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# Risk-Adjusted SPIVA<sup>®</sup> Scorecard: Evaluation of Active Managers' Performance Through a Risk Lens

## EXECUTIVE SUMMARY

- Modern portfolio theory (MPT) states that expectations of returns must be accompanied by risk or variation around the expected return. It assumes that higher risk should be compensated, on average, by higher returns.
- Beyond relative performance of funds, market participants are also interested in the risks taken to achieve those returns. This motivated us to examine the performance of actively managed funds on a risk-adjusted basis.
- Critiques of passive investing often argue that indices are not risk managed, unlike active management. Therefore, our study aims to understand whether actively managed funds are able to generate higher risk-adjusted returns than their corresponding benchmarks.
- We used the standard deviation of monthly returns, over a given period, to define and measure risk. We used net of fees and gross of fees returns in our calculation of risk. Our goal was to establish whether risk or fees affected managers' relative performance versus the benchmark.
- We used the return/risk ratio to evaluate managers' risk-adjusted performance. To make our comparison relevant, we also adjusted the returns of the benchmarks used in our analysis by their volatility.
- Our analysis showed that on a risk-adjusted basis, the majority of actively managed domestic and international equity funds underperformed the benchmarks when using net of fees returns. However, when gross of fees returns were used, managers in certain categories outperformed the benchmarks.
- In fixed income, we found that actively managed bond funds outperformed their benchmarks when gross of fees returns were used. The results highlighted that fees negatively affected active bond funds' performance.

## INTRODUCTION

MPT, introduced by Harry Markowitz (1952), Jack Treynor (1962), William Sharpe (1964), and John Lintner (1965), states that the expectation of returns must be accompanied by risk—the variation (or volatility) around the expected return. MPT assumes that higher risk should be compensated, on average, by higher returns.

We applied the same principle to active managers' performance. Since its launch in 2002, the SPIVA Scorecard has looked at the relative performance of actively managed equity and fixed income funds against their respective benchmarks across different regions. Beyond the relative performance of funds, market participants are also interested in the risks taken to achieve those returns. This motivated us to examine the performance of actively managed funds on a risk-adjusted basis.

Moreover, critiques of passive investing often argue that indices are not risk-managed, unlike active management. Previous research by S&P Dow Jones Indices revealed that active funds typically had higher risk than comparable benchmarks and relative fund volatility tended to be persistent (Edwards et al. 2016).

Therefore, our study seeks to establish whether actively managed funds are able to generate higher risk-adjusted returns than their corresponding benchmarks over a long-term investment horizon.

As with any analysis involving risk-adjusted performance, it is important to define risk and how to measure it. In our analysis, we used the standard deviation of monthly returns over a given period to define and measure risk. The monthly standard deviation was annualized by multiplying it by the square root of 12.<sup>1</sup>

The risk/return ratio looks at the relationship and the trade-off between risk and return. All else equal, a fund with a higher ratio is preferable since it delivers a higher return per unit of risk taken. To make our comparison relevant, we also adjusted the returns of the benchmarks used in our analysis by their volatility.

We acknowledge that there are other measures of risk that may be of interest to market participants, such as the downside variance or Sortino ratio, which may align better with different views on risk. Those ratios are suitable for strategies with positively skewed or negatively skewed returns, such as options-based or CTA strategies (Rollinger and Hoffman 2013). Since our study universe comprised long-only, 40 Act mutual funds, and for purposes of simplicity and comprehensiveness, we chose the Sharpe ratio to represent risk-adjusted returns.

The selection and the appropriateness of benchmarks were highly critical in evaluating risk-adjusted performance. The SPIVA U.S. Scorecard ensures that the benchmarks used in the analysis are determined based on managers' investment styles. For example, large-cap value funds are compared against the [S&P 500® Value](#), rather than [S&P 500](#). As such, we are confident that the benchmarks

<sup>1</sup> It can be mathematically expressed as  $\sigma_A = \sqrt{12} * \sqrt{\frac{1}{n-1} \sum_{i=1}^n (R_i - \bar{R})^2}$  where

$\sigma_A$  = annualized standard deviation

n = number of months

$R_i$  = return of the fund in month i

$\bar{R}$  = average monthly return of the fund

used in our study reflect the risk profiles and the characteristics of the corresponding managers' investments.

Through this analysis, we can now observe whether managers, on average, were able to outperform their benchmarks after adjusting for risk and fees. Given that indices do not incur costs, we also present the gross of fees performance figures by adding the expense ratio back to net of fees returns. In this way, all else being equal, higher risk taken by a manager should be compensated by higher returns.

## **Data**

For our study, the underlying data source was the University of Chicago's Center for Research in Security Prices (CRSP) Survivorship-Bias-Free US Mutual Fund Database, which is the same source used by the headline SPIVA U.S. Scorecard. The universe used for the study only included actively managed domestic U.S. equity, international equity, and fixed income funds. Index funds, sector funds, and index-based dynamic (leveraged or inverse) funds were excluded from the sample. To avoid double counting multiple share classes, only the share class with the highest previous period return of each fund was used.

## **Analysis**

Reports 1-3 show the percentage of actively managed domestic equity, international equity, and fixed income funds that were outperformed by their respective benchmarks, using both net of fees and gross of fees performance figures, on a risk-adjusted basis over 5-, 10-, and 15-year investment horizons.

The results show that across all categories, actively managed domestic equity funds, on average, underperformed their respective benchmarks over intermediate- and long-term investment horizons. We observed that large-cap value funds (over 10 years) and real estate funds (over 5 and 15 years) outperformed their respective benchmarks when using gross of fees risk-adjusted returns, indicating that fees played a major role in those categories.

Similarly, in international equities, we found that fees contributed meaningfully to the underperformance of international funds and international small-cap funds. For example, when using gross of fees returns in the risk-adjusted performance analysis, funds in those two categories outperformed the benchmarks over the 5- and 10-year periods. When net of fees returns were used, the majority of managers across all categories underperformed the benchmarks.

We found similar results in the fixed income categories. When using net of fees returns, the majority of actively managed fixed income funds underperformed across all three investment horizons on a risk-adjusted basis, with the exception of investment-grade long funds and leveraged loan funds. However, when gross of fees returns were used, most fixed income funds outperformed the benchmarks. The role of fees in the underperformance of fixed income funds is a phenomenon highlighted in numerous research studies (Poirier et al. 2017; Dobrescu and Motola 2018).

## CONCLUSION

The evaluation of active managers' performance through a risk lens is an integral part of the investment decision-making process. Beyond the relative performance of funds, market participants are economically interested in whether funds are able to generate sufficient returns to compensate for the risk taken. However, as our study highlights, actively managed domestic and international equity funds across almost all categories did not outperform the benchmarks on a risk-adjusted basis. The figures improved for some categories when gross of fees returns were used. Similarly, in fixed income, fees were the biggest detractor from performance, not risk. Therefore, we did not see evidence that actively managed funds were better risk managed than passive indices.

## REPORTS

**Report 1: Percentage of U.S. Equity Funds Outperformed by Benchmarks – Risk-Adjusted Returns**

FUND CATEGORY	COMPARISON INDEX	NET OF FEES (%)			GROSS OF FEES (%)		
		5-YEAR	10-YEAR	15-YEAR	5-YEAR	10-YEAR	15-YEAR
All Domestic Funds	S&P Composite 1500	97.30	92.98	94.97	91.78	81.55	84.20
All Large-Cap Funds	S&P 500	96.76	90.66	95.03	88.34	75.08	83.52
All Mid-Cap Funds	S&P MidCap 400	83.91	93.50	92.22	72.99	82.38	81.27
All Small-Cap Funds	S&P SmallCap 600	89.10	93.46	92.71	77.44	78.94	75.13
All Multi-Cap Funds	S&P Composite 1500	97.01	91.58	94.03	91.04	82.11	83.62
Large-Cap Growth Funds	S&P 500 Growth	97.53	99.47	99.53	92.93	94.18	92.56
Large-Cap Core Funds	S&P 500	95.77	96.33	96.67	85.63	78.44	86.67
Large-Cap Value Funds	S&P 500 Value	85.07	64.53	77.78	71.88	48.77	62.96
Mid-Cap Growth Funds	S&P MidCap 400 Growth	85.53	97.11	95.32	77.99	90.17	87.13
Mid-Cap Core Funds	S&P MidCap 400	84.68	91.35	94.19	72.58	83.65	80.23
Mid-Cap Value Funds	S&P MidCap 400 Value	66.15	83.70	83.33	52.31	67.39	65.56
Small-Cap Growth Funds	S&P SmallCap 600 Growth	87.18	95.56	97.47	80.00	87.78	89.87
Small-Cap Core Funds	S&P SmallCap 600	92.51	92.92	93.79	77.97	78.77	76.55
Small-Cap Value Funds	S&P SmallCap 600 Value	84.55	84.54	72.63	73.64	62.89	57.89
Multi-Cap Growth Funds	S&P Composite 1500 Growth	97.87	100.00	97.24	93.62	94.12	91.03
Multi-Cap Core Funds	S&P Composite 1500	97.77	90.14	92.86	94.59	81.34	83.67
Multi-Cap Value Funds	S&P Composite 1500 Value	84.16	78.95	82.58	70.30	69.17	70.79
Real Estate Funds	S&P United States REIT	56.58	80.41	71.70	28.95	63.92	43.40

Source: S&P Dow Jones Indices LLC, CRSP. Data as of Dec. 31, 2017. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

**Report 2: Percentage of International Equity Funds Outperformed by Benchmarks – Risk-Adjusted Returns**

FUND CATEGORY	COMPARISON INDEX	NET OF FEES (%)			GROSS OF FEES (%)		
		5-YEAR	10-YEAR	15-YEAR	5-YEAR	10-YEAR	15-YEAR
Global Funds	S&P Global 1200	89.14	79.28	88.66	72.57	59.46	72.16
International Funds	S&P 700	67.05	79.77	90.44	42.64	59.92	76.89
International Small-Cap Funds	S&P Developed Ex-U.S. SmallCap	65.52	66.67	78.13	41.38	41.18	65.63
Emerging Markets Funds	S&P/IFCI Composite	75.44	85.14	89.66	58.48	60.81	70.69

Source: S&P Dow Jones Indices LLC, CRSP. Data as of Dec. 31, 2017. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

**Report 3: Percentage of Fixed Income Funds Outperformed by Benchmarks – Risk-Adjusted Returns**

FUND CATEGORY	COMPARISON INDEX	NET OF FEES (%)			GROSS OF FEES (%)		
		5-YEAR	10-YEAR	15-YEAR	5-YEAR	10-YEAR	15-YEAR
Government Long Funds	Barclays US Government Long	50.85	50.00	62.00	33.90	45.24	58.00
Government Intermediate Funds	Barclays US Government Intermediate	84.00	70.73	85.71	36.00	48.78	65.08
Government Short Funds	Barclays US Government (1-3 Year)	89.66	85.29	91.18	41.38	55.88	76.47
Investment-Grade Long Funds	Barclays US Government/Credit Long	20.00	52.87	62.88	13.64	41.38	59.85
Investment-Grade Intermediate Funds	Barclays US Government/Credit Intermediate	50.39	73.40	86.47	27.17	51.06	61.18
Investment-Grade Short Funds	Barclays US Government/Credit (1-3 Year)	66.67	95.31	97.78	18.33	70.31	82.22
High Yield Funds	Barclays US Corporate High Yield	70.62	83.74	86.73	47.42	55.28	61.06
Mortgage-Backed Securities Funds	Barclays US Aggregate Securitized - MBS	75.86	90.70	95.92	48.28	46.51	59.18
Global Income Funds	Barclays Global Aggregate	54.31	70.83	72.22	42.24	54.17	55.56
Emerging Markets Debt Funds	Barclays Emerging Markets	94.29	84.21	86.67	82.86	57.89	40.00
General Municipal Debt Funds	S&P National AMT-Free Municipal Bond	56.25	73.42	83.78	16.25	45.57	61.26
California Municipal Debt Funds	S&P California AMT-Free Municipal Bond	74.29	89.74	88.89	8.57	41.03	46.67
New York Municipal Debt Funds	S&P New York AMT-Free Municipal Bond	96.67	91.18	97.37	26.67	47.06	63.16
Loan Participation Funds	S&P/LSTA U.S. Leveraged Loan 100	27.78	76.47	-	11.11	29.41	-

Source: S&P Dow Jones Indices LLC, CRSP. Data as of Dec. 31, 2017. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

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