

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

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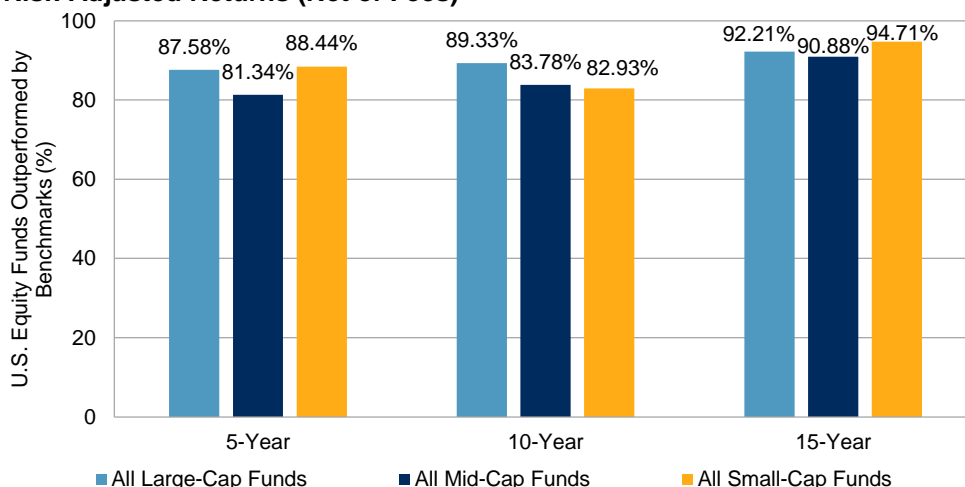
## SUMMARY

Risk and return are two sides of the same coin. 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.

The Risk-Adjusted SPIVA Scorecard measures the performance of actively managed funds against their benchmarks on a risk-adjusted basis, using net-of-fees and gross-of-fees returns. We use return/volatility ratios to evaluate performance. Volatility is computed by taking the standard deviation of monthly returns. Our goal is to establish whether actively managed funds are better at risk management than passive indices, using net-of-fees and gross-of-fees returns.

**After adjusting for risk, the majority of actively managed domestic funds in all categories underperformed their benchmarks, on a net-of-fees basis, over mid- and long-term investment horizons.**

**Exhibit 1: Percentage of U.S. Equity Funds Outperformed by Benchmarks – Risk-Adjusted Returns (Net of Fees)**



Source: S&P Dow Jones Indices LLC. Data as of Dec. 31, 2018. Past performance is no guarantee of future results. Chart is provided for illustrative purposes.

Although the risk-adjusted performance of active funds improved compared with their benchmarks on a gross-of-fees basis, real estate funds (over the five-year period) was the only category that generated a higher ratio than the benchmark. Overall, **most active domestic equity managers in most categories underperformed their benchmarks, on a gross-of-fees basis.**

**The majority of international equity funds also generated lower risk-adjusted returns than their benchmarks, when using net-of-fees returns.** International Small-Cap Funds were the only category that outperformed the benchmark on a risk-adjusted basis over the 10-year period, on a gross-of-fees basis.

**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.** The exceptions were Investment-Grade Long Funds and Loan Participation Funds (over the 5- and 10-year periods), as well as Government Long Funds and California Municipal Debt Funds (over the 10-year period).

Unlike their equity counterparts, most fixed income funds outperformed their respective benchmarks gross of fees. **This highlights how the role of fees in fixed income fund performance was especially critical.** More active fixed income managers underperformed the benchmark on a risk-adjusted basis over the long term (15 years) than in the intermediate term (5 years).

**Asset-weighted return/risk ratios of active managers were higher than the equal-weighted ratios, indicating that larger firms have taken on better-compensated risk than smaller ones.** When comparing average ratios against their benchmarks, all domestic equity categories had lower ratios over all investment horizons when they were equally weighted on a net-of-fees basis. However, asset-weighted ratios of Real Estate Funds (over the 5-, 10-, and 15-year periods), Large-Cap Value Funds (over the 10- and 15-year periods), Mid-Cap Growth Funds (over the 5-year period), and Mid-Cap Value Funds (over the 10-year period) were higher than the benchmarks.

Looking at gross-of-fees versus net-of-fees returns, most fund categories produced higher return/risk ratios than their benchmarks if they were asset-weighted on a gross-of-fees basis. However, their outperformance diminished quickly once fees were accounted for, especially in domestic equity and international equity funds.

## METHODOLOGY

Modern Portfolio Theory (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 the expectation of risk—the variation (or volatility) around the expected return. MPT assumes that higher risk should be compensated, on average, by higher returns.

We believe the same principle can apply to evaluating active managers' performance. Moreover, critiques of passive investing often argue that indices are not risk-managed, unlike active management. However, research by S&P Dow Jones Indices has revealed that active funds typically had higher risk than comparable benchmarks and relative fund volatility tended to be persistent (Edwards et al. 2016). This motivated us to examine the performance of actively managed funds on a risk-adjusted basis.

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.** 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. 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 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 the [S&P 500](#). As such, we are confident that the benchmarks 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.

<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

## 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.

CRSP database reports fund returns on a net-of-fees basis. To calculate gross-of-fees returns, we added the annual expense ratio of the fund to the net-of-fees returns.

## RESULTS

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.

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.

Reports 4a-4b show the asset-weighted and equal-weighted average return/risk ratios of active managers against their benchmarks, using net-of-fees and gross-of-fees bases, respectively. To compute this, we build a composite portfolio in each category and calculate the annualized return and volatility over the specified investment horizons. The risk-adjusted returns are measured as the ratio of these two. Asset-weighted and equal-weighted composite portfolios are rebalanced monthly. All else equal, compared with the benchmark, a higher return/risk ratio indicates that funds in the category were collectively better at taking compensated risk.

From these reports, we did not see evidence that actively managed funds were better risk-managed than passive indices. 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. In fixed income, fees, not risk, were the biggest detractor from performance. 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).

**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	91.05	92.17	93.91	83.67	85.70	85.28
All Large-Cap Funds	S&P 500	87.58	89.33	92.21	76.80	81.46	82.35
All Mid-Cap Funds	S&P MidCap 400	81.34	83.78	90.88	69.97	76.06	78.42
All Small-Cap Funds	S&P SmallCap 600	88.44	82.93	94.71	77.26	72.46	80.35
All Multi-Cap Funds	S&P Composite 1500	92.04	90.18	93.02	84.08	83.36	82.36
Large-Cap Growth Funds	S&P 500 Growth	95.96	96.70	99.46	88.60	89.49	90.81
Large-Cap Core Funds	S&P 500	91.18	95.61	93.67	78.82	90.06	84.18
Large-Cap Value Funds	S&P 500 Value	77.12	74.39	72.63	66.01	60.06	59.78
Mid-Cap Growth Funds	S&P MidCap 400 Growth	76.88	87.40	92.11	61.25	78.05	81.58
Mid-Cap Core Funds	S&P MidCap 400	86.78	87.22	91.09	77.69	78.95	76.24
Mid-Cap Value Funds	S&P MidCap 400 Value	93.55	83.45	86.84	75.81	64.03	73.68
Small-Cap Growth Funds	S&P SmallCap 600 Growth	87.63	83.91	96.95	77.42	73.04	91.46
Small-Cap Core Funds	S&P SmallCap 600	92.92	89.45	95.51	84.96	78.91	84.62
Small-Cap Value Funds	S&P SmallCap 600 Value	90.65	71.85	85.71	83.18	60.00	63.64
Multi-Cap Growth Funds	S&P Composite 1500 Growth	95.56	98.70	96.85	90.56	93.04	91.34
Multi-Cap Core Funds	S&P Composite 1500	96.66	92.96	92.00	90.97	86.22	81.33
Multi-Cap Value Funds	S&P Composite 1500 Value	86.87	78.40	85.37	66.67	67.90	71.95
Real Estate Funds	S&P United States REIT	65.00	77.42	75.86	47.50	53.76	50.00

Source: S&P Dow Jones Indices LLC, CRSP. Data as of Dec. 31, 2018. 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	87.15	81.20	85.26	72.07	66.92	72.63
International Funds	S&P 700	82.56	80.00	91.10	62.02	64.29	74.15
International Small-Cap Funds	S&P Developed Ex-U.S. SmallCap	73.68	66.04	75.86	56.14	49.06	58.62
Emerging Markets Funds	S&P/IFCI Composite	92.67	85.96	92.31	73.82	63.16	73.08

Source: S&P Dow Jones Indices LLC, CRSP. Data as of Dec. 31, 2018. 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	52.54	43.04	64.71	35.59	39.24	60.78
Government Intermediate Funds	Barclays US Government Intermediate	77.27	69.44	83.33	40.91	47.22	68.33
Government Short Funds	Barclays US Government (1-3 Year)	82.76	76.47	85.71	37.93	50.00	71.43
Investment-Grade Long Funds	Barclays US Government/Credit Long	32.61	25.98	62.70	11.96	25.20	59.52
Investment-Grade Intermediate Funds	Barclays US Government/Credit Intermediate	65.58	55.56	90.22	32.09	44.03	65.76
Investment-Grade Short Funds	Barclays US Government/Credit (1-3 Year)	58.06	82.81	97.87	17.74	46.88	82.98
High Yield Funds	Barclays US Corporate High Yield	77.11	85.39	88.89	54.73	69.66	62.39
Mortgage-Backed Securities Funds	Barclays US Aggregate Securitized - MBS	79.31	72.22	95.83	39.66	46.30	62.50
Global Income Funds	Barclays Global Aggregate	57.66	52.78	74.29	45.05	47.22	54.29
Emerging Markets Debt Funds	Barclays Emerging Markets	98.00	100.00	100.00	96.00	100.00	57.14
General Municipal Debt Funds	S&P National AMT-Free Municipal Bond	56.25	54.05	86.92	16.25	35.14	62.62
California Municipal Debt Funds	S&P California AMT-Free Municipal Bond	50.00	44.74	95.65	5.56	26.32	52.17
New York Municipal Debt Funds	S&P New York AMT-Free Municipal Bond	57.14	90.91	97.37	7.14	42.42	60.53
Loan Participation Funds	S&P/LSTA U.S. Leveraged Loan 100	34.04	28.57	-	6.38	19.05	-

Source: S&P Dow Jones Indices LLC, CRSP. Data as of Dec. 31, 2018. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 4a: Return/Volatility Ratio of Active Mutual Funds and Benchmarks (Net of Fees)										
FUND CATEGORY	BENCHMARK	BENCHMARK			ASSET WEIGHTED			EQUAL WEIGHTED		
		5-YEAR	10-YEAR	15-YEAR	5-YEAR	10-YEAR	15-YEAR	5-YEAR	10-YEAR	15-YEAR
<b>U.S. EQUITY FUNDS</b>										
All Domestic Funds	S&P Composite 1500	0.75	0.96	0.58	0.60	0.88	0.51	0.44	0.80	0.44
All Large-Cap Funds	S&P 500	0.78	0.96	0.58	0.68	0.91	0.51	0.58	0.84	0.46
All Mid-Cap Funds	S&P MidCap 400	0.47	0.86	0.55	0.47	0.86	0.51	0.35	0.79	0.44
All Small-Cap Funds	S&P SmallCap 600	0.42	0.75	0.52	0.28	0.72	0.44	0.23	0.67	0.38
All Multi-Cap Funds	S&P Composite 1500	0.75	0.96	0.58	0.53	0.86	0.50	0.47	0.80	0.44
Large-Cap Growth Funds	S&P 500 Growth	0.90	1.12	0.65	0.76	1.00	0.52	0.69	0.94	0.50
Large-Cap Core Funds	S&P 500	0.78	0.96	0.58	0.69	0.88	0.48	0.58	0.83	0.45
Large-Cap Value Funds	S&P 500 Value	0.55	0.76	0.47	0.54	0.81	0.48	0.45	0.73	0.44
Mid-Cap Growth Funds	S&P MidCap 400 Growth	0.50	0.92	0.57	0.55	0.89	0.52	0.42	0.84	0.44
Mid-Cap Core Funds	S&P MidCap 400	0.47	0.86	0.55	0.37	0.83	0.49	0.29	0.75	0.44
Mid-Cap Value Funds	S&P MidCap 400 Value	0.42	0.77	0.51	0.36	0.79	0.48	0.25	0.72	0.43
Small-Cap Growth Funds	S&P SmallCap 600 Growth	0.49	0.84	0.57	0.40	0.83	0.46	0.33	0.74	0.38
Small-Cap Core Funds	S&P SmallCap 600	0.42	0.75	0.52	0.22	0.67	0.42	0.19	0.64	0.37
Small-Cap Value Funds	S&P SmallCap 600 Value	0.33	0.66	0.46	0.14	0.58	0.38	0.13	0.59	0.36
Multi-Cap Growth Funds	S&P Composite 1500 Growth	0.87	1.11	0.65	0.65	0.96	0.57	0.58	0.88	0.48
Multi-Cap Core Funds	S&P Composite 1500	0.75	0.96	0.58	0.48	0.83	0.48	0.42	0.77	0.42
Multi-Cap Value Funds	S&P Composite 1500 Value	0.54	0.76	0.49	0.26	0.66	0.37	0.33	0.69	0.39
Real Estate Funds	S&P United States REIT	0.55	0.58	0.36	0.60	0.60	0.36	0.54	0.58	0.34
<b>INTERNATIONAL EQUITY FUNDS</b>										
Global Funds	S&P Global 1200	0.49	0.71	0.47	0.36	0.66	0.46	0.30	0.62	0.38
International Funds	S&P International 700	0.11	0.43	0.35	0.02	0.41	0.30	-0.02	0.36	0.24
International Small Cap Funds	S&P Developed Ex-U.S. Small Cap	0.23	0.60	0.42	0.16	0.62	0.45	0.09	0.59	0.38
Emerging Markets Funds	S&P/IFCI Composite	0.17	0.47	0.42	0.07	0.44	0.37	0.00	0.37	0.30

Source: S&P Dow Jones Indices LLC, CRSP. Data as of Dec. 31, 2018. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 4a: Return/Volatility Ratio of Active Mutual Funds and Benchmarks (Net of Fees) (cont.)										
FUND CATEGORY	BENCHMARK	BENCHMARK			ASSET WEIGHTED			EQUAL WEIGHTED		
		5-YEAR	10-YEAR	15-YEAR	5-YEAR	10-YEAR	15-YEAR	5-YEAR	10-YEAR	15-YEAR
<b>FIXED INCOME FUNDS</b>										
Government Long Funds	Barclays US Government Long	0.60	0.38	0.56	0.55	0.78	0.87	0.54	0.74	0.83
Government Intermediate Funds	Barclays US Government Intermediate	0.70	0.79	1.11	0.68	1.07	1.20	0.51	0.75	0.95
Government Short Funds	Barclays US Government (1-3 Year)	1.05	1.30	1.68	0.94	1.27	1.59	0.78	1.15	1.46
Investment-Grade Long Funds	Barclays US Government/Credit Long	0.69	0.70	0.68	0.81	1.35	0.91	0.79	1.38	0.93
Investment-Grade Intermediate Funds	Barclays US Government/Credit Intermediate	0.91	1.28	1.22	0.97	1.49	1.15	0.81	1.38	0.99
Investment-Grade Short Funds	Barclays US Government/Credit (1-3 Year)	1.36	1.85	1.88	1.52	1.90	1.40	1.38	1.76	1.04
High Yield Funds	Barclays US Corporate High Yield	0.75	1.44	0.78	0.60	1.35	0.67	0.53	1.30	0.63
Mortgage-Backed Securities Funds	Barclays US Aggregate Securitized - MBS	1.16	1.42	1.56	1.15	1.50	1.53	1.02	1.48	1.38
Global Income Funds	Barclays Global Aggregate	0.24	0.48	0.61	0.29	0.67	0.71	0.25	0.63	0.60
Emerging Markets Debt Funds	Barclays Emerging Markets	0.94	1.36	0.84	0.52	0.95	0.69	0.33	0.76	0.56
General Municipal Debt Funds	S&P National AMT-Free Municipal Bond	1.22	1.13	0.91	1.32	1.22	0.82	1.19	1.14	0.76
California Municipal Debt Funds	S&P California AMT-Free Municipal Bond	1.22	1.11	0.94	1.24	1.16	0.81	1.20	1.10	0.72
New York Municipal Debt Funds	S&P New York AMT-Free Municipal Bond	1.22	1.21	0.96	1.35	1.12	0.69	1.20	1.08	0.74
Loan Participation Funds	S&P/LSTA U.S. Leveraged Loan 100	0.72	1.29	-	0.79	1.46	0.55	0.75	1.46	-

Source: S&P Dow Jones Indices LLC, CRSP. Data as of Dec. 31, 2018. Past performance is no guarantee of future results. Table is provided for illustrative purposes.



Report 4b: Return/Volatility Ratio of Active Mutual Funds and Benchmarks (Gross of Fees)										
FUND CATEGORY	BENCHMARK	BENCHMARK			ASSET WEIGHTED			EQUAL WEIGHTED		
		5-YEAR	10-YEAR	15-YEAR	5-YEAR	10-YEAR	15-YEAR	5-YEAR	10-YEAR	15-YEAR
<b>U.S. EQUITY FUNDS</b>										
All Domestic Funds	S&P Composite 1500	0.75	0.96	0.58	0.73	0.98	0.60	0.65	0.95	0.59
All Large-Cap Funds	S&P 500	0.78	0.96	0.58	0.80	1.00	0.60	0.79	0.99	0.61
All Mid-Cap Funds	S&P MidCap 400	0.47	0.86	0.55	0.60	0.95	0.60	0.57	0.95	0.59
All Small-Cap Funds	S&P SmallCap 600	0.42	0.75	0.52	0.48	0.87	0.57	0.42	0.83	0.52
All Multi-Cap Funds	S&P Composite 1500	0.75	0.96	0.58	0.65	0.95	0.59	0.65	0.95	0.58
Large-Cap Growth Funds	S&P 500 Growth	0.90	1.12	0.65	0.88	1.10	0.62	0.88	1.09	0.64
Large-Cap Core Funds	S&P 500	0.78	0.96	0.58	0.81	0.96	0.56	0.79	0.97	0.59
Large-Cap Value Funds	S&P 500 Value	0.55	0.76	0.47	0.67	0.90	0.57	0.64	0.88	0.58
Mid-Cap Growth Funds	S&P MidCap 400 Growth	0.50	0.92	0.57	0.66	0.99	0.62	0.63	1.00	0.59
Mid-Cap Core Funds	S&P MidCap 400	0.47	0.86	0.55	0.47	0.91	0.57	0.43	0.86	0.55
Mid-Cap Value Funds	S&P MidCap 400 Value	0.42	0.77	0.51	0.59	0.92	0.60	0.64	0.95	0.63
Small-Cap Growth Funds	S&P SmallCap 600 Growth	0.49	0.84	0.57	0.56	0.96	0.58	0.51	0.90	0.52
Small-Cap Core Funds	S&P SmallCap 600	0.42	0.75	0.52	0.37	0.79	0.53	0.36	0.78	0.51
Small-Cap Value Funds	S&P SmallCap 600 Value	0.33	0.66	0.46	0.53	0.85	0.59	0.37	0.74	0.51
Multi-Cap Growth Funds	S&P Composite 1500 Growth	0.87	1.11	0.65	0.74	1.03	0.65	0.72	0.99	0.60
Multi-Cap Core Funds	S&P Composite 1500	0.75	0.96	0.58	0.58	0.91	0.55	0.62	0.93	0.57
Multi-Cap Value Funds	S&P Composite 1500 Value	0.54	0.76	0.49	0.48	0.80	0.50	0.55	0.85	0.54
Real Estate Funds	S&P United States REIT	0.55	0.58	0.36	0.69	0.68	0.45	0.65	0.66	0.43
<b>INTERNATIONAL EQUITY FUNDS</b>										
Global Funds	S&P Global 1200	0.49	0.71	0.47	0.44	0.74	0.53	0.42	0.72	0.49
International Funds	S&P International 700	0.11	0.43	0.35	0.08	0.47	0.36	0.09	0.45	0.34
International Small Cap Funds	S&P Developed Ex-U.S. Small Cap	0.23	0.60	0.42	0.26	0.70	0.53	0.23	0.70	0.49
Emerging Markets Funds	S&P/IFCI Composite	0.17	0.47	0.42	0.15	0.51	0.44	0.11	0.45	0.39

Source: S&P Dow Jones Indices LLC, CRSP. Data as of Dec. 31, 2018. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 4b: Return/Volatility Ratio of Active Mutual Funds and Benchmarks (Gross of Fees) (cont.)										
FUND CATEGORY	BENCHMARK	BENCHMARK			ASSET WEIGHTED			EQUAL WEIGHTED		
		5-YEAR	10-YEAR	15-YEAR	5-YEAR	10-YEAR	15-YEAR	5-YEAR	10-YEAR	15-YEAR
<b>FIXED INCOME FUNDS</b>										
Government Long Funds	Barclays US Government Long	0.60	0.38	0.56	0.64	0.87	1.00	0.79	0.98	1.10
Government Intermediate Funds	Barclays US Government Intermediate	0.70	0.79	1.11	1.08	1.46	1.58	1.10	1.30	1.46
Government Short Funds	Barclays US Government (1-3 Year)	1.05	1.30	1.68	1.29	1.66	1.94	2.20	2.32	2.38
Investment-Grade Long Funds	Barclays US Government/Credit Long	0.69	0.70	0.68	0.92	1.48	1.04	1.06	1.63	1.18
Investment-Grade Intermediate Funds	Barclays US Government/Credit Intermediate	0.91	1.28	1.22	1.15	1.66	1.33	1.17	1.70	1.30
Investment-Grade Short Funds	Barclays US Government/Credit (1-3 Year)	1.36	1.85	1.88	1.99	2.21	1.67	2.60	2.50	1.65
High Yield Funds	Barclays US Corporate High Yield	0.75	1.44	0.78	0.74	1.47	0.78	0.75	1.47	0.79
Mortgage-Backed Securities Funds	Barclays US Aggregate Securitized - MBS	1.16	1.42	1.56	1.37	1.71	1.73	1.53	1.94	1.84
Global Income Funds	Barclays Global Aggregate	0.24	0.48	0.61	0.47	0.80	0.86	0.49	0.82	0.81
Emerging Markets Debt Funds	Barclays Emerging Markets	0.94	1.36	0.84	0.67	1.09	0.82	0.56	0.93	0.71
General Municipal Debt Funds	S&P National AMT-Free Municipal Bond	1.22	1.13	0.91	1.51	1.36	0.96	1.55	1.39	1.02
California Municipal Debt Funds	S&P California AMT-Free Municipal Bond	1.22	1.11	0.94	1.42	1.29	0.94	1.51	1.32	0.93
New York Municipal Debt Funds	S&P New York AMT-Free Municipal Bond	1.22	1.21	0.96	1.57	1.27	0.82	1.56	1.34	0.98
Loan Participation Funds	S&P/LSTA U.S. Leveraged Loan 100	0.72	1.29	-	1.18	1.72	0.74	1.24	1.74	-

Source: S&P Dow Jones Indices LLC, CRSP. Data as of Dec. 31, 2018. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

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