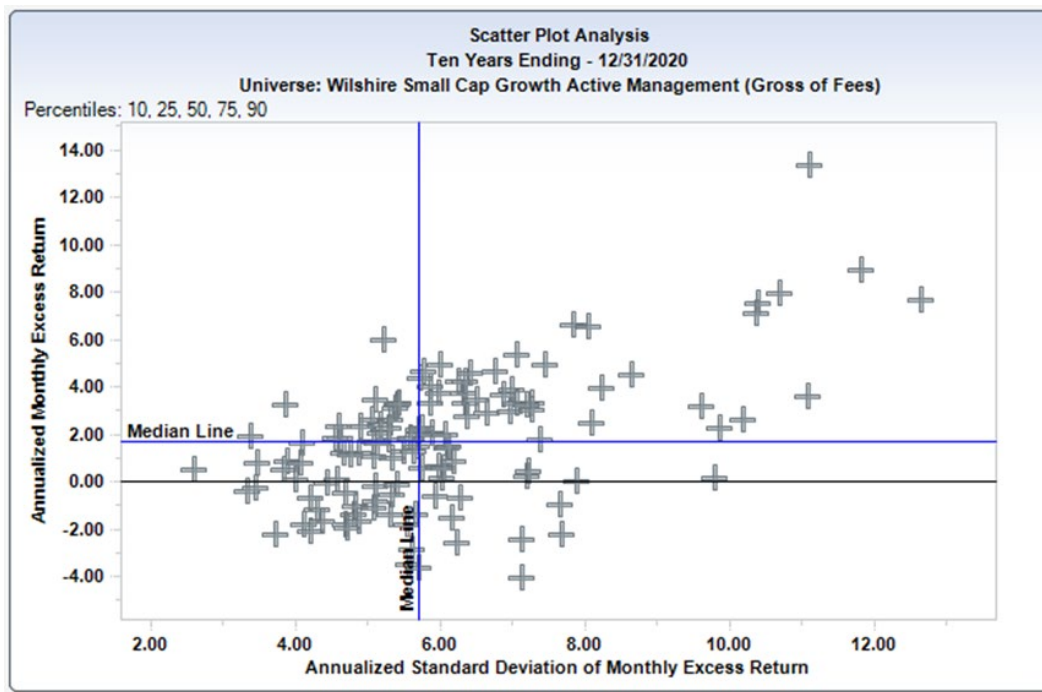
Based on 137 products through 2017, 1 (0.8%) of which dropped out of the database by 2020

⁷ Source: Wilshire Compass

US Small Growth Equity (Source: Wilshire Compass)



US Small Growth Equity (Source: Wilshire Compass)



US Small Value Equity⁸

(Benchmark: Wilshire US Small Cap Value Index)

(Universe: Wilshire Defined US Small Cap Value)

The universe of Small Value managers struggled again in 2020. The average and median gross-of-fee excess returns for the group were -0.95% and -1.52%, respectively. More than half of managers outperformed the Wilshire US Small Cap Value Index over the latest ten-year period, with a median return of 0.09%; however, once fees are considered, this figure would likely be negative.

Universe Statistics

Periods Ending 12/31/2020	1 Year	3 Years	5 Years	10 Years
Number of Products	74	74	72	64
Index Ranking (Percentile)	41	30	50	54
Average Excess Return	-0.95	-1.06	0.28	0.21
Median Excess Return	-1.52	-1.13	0.00	0.09
Average Information Ratio	-0.25	-0.20	0.04	0.05
Median Information Ratio	-0.23	-0.18	0.00	0.02

Universe Index: Wilshire - U.S. Small Value Index

Consistency of Excess Returns

3 Yr Qtile Rank 2017	3 Year Quartile Rank 2020				
	1st	2nd	3rd	4th	Total
1st	28%	33%	22%	17%	100%
2nd	17%	22%	33%	28%	100%
3rd	28%	17%	11%	44%	100%
4th	21%	26%	26%	16%	89%

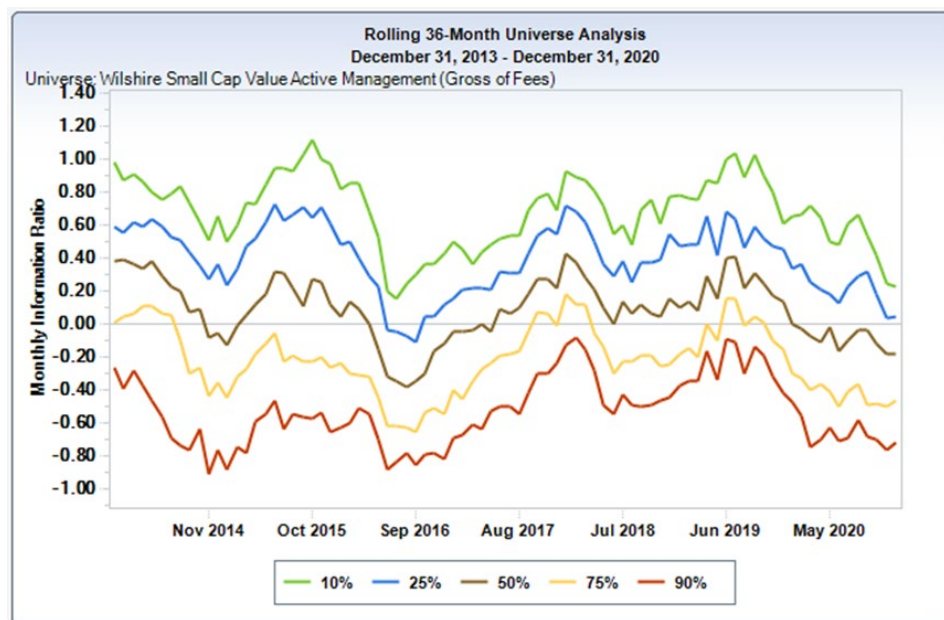
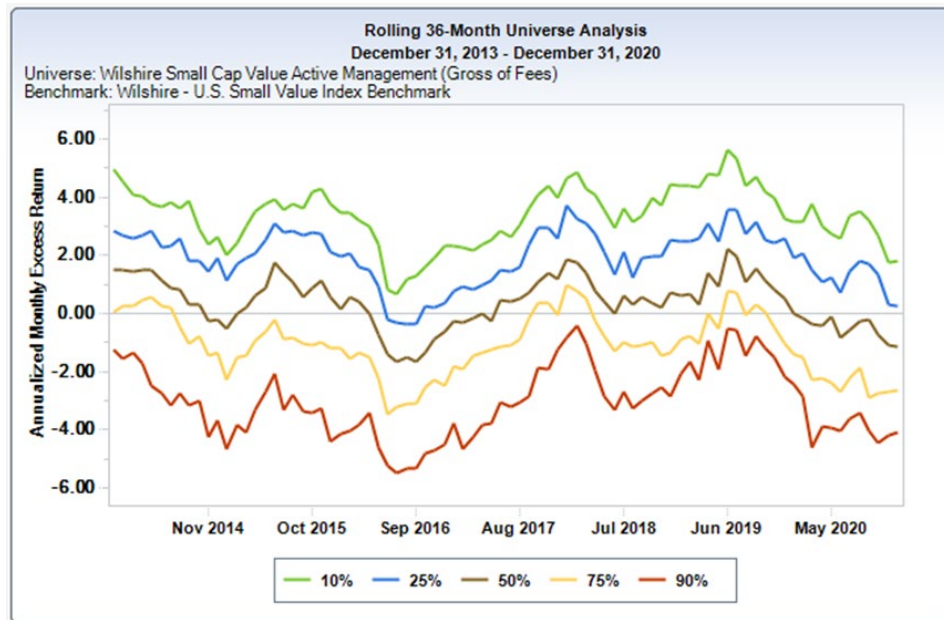
Consistency of Information Ratios

3 Yr Qtile Rank 2017	3 Year Quartile Rank 2020				
	1st	2nd	3rd	4th	Total
1st	33%	22%	33%	11%	100%
2nd	11%	28%	17%	44%	100%
3rd	28%	17%	11%	44%	100%
4th	21%	26%	37%	5%	89%

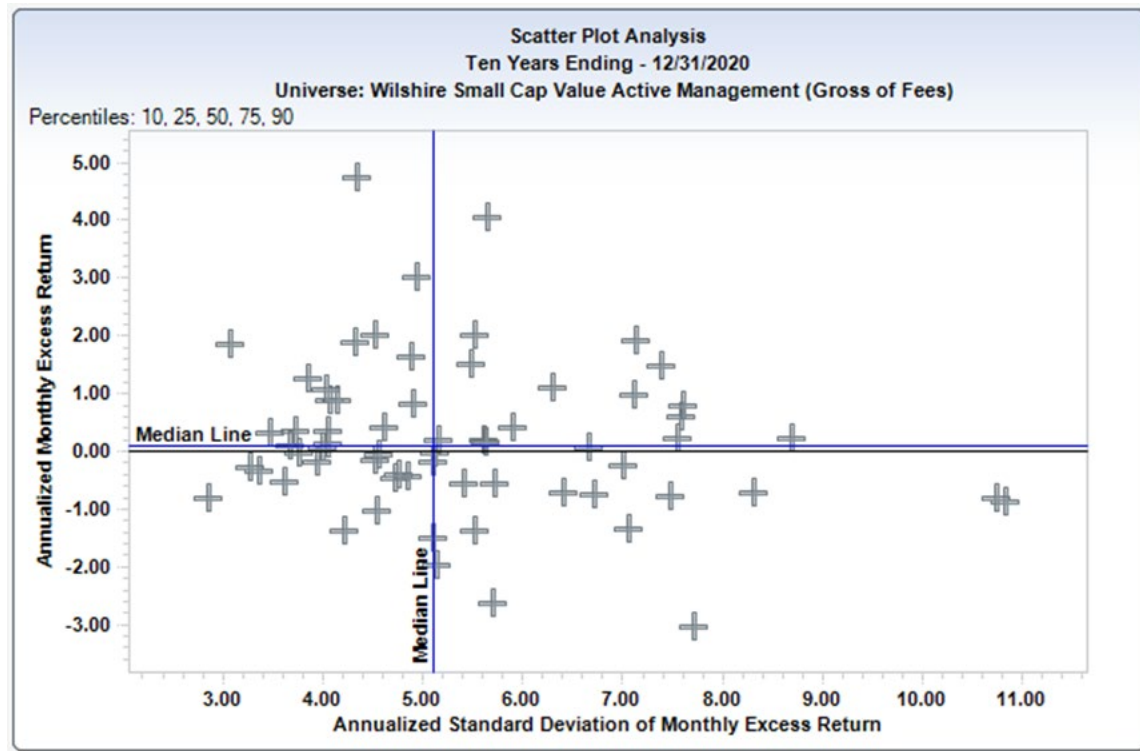
Based on 73 products through 2017, 2 (2.6%) of which dropped out of the database by 2020

⁸ Source: Wilshire Compass

US Small Value Equity (Source: Wilshire Compass)



US Small Value Equity (Source: Wilshire Compass)



US REITs9

(Benchmark: Wilshire REIT Index)

US REIT managers delivered strong results again in 2020, with average and median excess returns of 4.01% and 4.77%, respectively. The US REITS group has notched positive gross-of-fee median excess returns of 2.37%, 1.57% and 0.99%, across the most recent three-, five- and ten-year periods, respectively. Though the group is comprised of a small number of strategies (i.e., less than 35), an impressive 80%-plus of managers' gross-of-fee returns exceeded those of the Wilshire REIT Index over each of the trailing time periods in the analysis.

Universe Statistics

Periods Ending 12/31/2020	1 Year	3 Years	5 Years	10 Years
Number of Products	26	25	25	24
Index Ranking (Percentile)	83	88	89	90
Average Excess Return	4.01	1.95	1.74	1.06
Median Excess Return	4.77	2.37	1.57	0.99
Average Information Ratio	0.90	0.62	0.59	0.44
Median Information Ratio	0.91	0.67	0.58	0.46

Universe Index: Wilshire - REIT Index

Consistency of Excess Returns

3 Yr Qtile Rank 2017	3 Year Quartile Rank 2020				
	1st	2nd	3rd	4th	Total
1st	71%	0%	14%	14%	100%
2nd	14%	43%	43%	0%	100%
3rd	0%	14%	29%	43%	86%
4th	0%	25%	0%	38%	63%

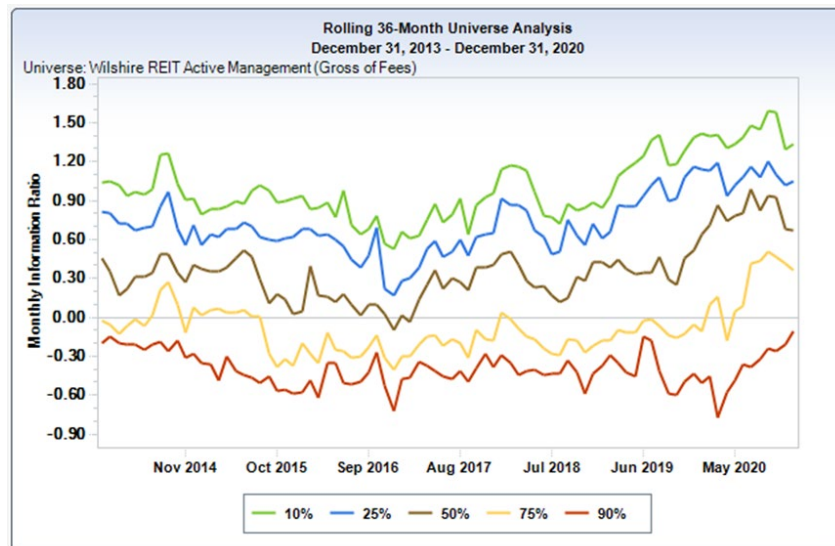
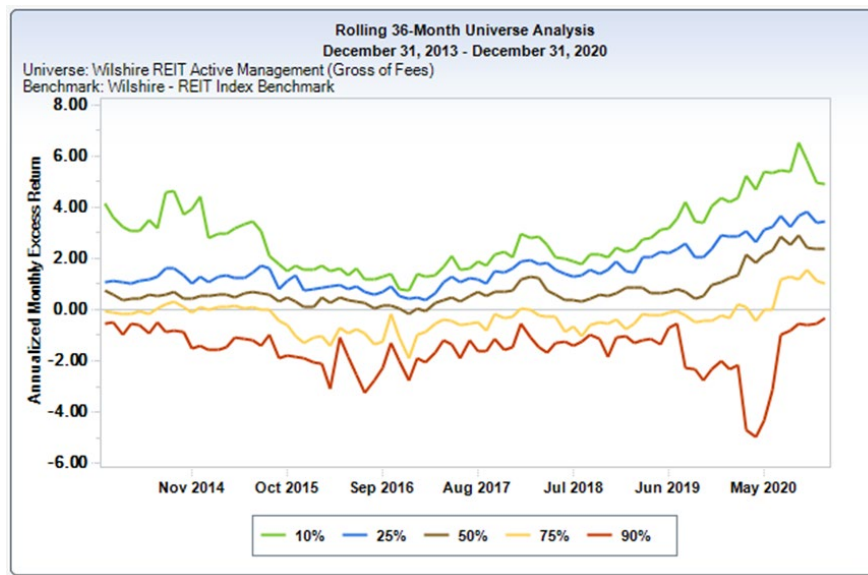
Consistency of Information Ratios

3 Yr Qtile Rank 2017	3 Year Quartile Rank 2020				
	1st	2nd	3rd	4th	Total
1st	57%	14%	29%	0%	100%
2nd	14%	43%	29%	14%	100%
3rd	0%	29%	0%	57%	86%
4th	13%	0%	25%	25%	63%

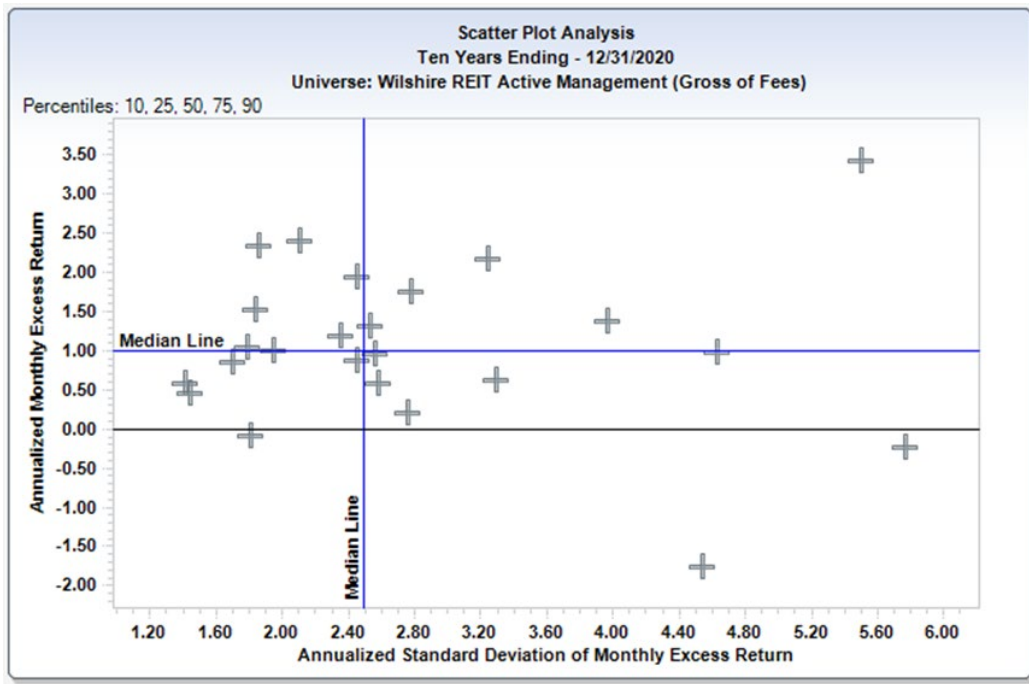
Based on 29 products through 2017, 4 (12.9%) of which dropped out of the database by 2020

⁹ Source: Wilshire Compass

US REITs (Source: Wilshire Compass)



US REITs (Source: Wilshire Compass)



Developed Non-US Equity¹⁰

(Benchmark: MSCI EAFE Index (\$ Net))

(Universe: Wilshire Defined EAFE)

As a group, Developed Non-US Equity managers delivered positive results in 2020 with average and median gross-of-fee excess returns of 2.18% and 1.87%, respectively, contributing to median excess returns of -0.22% over the past three years, 0.83% over five years and 1.69% over the ten-year period. During the past ten years, a remarkable 86% of managers outperformed the MSCI EAFE Index (\$Net).

Universe Statistics

Periods Ending 12/31/2020	1 Year	3 Years	5 Years	10 Years
Number of Products	88	86	80	62
Index Ranking (Percentile)	60	48	58	86
Average Excess Return	2.18	0.33	0.90	1.67
Median Excess Return	1.87	-0.22	0.83	1.69
Average Information Ratio	0.30	0.04	0.16	0.36
Median Information Ratio	0.28	-0.04	0.13	0.41

Universe Index: MSCI - EAFE Index (\$Net)

Consistency of Excess Returns

3 Yr Qtile Rank 2017	3 Year Quartile Rank 2020				
	1st	2nd	3rd	4th	Total
1st	11%	32%	26%	32%	100%
2nd	37%	21%	16%	26%	100%
3rd	37%	16%	26%	11%	89%
4th	20%	15%	20%	45%	100%

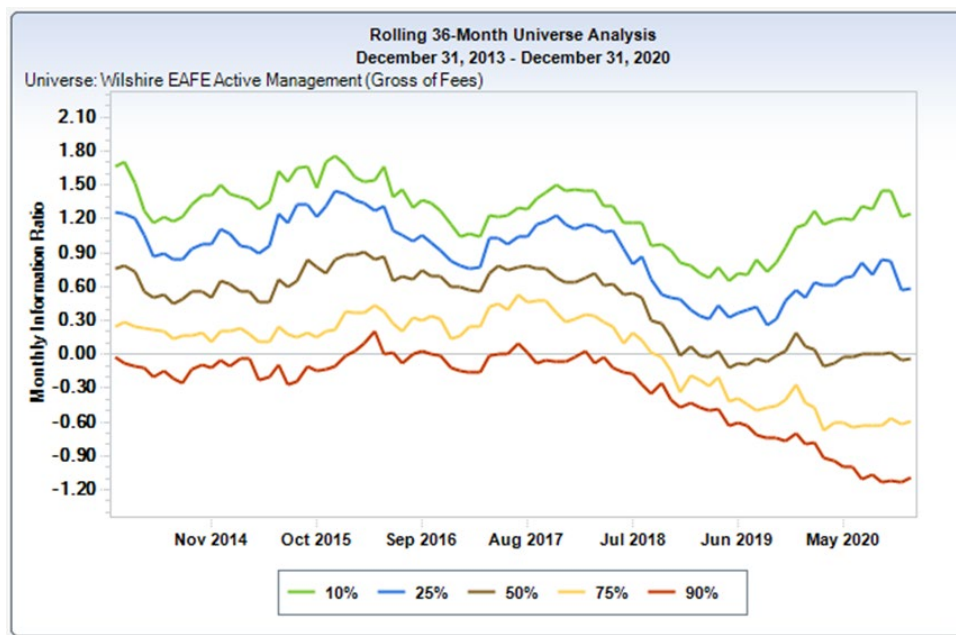
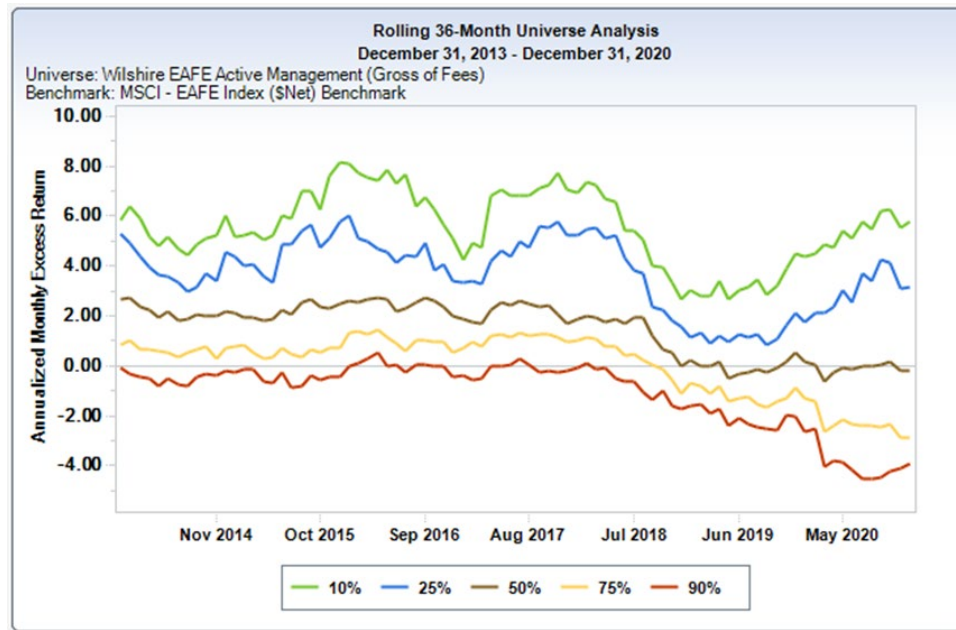
Consistency of Information Ratios

3 Yr Qtile Rank 2017	3 Year Quartile Rank 2020				
	1st	2nd	3rd	4th	Total
1st	5%	42%	37%	16%	100%
2nd	32%	16%	26%	26%	100%
3rd	37%	16%	16%	21%	89%
4th	30%	10%	10%	50%	100%

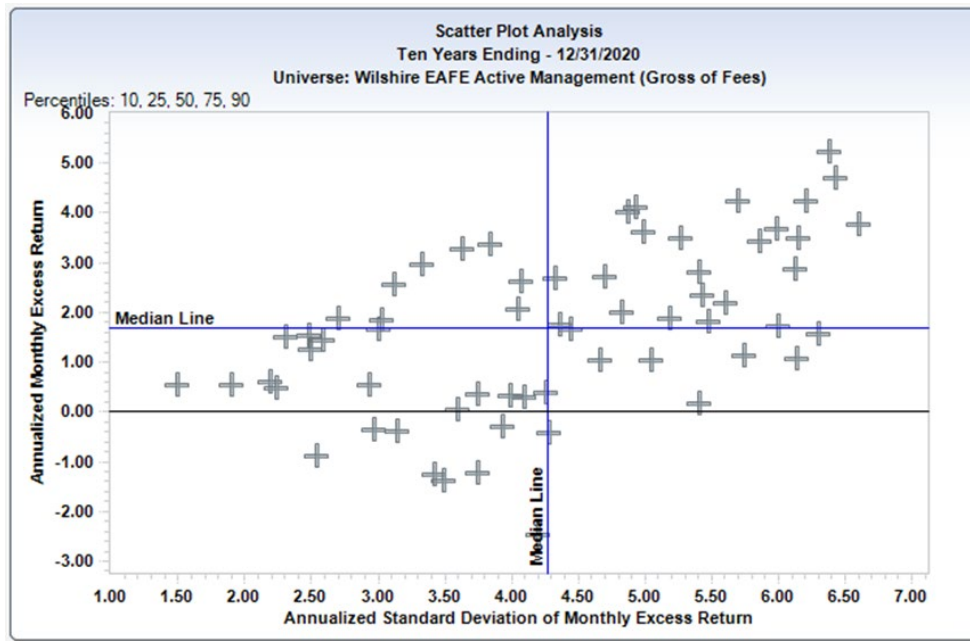
Based on 77 products through 2017, 2 (2.6%) of which dropped out of the database by 2020

¹⁰ Source: Wilshire Compass

Developed Non-US Equity (Source: Wilshire Compass)



Developed Non-US Equity (Source: Wilshire Compass)



Developed Non-US Small Cap Equity¹¹
 (Benchmark: MSCI EAFE Small Index (\$Net))

Developed Non-US Small Cap Equity managers delivered a negative median excess return of -0.75% in 2020 but an average excess return of +1.83%. The group has generated average and median gross-of-fee excess returns of 0.74% and 0.62%, respectively, versus the MSCI EAFE Small Cap Index in the past ten years and has seen 68% of managers beat the benchmark. However, the declining returns over recent periods continue to erode the longer-term performance.

Universe Statistics

Periods Ending 12/31/2020	1 Year	3 Years	5 Years	10 Years
Number of Products	29	29	27	23
Index Ranking (Percentile)	49	46	39	68
Average Excess Return	1.83	-0.07	-0.25	0.74
Median Excess Return	-0.75	-0.34	-0.57	0.62
Average Information Ratio	0.24	-0.13	-0.13	0.20
Median Information Ratio	-0.16	-0.08	-0.07	0.20

Universe Index: MSCI - EAFE Small Index (\$Net)

Consistency of Excess Returns

3 Yr Qtile Rank 2017	3 Year Quartile Rank 2020				
	1st	2nd	3rd	4th	Total
1st	25%	38%	13%	13%	88%
2nd	0%	0%	57%	43%	100%
3rd	29%	29%	14%	29%	100%
4th	13%	25%	13%	25%	75%

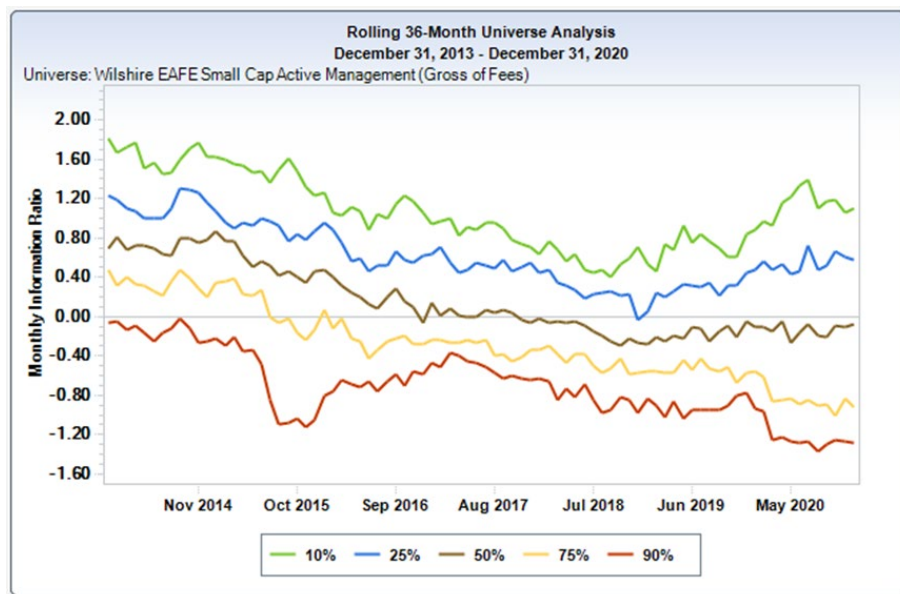
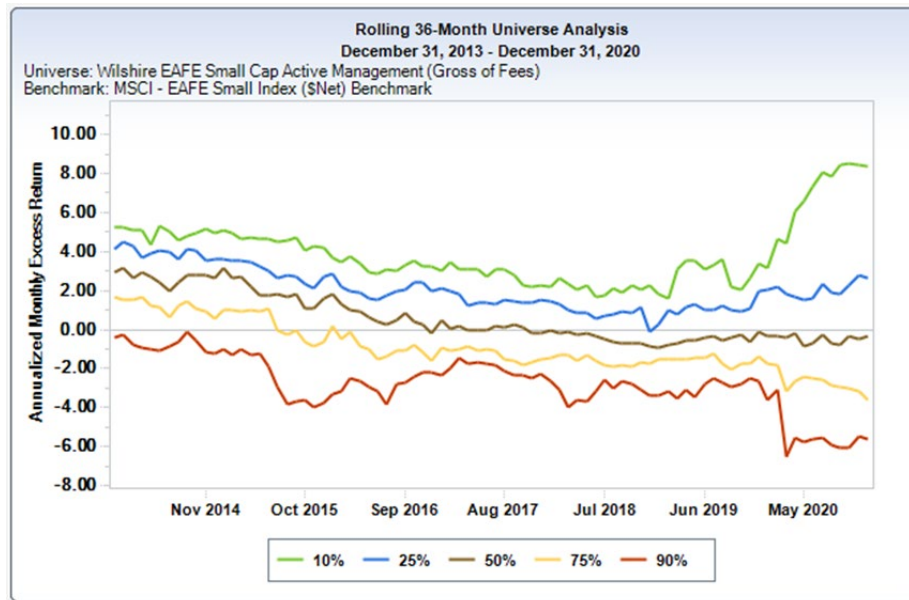
Consistency of Information Ratios

3 Yr Qtile Rank 2017	3 Year Quartile Rank 2020				
	1st	2nd	3rd	4th	Total
1st	13%	38%	13%	25%	88%
2nd	14%	0%	29%	57%	100%
3rd	43%	14%	14%	29%	100%
4th	0%	38%	38%	0%	75%

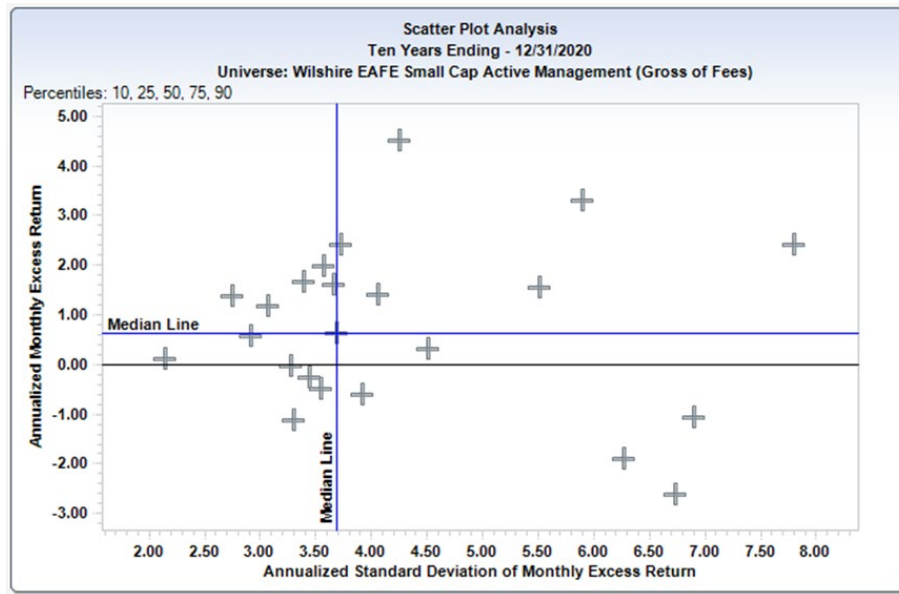
Based on 30 products through 2017, 3 (9.4%) of which dropped out of the database by 2020

¹¹ Source: Wilshire Compass

Developed Non-US Small Cap Equity (Source: Wilshire Compass)



Developed Non-US Small Cap Equity (Source: Wilshire Compass)



Emerging Markets Equity¹²

(Benchmark: MSCI Emerging Markets Index (\$Net))

(Universe: Wilshire Defined Emerging Markets)

Emerging Markets Equity managers posted modest returns in 2020, after posting strong excess returns in 2019, with average and median gross-of-fee excess returns of 0.39% and -0.04%, respectively. The groups relative performance remains strong over the past ten years, with average and median returns of 1.70% and 1.67%, respectively, versus the MSCI Emerging Markets Index. An impressive 81% of managers in the EM universe have outperformed the index during the latest ten-year period.

Universe Statistics

Periods Ending 12/31/2020	1 Year	3 Years	5 Years	10 Years
Number of Products	148	143	139	91
Index Ranking (Percentile)	50	53	53	81
Average Excess Return	0.39	0.30	0.15	1.70
Median Excess Return	-0.04	0.06	0.13	1.67
Average Information Ratio	0.13	0.10	0.07	0.35
Median Information Ratio	-0.01	0.05	0.03	0.39

Universe Index: MSCI - Emerging Markets Index (\$ Net)

Consistency of Excess Returns

3 Yr Qtile Rank 2017	3 Year Quartile Rank 2020				
	1st	2nd	3rd	4th	Total
1st	39%	33%	12%	12%	97%
2nd	26%	32%	24%	15%	97%
3rd	15%	21%	32%	32%	100%
4th	17%	14%	29%	37%	97%

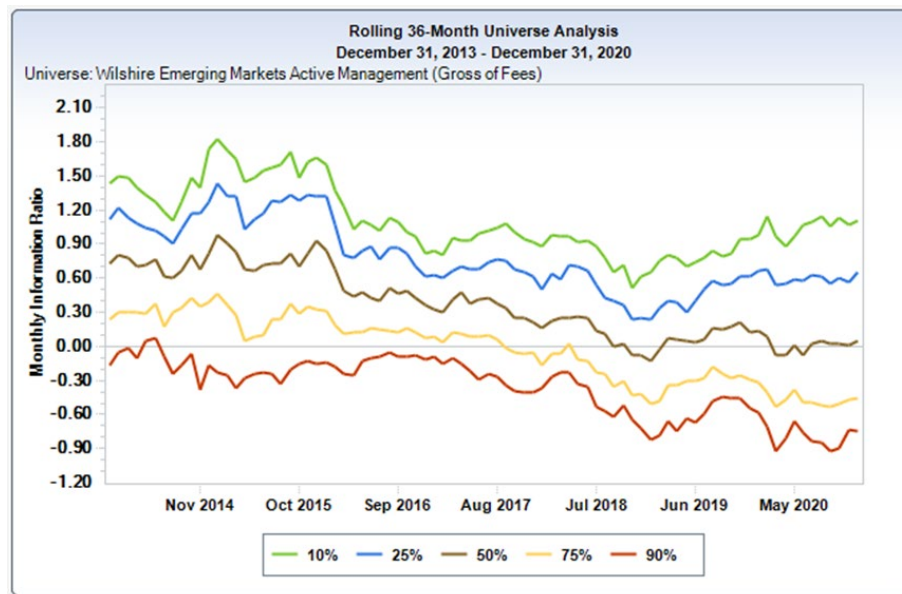
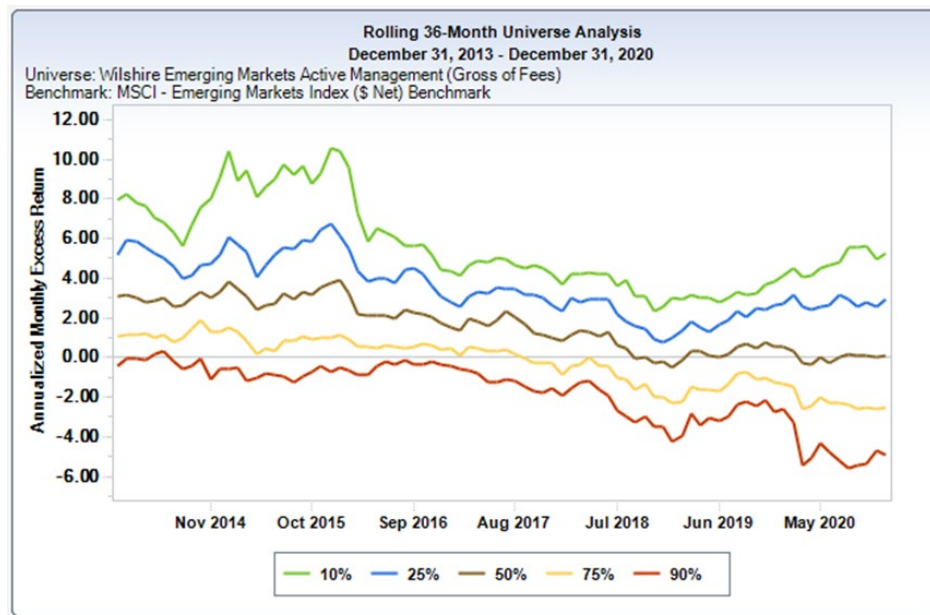
Consistency of Information Ratios

3 Yr Qtile Rank 2017	3 Year Quartile Rank 2020				
	1st	2nd	3rd	4th	Total
1st	42%	24%	18%	12%	97%
2nd	29%	29%	24%	15%	97%
3rd	18%	26%	26%	29%	100%
4th	14%	14%	29%	40%	97%

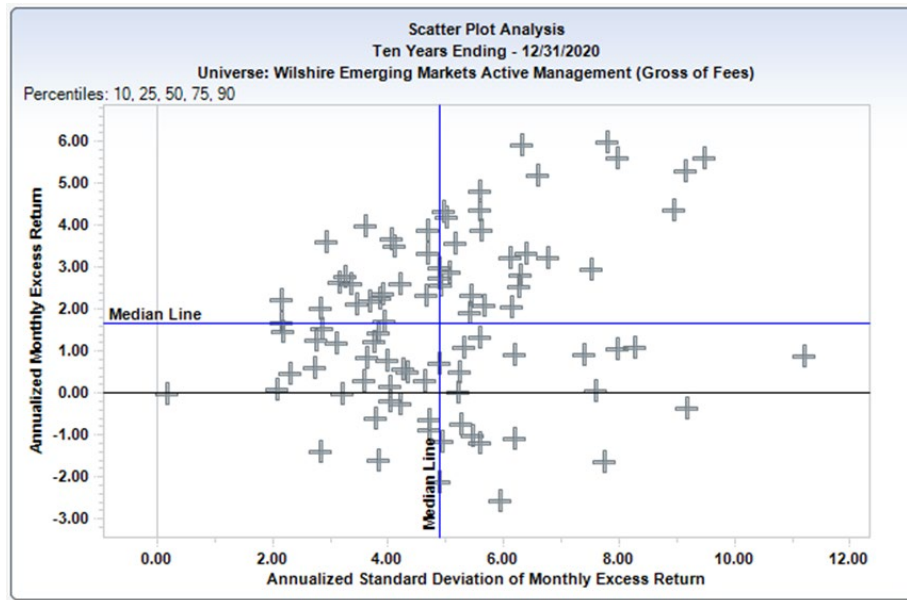
Based on 136 products through 2017, 3 (2.2%) of which dropped out of the database by 2020

¹² Source: Wilshire Compass

Emerging Markets Equity (Source: Wilshire Compass)



Emerging Markets Equity (Source: Wilshire Compass)



Global Equity¹³

(Benchmark: MSCI All Country World Index (\$Net))

(Universe: Wilshire Defined Global Equity)

Similar to the past two years, Global Equity managers failed to add value as a group with an average gross-of-fee excess return of +0.40% but a median excess return of -6.28%. This universe has proven to be a space where most active managers have struggled to outperform the benchmark over the last several years. Results over the 10-year period tell the same story with both the universe average (-0.03%) and median (-0.68%) excess return, on a gross-of-fee basis, in negative territory.

Universe Statistics

Periods Ending 12/31/2020	1 Year	3 Years	5 Years	10 Years
Number of Products	105	99	92	69
Index Ranking (Percentile)	39	32	31	41
Average Excess Return	0.40	-1.40	-0.79	-0.03
Median Excess Return	-6.28	-2.92	-1.37	-0.68
Average Information Ratio	-0.06	-0.24	-0.18	-0.02
Median Information Ratio	-0.48	-0.37	-0.20	-0.10

Universe Index: MSCI - AC World Index (\$Net)

Consistency of Excess Returns

3 Yr Qtile Rank 2017	3 Year Quartile Rank 2020				
	1st	2nd	3rd	4th	Total
1st	41%	36%	14%	9%	100%
2nd	17%	30%	30%	22%	100%
3rd	27%	27%	14%	32%	100%
4th	0%	17%	43%	39%	100%

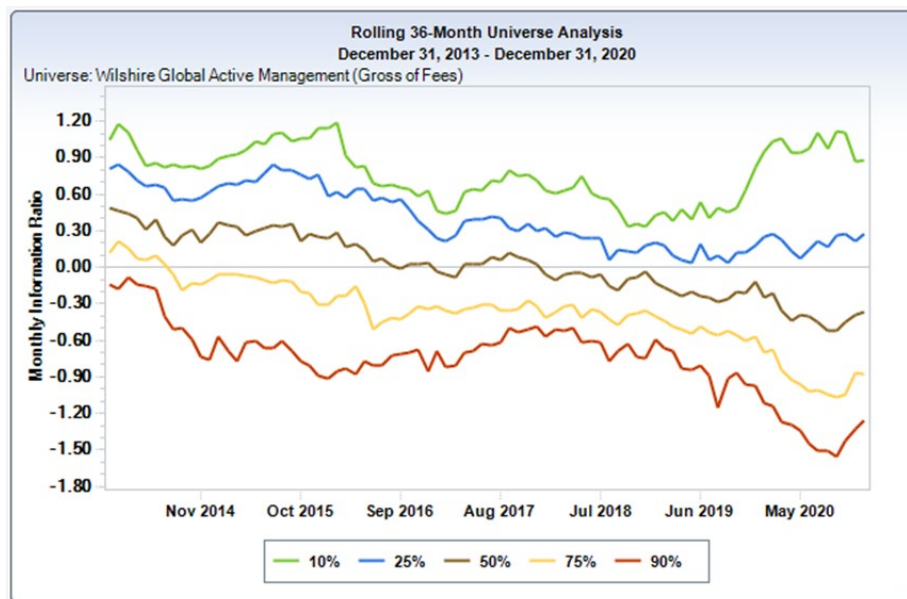
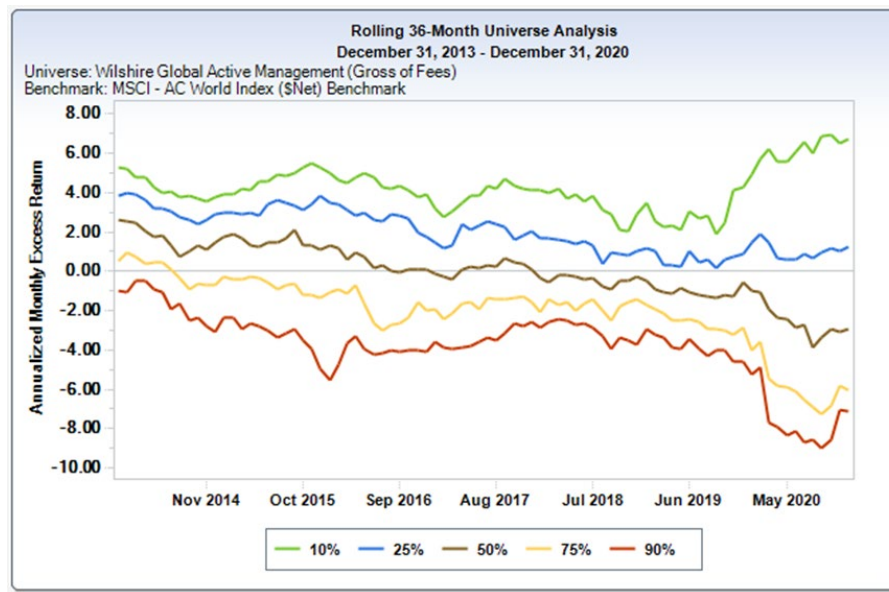
Consistency of Information Ratios

3 Yr Qtile Rank 2017	3 Year Quartile Rank 2020				
	1st	2nd	3rd	4th	Total
1st	36%	32%	14%	18%	100%
2nd	13%	35%	39%	13%	100%
3rd	32%	27%	18%	23%	100%
4th	4%	17%	26%	52%	100%

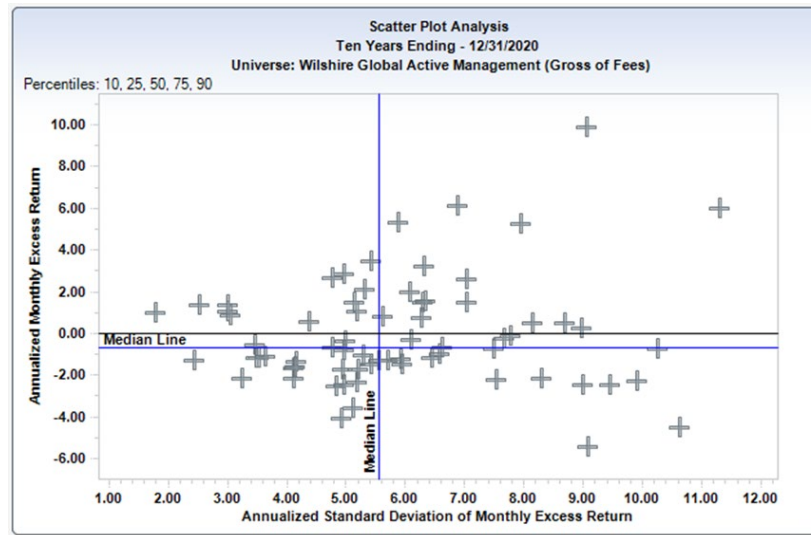
Based on 90 products through 2017, 0 (0%) of which dropped out of the database by 2020

¹³ Source: Wilshire Compass

Global Equity (Source: Wilshire Compass)



Global Equity (Source: Wilshire Compass)



Core Fixed Income¹⁴

(Benchmark: Bloomberg Barclays US Aggregate Index)

(Universe: Wilshire Defined Core)

Core Fixed Income managers produced positive results in 2020, with a 0.16% and 0.07% gross-of-fee average and median relative return for the year, respectively. Over longer-periods, the group has delivered slightly negative relative results with three-, five- and ten-year median returns of -0.18%, -0.23% and -0.20%, respectively.

Universe Statistics

Periods Ending 12/31/2020	1 Year	3 Years	5 Years	10 Years
Number of Products	45	45	44	40
Index Ranking (Percentile)	53	42	39	42
Average Excess Return	0.16	-0.05	-0.16	-0.05
Median Excess Return	0.07	-0.18	-0.23	-0.20
Average Information Ratio	0.22	0.12	0.04	0.12
Median Information Ratio	0.03	-0.10	-0.20	-0.20

Universe Index: Bloomberg Barclays - U.S. Aggregate Index

Consistency of Excess Returns

3 Yr Qtile Rank 2017	3 Year Quartile Rank 2020				
	1st	2nd	3rd	4th	Total
1st	45%	45%	9%	0%	100%
2nd	45%	27%	18%	9%	100%
3rd	0%	18%	55%	27%	100%
4th	0%	8%	17%	67%	92%

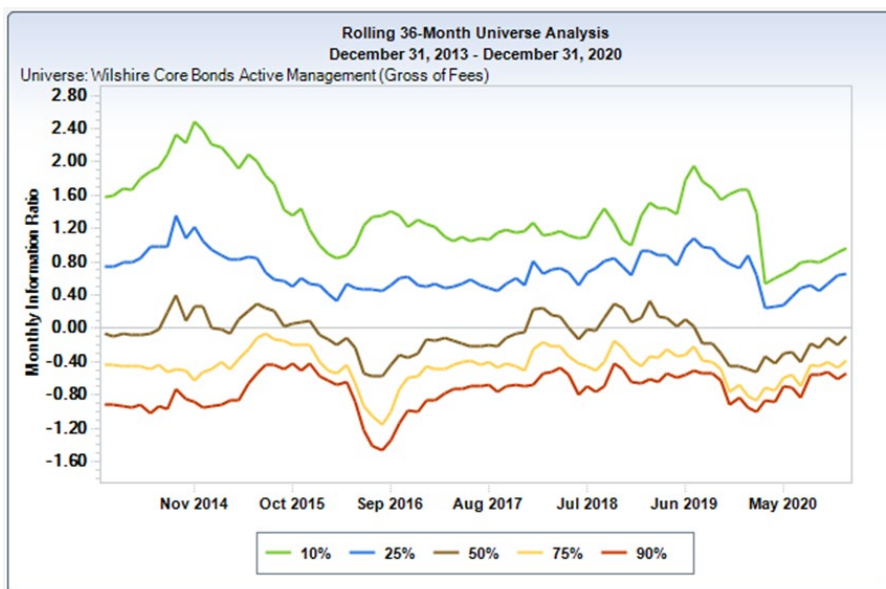
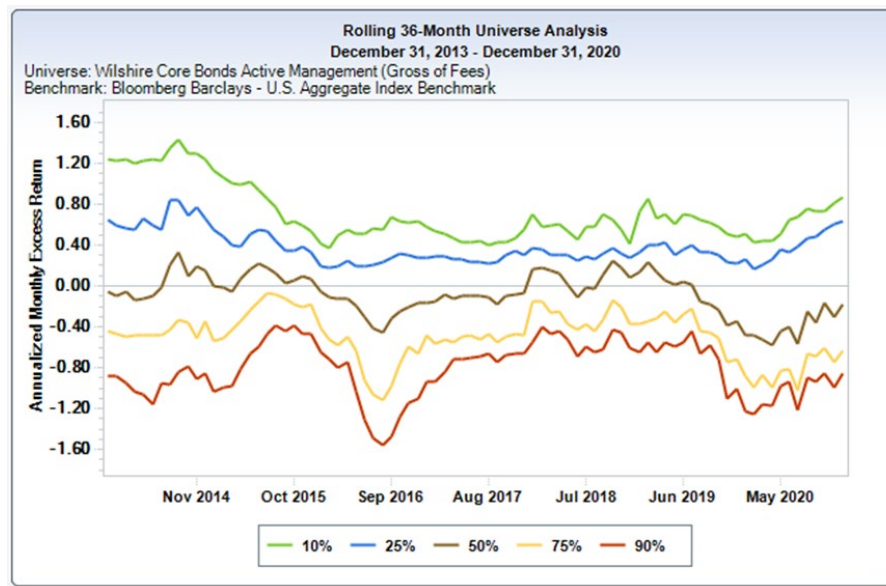
Consistency of Information Ratios

3 Yr Qtile Rank 2017	3 Year Quartile Rank 2020				
	1st	2nd	3rd	4th	Total
1st	55%	45%	0%	0%	100%
2nd	45%	18%	27%	9%	100%
3rd	0%	9%	55%	36%	100%
4th	0%	17%	17%	58%	92%

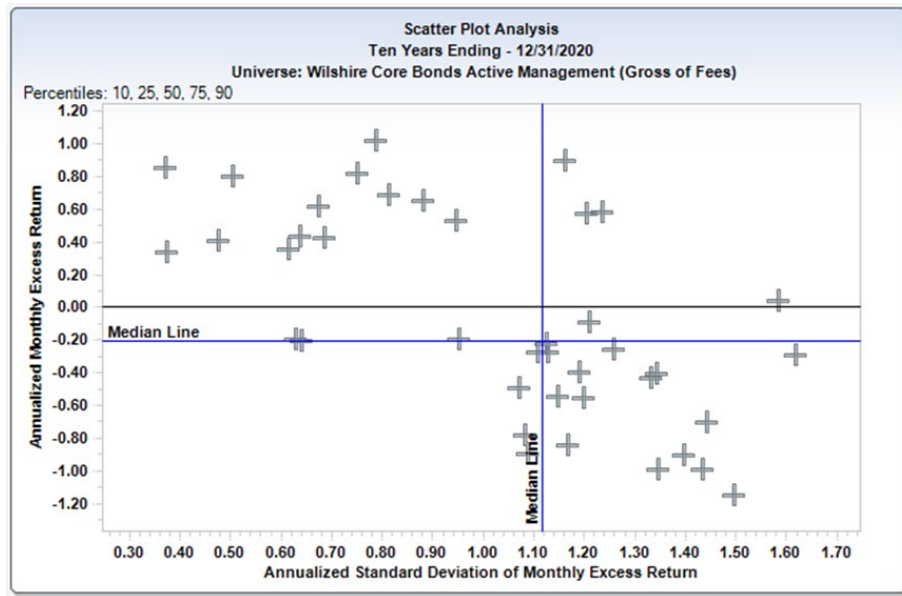
Based on 45 products through 2017, 1 (2.1%) of which dropped out of the database by 2020

¹⁴ Source: Wilshire Compass

Core Fixed Income (Source: Wilshire Compass)



Core Fixed Income (Source: Wilshire Compass)



High Yield Fixed Income¹⁵

(Benchmark: Bloomberg Barclays High Yield Index)

(Universe: Wilshire Defined High Yield)

The High Yield manager universe struggled again in 2020, with average and median gross-of-fee excess returns of -1.14% and -1.30% for the year, respectively. The three-, five- and ten-year figures are behind the index, as well, with the median returns at -0.63%, -1.13% and -0.36%, respectively. With barely one-third of managers outperforming the Bloomberg Barclays High Yield Index during all periods included, the results reflect how difficult it has been for active managers to keep pace with the index during this environment.

Universe Statistics

Periods Ending 12/31/2020	1 Year	3 Years	5 Years	10 Years
Number of Products	153	151	144	117
Index Ranking (Percentile)	30	34	19	38
Average Excess Return	-1.14	-0.57	-1.39	-0.61
Median Excess Return	-1.30	-0.63	-1.13	-0.36
Average Information Ratio	-0.29	-0.14	-0.45	-0.17
Median Information Ratio	-0.30	-0.22	-0.50	-0.19

Universe Index: Bloomberg Barclays - U.S. High Yield Index

Consistency of Excess Returns

3 Yr Qtile Rank 2017	3 Year Quartile Rank 2020				
	1st	2nd	3rd	4th	Total
1st	47%	33%	14%	3%	97%
2nd	31%	33%	28%	3%	94%
3rd	14%	30%	27%	30%	100%
4th	3%	5%	27%	59%	95%

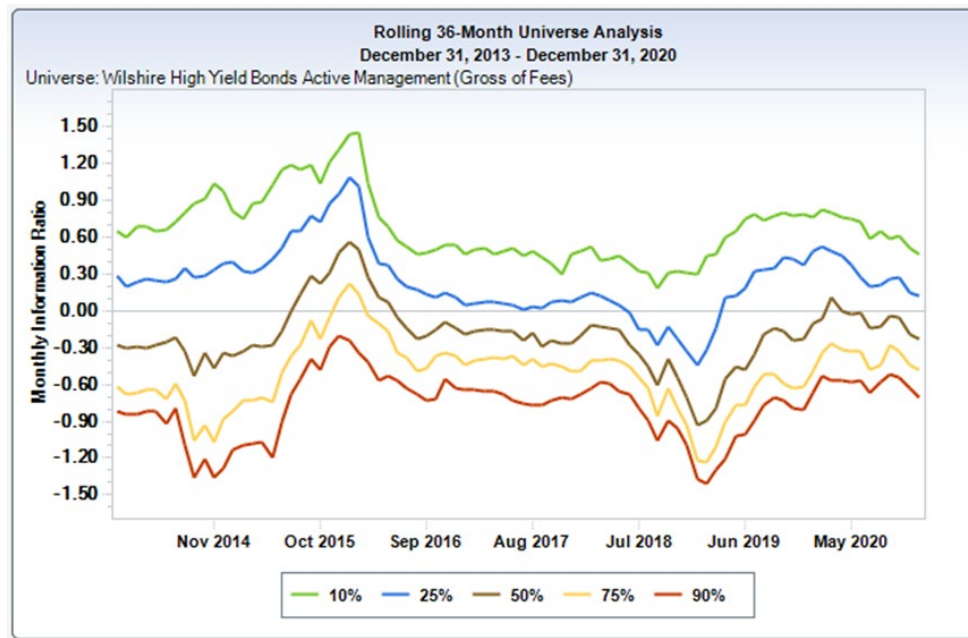
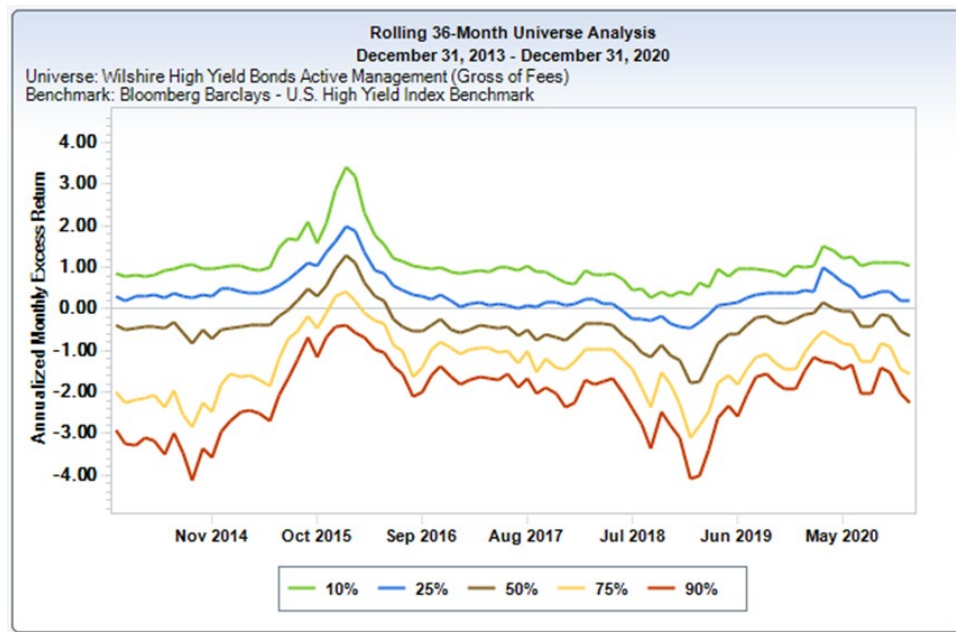
Consistency of Information Ratios

3 Yr Qtile Rank 2017	3 Year Quartile Rank 2020				
	1st	2nd	3rd	4th	Total
1st	47%	33%	11%	6%	97%
2nd	31%	22%	31%	11%	94%
3rd	5%	16%	22%	57%	100%
4th	11%	24%	32%	27%	95%

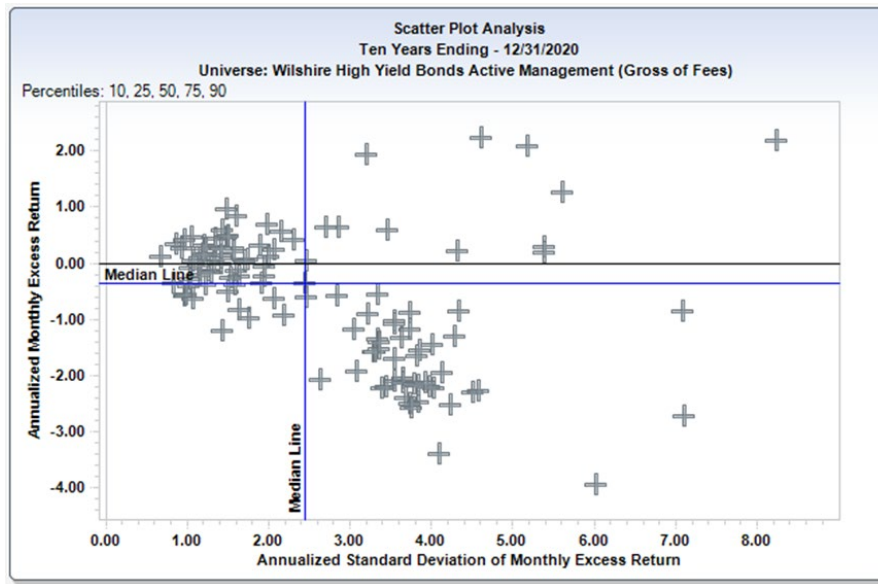
Based on 146 products through 2017, 5 (3.4%) of which dropped out of the database by 2020

¹⁵ Source: Wilshire Compass

High Yield Fixed Income (Source: Wilshire Compass)



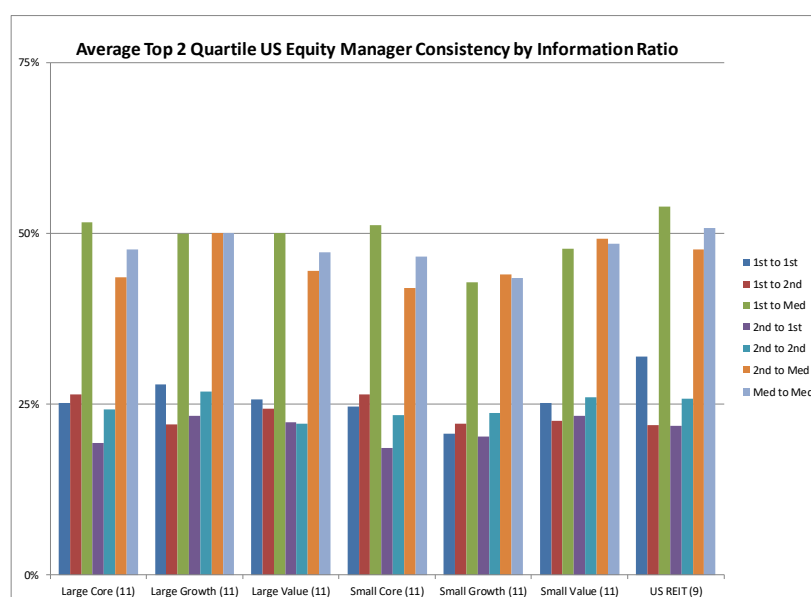
High Yield Fixed Income (Source: Wilshire Compass)



Consistency Statistics Multi-Year Summary

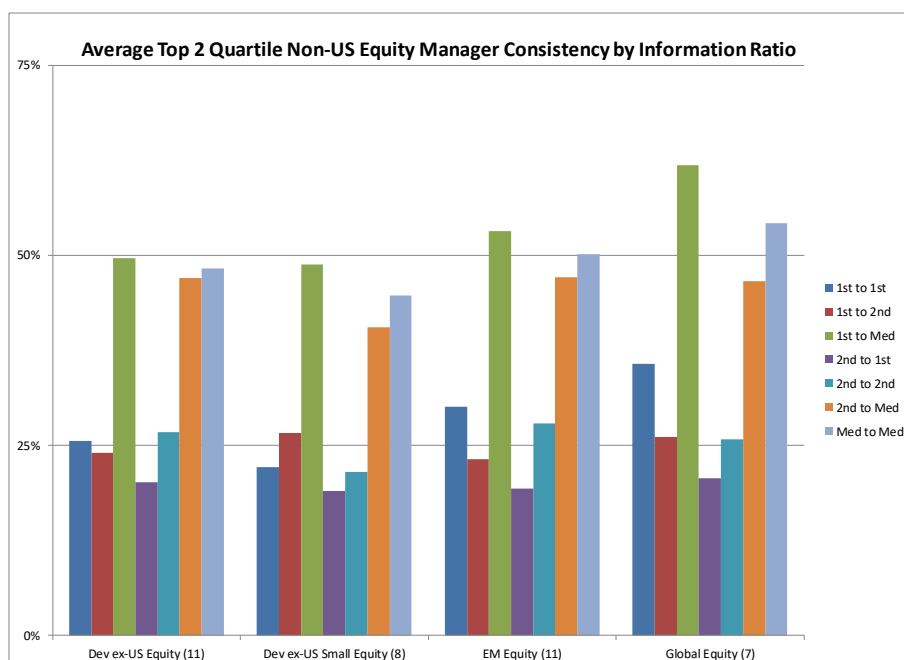
In this section of the report we look through each of the three major market segments (US Equities, International Equities and Fixed Income) to provide a summary of manager consistency across our ten annual review reports. Each summary takes the information ratio (risk-adjusted) consistency approach discussed earlier, whereby we measure manager consistency through a comparison of distinct three-year periods (i.e. the three years through 2017 vs. the three years through 2020 in this year's report, etc.). The exception asset segments are US REITs, Developed Small Cap Non-US Equity and Global Equity where the statistics are limited to eight, seven and six years of ending point data, respectively. The charts include seven statistical columns for each investment category. The first three columns chart the average percentage of managers that were in the 1st quartile in the previous three-year period who 1) remained in the 1st quartile in the subsequent period, 2) fell to the 2nd quartile in the subsequent period and 3) remained above median in the subsequent period. The next three columns present the same percentage outcomes in the most recent three-year period for those managers who were in the 2nd quartile in the previous three-year period. Finally, the seventh column bar displays the average percentages of above-median managers in the previous three-year period that remained above median in the subsequent three-year period.

In the chart below we see that none of the US Equity segments showed any signs of sustained risk-adjusted return consistency. The average 1st quartile to 1st quartile and 1st quartile to above median results were all near percentages that might be expected from a random outcome; 25% and 50%, respectively. Overall, the statistics in these segments are quite discouraging, representing the dearth of managers that are able to consistently add relative value across market cycles.



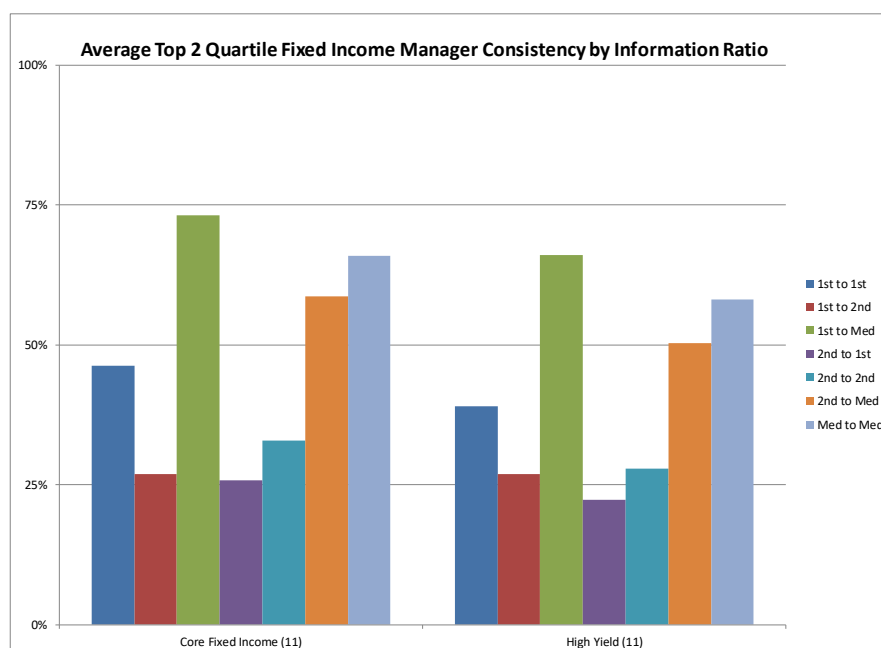
The figures in parenthesis indicate how many report years are embedded in the average statistics

The results in the Non-US Equity chart below are similar to those above for US Equity, providing scarce evidence of manager consistency. While several segments show some positive consistency to top-quartile performers, these statistics are not materially different from what would be expected from a random outcome. These results seem to confirm that the practice of simply selecting yesterday's winners is not a recipe for success in pursuing the potential benefits of active management.



The figures in parenthesis indicate how many report years are embedded in the average statistics

The Fixed Income chart below shows slightly more evidence of consistency than is apparent in the equity segments above. These results are likely due in part to the persistent factor tilts found in many fixed income strategies, whose linkages would tend to lift and drop cohorts of managers who maintain similar exposures. As such, we would view these moderate indications of consistency to be market driven as opposed to being driven by consistency in delivering alpha. Ultimately, these statistics along with others within this report suggest that successful active management requires a qualitative edge to accompany the analysis of historical quantitative results. At the risk of concluding with an overused metaphor, active management is a car that cannot be safely driven by looking only in the rear-view mirror.



The figures in parenthesis indicate how many report years are embedded in the average statistics

Appendix

Standard Wilshire Universes
Calculation Methodology and Rules
US & Non US Equity, Fixed Income
US Equity Database

I. Large Growth Universe

- A. The Product Type as described by the manager must be Equity, Index, Balanced, or Other.
- B. The R2 resulting from a four-factor¹ returns-based style analysis over a 3-year period ending the prior quarter must be 0.70 or greater.
 - 1) The four factors used in the style analysis are the Wilshire Large Growth, Wilshire Large Value Index, Wilshire Small Growth Index and Wilshire Small Value Index. This Analysis requires a minimum 3-year monthly return history as of the prior quarter for each product.
 - 2) The Total Large allocation is calculated by adding the Wilshire Large Growth Index and Wilshire Large Value Index allocations from a four-factor returns- based style analysis over the trailing 3 years.
 - 3) The Total Growth allocation is calculated by adding the Wilshire Large Growth Index and Wilshire Small Growth Index allocations from four-factor returns- based style analysis over the trailing 3 years.
 - 4) The Total Value allocation is calculated by adding the Wilshire Large Value Index and Wilshire Small Value Index allocations from four-factor returns- based style analysis over the trailing 3 years.
- C. The Size Score, as calculated using Wilshire's proprietary holdings-based methodology, must average greater than or equal to 30 over a two-quarter period ending the prior quarter.
- D. The Style Score, as calculated using Wilshire's proprietary holdings-based methodology, must average greater than or equal to 25 over a two-quarter period ending the prior quarter.
- E. The allocation to Total Large must be greater than or equal to 50% for the prior quarter four-factor 3-year returns-based style analysis².
- F. The allocation to Total Growth must be greater than or equal to 50% for the prior quarter four-factor 3-year returns-based style analysis³.

II. Large Value Universe

- A. The Product Type as described by the manager must be Equity, Index, Balanced, or Other.
- B. The R2 resulting from a four-factor returns-based style analysis over a 3-year period ending the prior quarter must be 0.70 or greater.
- C. The Size Score, as calculated using Wilshire's proprietary holdings-based methodology, must average greater than or equal to 30 over a two-quarter period ending the prior quarter.
- D. The Style Score, as calculated using Wilshire's proprietary holdings-based methodology, must average less than or equal to -25 over a two quarter period ending the prior quarter.
- E. The allocation to Total Large must be greater than or equal to 50% for the prior quarter four-factor 3-year returns-based style analysis.
- F. The allocation to Total Value must be greater than or equal to 50% for the prior quarter four-factor 3-year returns-based style analysis⁴.

III. Large Core Universe

- A. The Product Type as described by the manager must be Equity, Index, Balanced, or Other.
- B. The R2 resulting from a four-factor returns-based style analysis over a 3-year period ending the prior quarter must be 0.70 or greater.
- C. The Size Score, as calculated using Wilshire's proprietary holdings-based methodology, must average greater than or equal to 30 over a two-quarter period ending the prior quarter.
- D. The Style Score, as calculated using Wilshire's proprietary holdings-based methodology, must average between -25 and 25 over a two-quarter period ending the prior quarter.

- E. The allocation to Total Large must be greater than or equal to 50% for the prior quarter four-factor 3-year returns-based style analysis.

IV. Small Growth Universe

- A. The Product Type as described by the manager must be Equity, Index, Balanced, or Other.
- B. The R2 resulting from a four-factor returns-based style analysis over a 3-year period ending the prior quarter must be 0.70 or greater.
- C. The Size Score, as calculated using Wilshire's proprietary holdings-based methodology, must average less than or equal -30 over a two quarter period ending the prior quarter.
- D. The Style Score, as calculated using Wilshire's proprietary holdings-based methodology, must average greater than or equal to 25 over a two quarter period ending the prior quarter.
- E. The allocation to Total Small must be greater than or equal to 50% for the prior quarter four-factor 3-year returns-based style analysis.
- F. The allocation to Total Growth must be greater than or equal to 50% for the prior quarter four-factor 3-year returns-based style analysis.

V. Small Value Universe

- A. The Product Type as described by the manager must be Equity, Index, Balanced, or Other.
- B. The R2 resulting from a four-factor returns-based style analysis over a 3-year period ending the prior quarter must be 0.70 or greater.
- C. The Size Score, as calculated using Wilshire's proprietary holdings-based methodology, must average less than or equal -30 over a two quarter period ending the prior quarter.
- D. The Style Score, as calculated using Wilshire's proprietary holdings-based methodology, must average less than or equal to -25 over a two quarter period ending the prior quarter.
- E. The allocation to Total Small must be greater than or equal to 50% for the prior quarter four-factor 3-year returns-based style analysis.
- F. The allocation to Total Value must be greater than or equal to 50% for the prior quarter four-factor 3-year returns-based style analysis.

VI. Small Core Universe

- A. The Product Type as described by the manager must be Equity, Index, Balanced, or Other.
- B. The R2 resulting from a four-factor returns-based style analysis over a 3-year period ending the prior quarter must be 0.70 or greater.
- C. The Size Score, as calculated using Wilshire's proprietary holdings-based methodology, must average less than or equal -30 over a two quarter period ending the prior quarter.
- D. The Style Score, as calculated using Wilshire's proprietary holdings-based methodology, must average between -25 and 25 over a two quarter period ending the prior quarter.
- E. The allocation to Total Small must be greater than or equal to 50% for the prior quarter four-factor 3-year returns-based style analysis.

Non-US Equity Database

I. EAFE Universe

- A. The Product Type as described by the manager may not be REIT, Hedge Fund, Hedge Fund of Fund, or Alternative.
- B. The allocation to Developed (EAFE) Countries, as described by Morgan Stanley Capital Indices, must be greater than or equal to 90% over a two quarter average ending the prior quarter.
- C. The allocation to European Countries, as described by Morgan Stanley Capital Indices, must be less than 80% over a two quarter average ending the prior quarter.
- D. The allocation to Pacific Countries, as described by Morgan Stanley Capital Indices, must be less than 80% over a two quarter average ending the prior quarter.
- E. The allocation to Emerging Countries, as described by Morgan Stanley Capital Indices, must be less than or equal to 10% over a two quarter average ending the prior quarter.
- F. No weighting to an individual country may be greater than 50% over a two-quarter average ending the prior quarter.

II. Emerging Markets Universe

- A. The Product Type as described by the manager may not be REIT, Hedge Fund, Hedge Fund of Fund, or Alternative.
- B. The allocation to Developed (EAFE) Countries, as described by Morgan Stanley Capital Indices, must be less than or equal to 50% over a two quarter average ending the prior quarter.
- C. The allocation to European Countries, as described by Morgan Stanley Capital Indices, must be less than 15% over a two-quarter average ending the prior quarter
- D. The allocation to Pacific Countries, as described by Morgan Stanley Capital Indices, must be less than 25% over a two-quarter average ending the prior quarter.
- E. The allocation to US stocks must be less than 5% over a two-quarter average ending the prior quarter over a two-quarter average ending the prior quarter.
- F. The allocation to Emerging Market countries must be greater than 50%.

Fixed Income

I. High Yield Universe

- A. Average quality must average less than 3.99 for a two-quarter period ending the prior quarter.
- B. The Average Quality cannot be 0 for either of the two quarters in the average calculation.
- C. The Sector Focus described by the manager may not be Municipals.

II. Core Universe

- A. Average Quality must average more than 6.0 for a two-quarter period ending the prior quarter.
- B. The effective duration of the portfolio must average between 3.5 and 6.5 for a two-quarter period ending one the prior quarter.
- C. The allocation to Mortgage Backed Securities (% MBS Sect) must be less than or equal to 50% for a two-quarter period ending the prior quarter.
- D. The allocation to Municipal Securities (% Municipal Sect) must be less than or equal to 10% for a two-quarter period ending the prior quarter.
- E. The Sector Focus described by the manager may not be Municipals or TIPS.
- F. The allocation to Municipal Securities must be greater than or equal to 80% for a two quarter period ending the prior quarter.

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