

Evoked | ARIS Insights: Net Returns – A High Bar for Active to Beat Passive

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For decades, investors have disputed the merits of a passive, index-oriented investment strategy versus more expensive, actively managed funds to access public markets. On the surface, both approaches offer a compelling case. Active strategies typically try to take advantage of brilliant investment minds who theoretically should be able to outperform the market over time. A passive approach utilizing low-cost index funds usually relies on the premise that efficient dissemination of information makes it challenging to gain sufficient investment edge to outperform over the long run.

Countless studies have compared the two approaches. The analysis typically measures the performance of active managers net of fees versus the underlying index over an extended time frame. The results have flip-flopped over the years, largely dependent on the market environment. Passive, which is always fully invested, tends to shine during bull markets (like the 2010s) while active's nimbleness seems to reign during bear markets (as we witnessed in the 2000s).

In this edition of *Insights*, we offer a new, practical perspective. We focus on the dollars earned by investors net of all major costs. By shifting our analysis towards the money that ultimately ends up in investors' pockets, the amount by which active has to outperform passive to produce a net benefit to investors is more than suggested by conventional studies.

We take two unique steps in our research:

1. Calculate returns of active funds net of fees, taxes (where applicable) and the negative effects of investor behavioral biases; and
2. Determine the percentage of active managers that would have outperformed a passive index net of all these deductions over the past 20 years, to capture results over multiple bull and bear markets.

Calculating Net Returns

We introduce two new expenses beyond management fees: 1) taxes and 2) the negative impact from investor behaviors. Both of these can adversely impact the net dollars earned by investors over the long run and should be taken into account when determining the required outperformance of active over passive.

Taxes

Taxes can take an outsized bite out of the reported investment return for taxable investors. This potentially major expense comes in two main forms: income and capital gains.¹ The investment's yield drives the income component (the higher the yield the greater the tax). Capital gains, on the other hand, can be controlled. Active managers trigger capital gains by trading securities within their fund as they seek to outperform the market. That is, the very nature of being active involves the generation of greater *realized* capital gains than a passive approach. Conversely, index strategies in an efficient exchange traded fund (ETF) can potentially defer the vast majority of capital gains resulting from annual rebalancing until sale

¹ Many taxable investors are subject to the top federal marginal tax rate of 37% on income and short-term capital gains and 20% on qualified dividends and long-term capital gains (we will make the favorable assumption that there are no state taxes for the purposes of this exercise, which further favors active management). Nothing herein constitutes tax advice and should not be relied upon as such.

of the fund. This has two benefits relative to higher turnover active strategies: 1) assuming the investor has held the fund for over a year, more of the gains will receive favorable long-term capital gains treatment, and 2) deferring taxes until sale of the fund produces a compounding benefit that can lead to significantly better after-tax returns over long periods of time.

Taxes resulting from portfolio income and capital gains can be easily calculated since every investment fund reports this data on a quarterly basis. Therefore, we can look back over the past 20 years to compute the taxes that would have been due and should be subtracted from the reported performance of each strategy. We also assume that each fund is completely liquidated at the end of the 20 years to eliminate any remaining tax liability. The overall tax cost can be meaningfully higher for actively managed funds versus the passive alternative.

Behavioral Biases

The overwhelming bias of investors is to add to active funds that have outperformed in the recent past and take away from managers that have underperformed. While such a tendency may seem perfectly reasonable, history counterintuitively suggests that the exact opposite behavior may yield better results. The fact is that manager returns are cyclical as investment styles often go in and out of favor, with bad stretches often followed by good periods and vice versa (for our research on the subject please see *Insights: Fooled by Manager Returns* by clicking [here](#)). The behavioral bias of investors to repeatedly buy high and sell low costs them a couple percentage points on average per year.

The hit to investors can be roughly estimated by comparing the time weighted return to the dollar weighted return of each fund. The industry standard to reflect a manager's performance is to use time weighted returns. Importantly, this calculation is not impacted by dollar inflows and outflows to the fund. The logic of using this methodology is sound. Money going into and out of the strategy is beyond the control of the manager, whose sole mission is to outperform the index, and therefore the track record should not be influenced by this external factor.

The problem is that investors don't receive time weighted returns because they generally don't fully invest on day one and hold for the long run. Instead, investors tend to contribute and deduct money over time, which, depending on the timing decisions, can materially impact the actual dollars earned on their investment. While imprecise, a more directionally accurate measurement of the investor's true performance is appropriately termed dollar weighted returns, which *are* affected by cash inflows and outflows.

An oversimplified example will highlight the difference between the two methods. An investor buys a fund that averages 10% per year over 20 years. The first 10 years the fund earned 0% and the second 10 years it delivered 20% annualized returns. The investor put in \$100 on the first day and was frustrated by poor relative performance so he reduced his investment by half after 10 years. Over the full 20 years, his original \$100 investment would have yielded a total dollar return of about \$260 versus \$520 had he not reduced his position. In other words, this investor earned about half of the dollar return that would be implied by the reported time weighted performance (since all the gains in the fund came after he withdrew half his capital). Since we can clearly observe this bias in investor behavior over a long period of time, it makes sense to include this factor when comparing active versus passive.

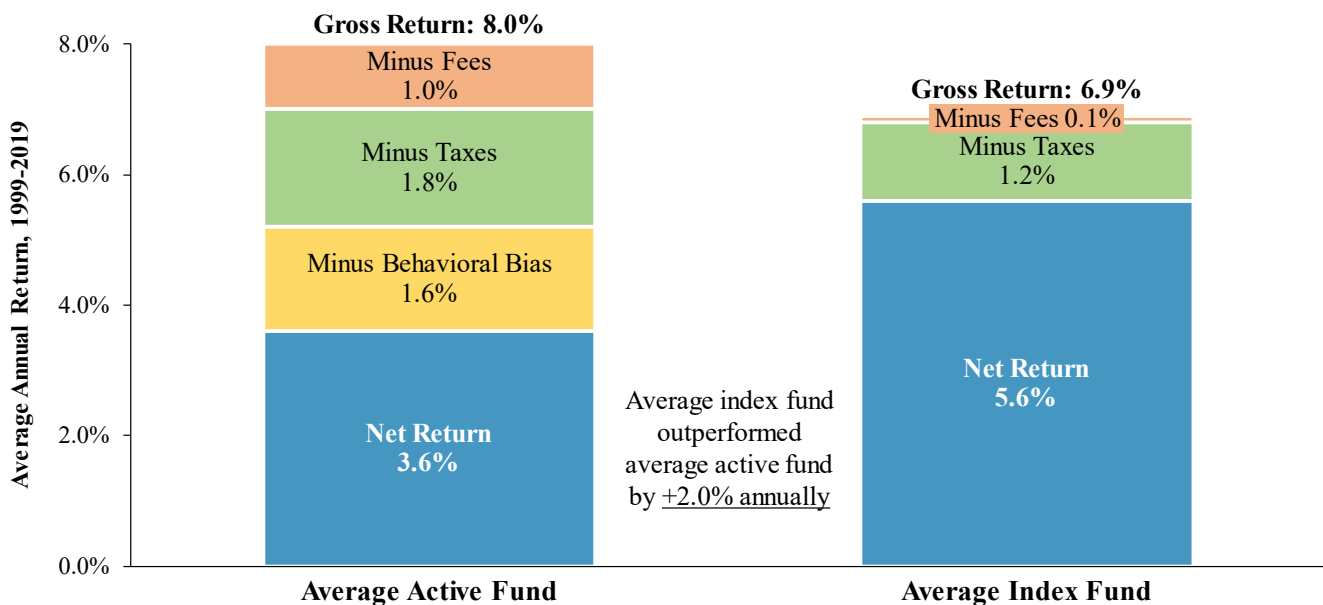
Results Net of Fees, Taxes and Behavioral Biases

The past 20 years offers a robust long-term data set over which to examine the net returns that investors actually received. The decade of the 2000s represented one of the worst bear markets in history as global equities lost money over the full 10 years, providing fertile ground for active managers to display their prowess. In contrast, the 2010s were one of the longest bull markets on record paving the way for passive investing to dominate the landscape. By considering results over the entire 20-year period, we limit the environmental bias in the results with an equal split between two extreme outcomes (still slightly favoring active given lower than historic returns over the full period). This stretch also offers robust, reliable data which was captured in the heart of the unparalleled investment fund boom, limiting concerns about a lack of sufficient data points.

We completed our full study by determining the net returns for every mutual fund with 20 years of full data in each of 12 investment styles. We looked at the managers in the 9 different US equity size/style categories (large cap, mid cap and small cap, within blend, growth and value) plus international equity and emerging markets equity. We also reviewed all core bond strategies with at least 20 years of history.

For each of the funds, we calculated the dollar weighted returns (and compared them to the time weighted returns for reference). We also computed the total taxes due by analyzing the distributions of each and assuming that the fund was sold at the end of the 20-year period. These net returns of the actively managed funds were compared to the net returns of the relevant index in each category. To even the playing field, we reduced the index returns by estimated fees and taxes. Exhibit 1 offers an aggregated summary of our findings on about 800 active funds. For those who are interested, more detailed data is provided in the appendix.

Exhibit 1: Avg. Active Fund vs. Avg. Index Fund Net of Fees, Taxes, Behavioral Biases (1999-2019)²



² Source: Bloomberg, 12/31/99 – 12/31/19. Please see methodology and detail in *Net Returns Disclosures*.

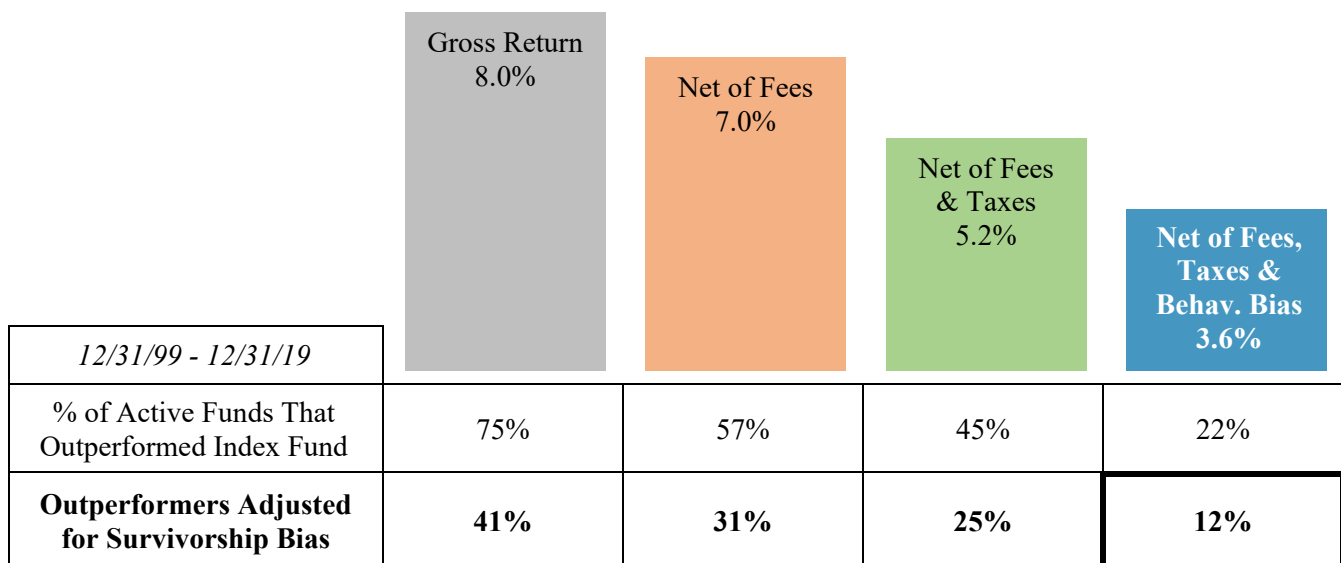
The average active fund underperformed the relevant index by **2.0% per year** (3.6% vs. 5.6%) over the past 20 years on a net basis. Interestingly, the average gross return of 8.0% was actually relatively strong (1.1% per year better than the index over 20 years), demonstrating how challenging it can be to beat the index after all the deductions.

Survivorship Bias

The bar for active to beat passive is probably even higher than reflected in the data above. This is because we limit our analysis to funds that have survived the past 20 years (because of the availability of return data). In reality, many of the underperformers over the past two decades either closed, stopped reporting returns or merged with another fund. As a result, there is a material upward bias in the data set that makes active managers as a group look far better than they have actually performed. Vanguard conducted a deep analysis of this “survivorship bias” and discovered that only about 55% of actively managed US funds survived over a 15-year period.³

Exhibit 2 summarizes the percentage of managers that outperformed the index at every deduction level. We start with the number that beat the index gross of everything and work our way to returns net of fees, taxes and behavioral biases. When adjusting for the survivorship bias in the final step (by assuming that only 55% of funds survived, and those that closed underperformed), only **about 12%** of all active funds outperformed passive! It is an extremely tall order to assume that investors can pick from that small pool of outperformers.

Exhibit 2: % of Active Funds that Outperformed Index Fund (1999-2019)⁴



It may be surprising to see such low percentages of managers that have historically outperformed on a net basis. The key takeaway from this analysis is that active managers are up against a monumental hurdle in order to outperform passive. Other studies consider returns net of fees, but as shown here the real dollar costs are significantly greater.

³ Vanguard, The Bumpy Road to Outperformance, July 2013.

⁴ Source: Bloomberg, 12/31/99 – 12/31/19. Please see methodology and detail in *Net Returns Disclosures*.

From a practical perspective, it is also imperative to consider the odds of actually picking one of the outperformers prior to their profitable run. We know that most investors would likely not invest in a fund that had underperformed over the prior 5 years. Thus, we can go back in time and check how the future outperformers (the surviving 22%) did during the prior 5 years (1994-1999). Interestingly, only about a fifth of the successful 22% had outperformed net of fees the prior 5 years ending in 1999. That is, the vast majority of the winners would likely not have been hired over our 20-year sample. Putting it all together, the hurdle for active to outperform passive net of all relevant costs is discouragingly high.

Looking Ahead

Fees, taxes and behavioral biases have meaningfully detracted from investors' bottom line for the past two decades. Today we find ourselves in a new world. Interest rates are near zero, economic growth is stagnant and unprecedented levels of monetary and fiscal stimulus are being injected into the system in response. Looking ahead, the environment that is likely to transpire is set up to pose even greater headwinds for investors within the context of portfolio management.

We are likely in a lower return environment for the foreseeable future (mainly because of low interest rates). Therefore, fees – which the industry established during higher returning periods when there were fewer low-cost passive options – should fall under greater scrutiny. Active strategies may be forced to reduce fees in response to growing pressure. We are seeing trends move in this direction, but this will take time. Investors have the option to expedite the process by switching to a low-cost passive vehicle now.

Another probable outcome from today's conditions are rising tax rates. The wealth gap has been increasing as monetary stimulus efforts have disproportionately benefited owners of capital as opposed to the average citizen. As the government's ballooning deficit appears to have no end in sight, it seems logical that the pressure to raise taxes for the wealthy will increase. This is particularly true considering that current top federal income tax rates are on the lower end of the range over the past 100 years.⁵ Higher taxes generate a larger deferral benefit than the figures presented in this *Insight*, which may potentially further support passive over active.

Lastly, as volatility has picked up from low levels, the odds of bad investor behavior (buy high, sell low) have likely jumped. When markets trend in one direction for an extended period of time, investors are naturally less susceptible to buying high and selling low. In contrast, market swings as intense as we've seen over the first part of 2020 are sure to test the patience of even the most disciplined long-term investors. Add in the rising economic and health uncertainty, the temptation to be more active in managing the portfolio should not be underestimated.

The bottom line is that for active to make sense, the manager has to outperform the index by more than fees and taxes and the investor must be able to buy and hold over the long run (including through inevitable stretches of underperformance). The percentage of managers that have historically outperformed net of all costs is 12% or less. Looking ahead, there are certainly active managers that can potentially overcome these headwinds. Indeed, one of our mandates as investment advisors is to identify these managers to complement passive exposures. The purpose of this research is to recognize that the bar is exceptionally high, which should be reflected in a more selective due diligence process and a patient allocation philosophy.

⁵ https://bradfordtaxinstitute.com/Free_Resources/Federal-Income-Tax-Rates.aspx.

Disclosures

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Net Returns Methodology

Active Managers: ARIS evaluated every mutual fund in existence with at least 20 years of data (inception on or before 12/31/99) in each of the 12 categories for active managers included in this analysis: large cap blend, large cap growth, large cap value, mid cap blend, mid cap growth, mid cap value, small cap blend, small cap growth, small cap value, international developed, emerging markets and core fixed income. ARIS took a simple average of all eligible fund participants for each category and return totals. All data and net-of-fees active manager returns were sourced from Bloomberg. ARIS removed the net expense ratios to produce gross-of-fee returns.

Index: ARIS used industry standards for the indexes (Russell, MSCI and Bloomberg) to represent the passive investment for each category. See indexes used to represent each category listed below in *Exhibit 1 Supporting Data Table*. All data and gross-of-fees index returns were sourced from Bloomberg. Since there are no associated fees with an index, ARIS used the 12/31/19 net expense ratio of widely used Vanguard ETF’s seeking to track the performance of each index. See ETFs and associated fees used for each index/category: large cap blend: Vanguard Russell 1000 ETF - VONE (0.08%), large cap growth: Vanguard Russell 1000 Growth ETF - VONG (0.08%), large cap value: Vanguard Russell 1000 Value ETF - VONV (0.08%), mid cap blend: Vanguard Mid-Cap ETF - VO (0.04%), mid cap growth: Vanguard Mid Cap Growth ETF - VOT (0.07%), mid cap value: Vanguard Mid Cap Value ETF: VOE (0.07%), small cap blend: Vanguard Russell 2000 ETF - VTWO (0.10%), small cap growth: Vanguard Russell 2000 Growth ETF - VTWG (0.15%), small cap value: Vanguard Russell 2000 Value ETF - VTWV (0.15%), international developed: Vanguard FTSE All World-Ex US - VEU (0.08%), emerging markets: Vanguard Emerging Markets Stock Index ETF - VWO (0.10%), and core fixed income: Vanguard Total Bond Market ETF - BND (0.04%).

The average return data at the bottom of Exhibit 1 Supporting Data Table represents an equal-weighted allocation spread across the 12 categories.

Exhibit 1 Supporting Data Table

Category	Active Managers (Average)					Index	
	Gross Return	Minus Fees	Minus Taxes	Minus Behav. Bias	Net Return	Index	Net Return (minus fees/taxes)
Large Cap Blend	7.0%	-0.9%	-1.4%	-1.8%	2.9%	Russell 1000 Index	5.1%
Large Cap Growth	6.7%	-1.0%	-1.3%	-1.9%	2.5%	Russell 1000 Growth Index	4.2%
Large Cap Value	7.9%	-0.9%	-1.7%	-1.3%	4.1%	Russell 1000 Value Index	5.7%
Mid Cap Blend	9.0%	-1.1%	-1.9%	-1.9%	4.2%	Russell Midcap Index	7.9%
Mid Cap Growth	8.2%	-1.1%	-2.0%	-1.9%	3.2%	Russell Midcap Growth Index	5.6%
	Active Managers (Average)					Index	

Category	Gross Return	Minus Fees	Minus Taxes	Minus Behav. Bias	Net Return	Index	Net Return (minus fees/taxes)
Mid Cap Value	9.8%	-1.0%	-2.0%	-1.6%	5.1%	Russell Midcap Value Index	8.6%
Small Cap Blend	9.7%	-1.1%	-2.1%	-1.7%	4.8%	Russell 2000 Index	6.4%
Small Cap Growth	8.7%	-1.2%	-1.9%	-2.4%	3.2%	Russell 2000 Growth Index	4.6%
Small Cap Value	10.4%	-1.2%	-2.3%	-1.7%	5.2%	Russell 2000 Value Index	7.9%
International Equity	4.8%	-1.1%	-1.0%	-1.2%	1.4%	MSCI ACWI Ex US Index	2.8%
Emerging Mkt. Equity	8.0%	-1.2%	-1.5%	-1.3%	4.0%	MSCI Emerging Markets	5.3%
Core Fixed Income	5.4%	-0.6%	-1.7%	-0.8%	2.2%	BB Barclays US Agg. Bond Index	3.0%
Average	8.0%	-1.0%	-1.8%	-1.6%	3.6%	-	5.6%

Exhibit 2 Supporting Data Table

Category	% of Funds that Outperformed Index			
	Gross	Net of Fees	Net of Fees & Taxes	Net of Fees, Taxes and Behavioral Bias
Large Cap Blend	66%	47%	35%	25%
Large Cap Growth	82%	69%	58%	29%
Large Cap Value	76%	54%	43%	26%
Mid Cap Blend	56%	33%	6%	3%
Mid Cap Growth	72%	57%	46%	25%
Mid Cap Value	47%	26%	9%	3%
Small Cap Blend	88%	81%	58%	11%
Small Cap Growth	88%	81%	73%	35%
Small Cap Value	85%	54%	18%	8%
International Equity	70%	36%	36%	27%
Emerging Mkt. Equity	78%	60%	48%	15%
Core Fixed Income	74%	45%	55%	21%

Relevant Index Descriptions

Bloomberg Barclays US Aggregate Bond Index: The Bloomberg Barclays US Aggregate Bond Index is a broad-based flagship benchmark that measures the investment grade, US dollar-denominated, fixed-rate taxable bond market. The index includes Treasuries, government-related and corporate securities, MBS (agency fixed-rate pass-throughs), ABS and CMBS (agency and non-agency)

MSCI ACWI Index: The MSCI All Country World Index captures large and mid-cap representation across 23 Developed Markets and 26 Emerging Markets countries. With 3,047 constituents, the index covers approximately 85% of the global investable equity opportunity set.

MSCI ACWI Ex-US Index: The MSCI All Country World ex USA Index captures large and mid-cap representation across 22 of 23 Developed Markets countries, excluding the USA, and 26 Emerging Markets (EM) countries. With 2,411 constituents, the index covers approximately 85% of the global equity opportunity outside the US.

MSCI Emerging Markets Index: The MSCI Emerging Markets Index captures large and mid-cap representation across 26 Emerging Markets (EM) countries. With 1,404 constituents, the index covers approximately 85% of the free float-adjusted market capitalization in each country.

Russell 1000 Indices: The Russell 1000 Index measures the performance of the large-cap segment of the US equity universe. It is a subset of the Russell 3000 Index and includes approximately 1,000 of the largest securities based on a combination of their market cap and current index membership. The Russell 1000 represents approximately 92% of the US market. The Russell 1000® Index is constructed to provide a comprehensive and unbiased barometer for the large-cap segment and is completely reconstituted annually to ensure new and growing equities are included.

Russell Mid Cap Indices: The Russell Midcap Index measures the performance of the mid-cap segment of the US equity universe. The Russell Midcap Index is a subset of the Russell 1000® Index. It includes approximately 800 of the smallest securities based on a combination of their market cap and current index membership. The Russell Midcap Index represents approximately 31% of the total market capitalization of the Russell 1000 companies. The Russell Midcap Index is constructed to provide a comprehensive and unbiased barometer for the mid-cap segment. The index is completely reconstituted annually to ensure larger stocks do not distort the performance and characteristics of the true mid-cap opportunity set.

Russell 2000 Indices: The Russell 2000 Index measures the performance of the small-cap segment of the US equity universe. The Russell 2000 Index is a subset of the Russell 3000 Index representing approximately 10% of the total market capitalization of that index. It includes approximately 2,000 of the smallest securities based on a combination of their market cap and current index membership. The Russell 2000 is constructed to provide a comprehensive and unbiased small-cap barometer and is completely reconstituted annually to ensure larger stocks do not distort the performance and characteristics of the true small-cap opportunity set.