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SPIVA[®] U.S. Scorecard

SUMMARY

- Despite the market turmoil seen in the first quarter of 2018, the U.S. equity market posted positive returns over the 12-month period ending June 30, 2018, with small-cap stocks leading the pack. The [S&P SmallCap 600[®]](#) reported 20.50%, while the [S&P 500[®]](#) and the [S&P MidCap 400[®]](#) posted 14.37% and 13.50%, respectively.
- During the one-year period ending June 30, 2018, the overall percentage of all domestic funds outperforming the [S&P Composite 1500[®]](#) increased (42.02%) compared with six months prior (36.57%).
- Over the one-year period, 63.46% of large-cap managers, 54.18% of mid-cap managers, and 72.88% of small-cap managers underperformed the S&P 500, the S&P MidCap 400, and the S&P SmallCap 600, respectively.
- Despite small-cap equity performing the best, more small-cap managers underperformed the S&P SmallCap 600 over the one-year period compared with results from six months prior.
- Overall performance of active equity funds relative to their respective benchmarks over the medium term also improved, although the majority still underperformed their benchmarks. Over the five-year period, 76.49% of large-cap managers, 81.74% of mid-cap managers, and 92.90% of small-cap managers lagged their respective benchmarks.
- Similarly, over the 15-year investment horizon, 92.43% of large-cap managers, 95.13% of mid-cap managers, and 97.70% of small-cap managers failed to outperform on a relative basis.
- Growth style investing dominates, as growth managers across all three market cap ranges performed better than their core and value counterparts over the one-year period. Only 36.29%, 31.54%, and 42.05% of large-cap, mid-cap, and small-cap growth managers, respectively, underperformed their style-adjusted benchmarks. However, more growth funds underperformed their respective benchmarks compared with six months prior.

- Over the long-term investment horizon, as measured by the 15-year period, relative underperformance of growth and value funds compared with their respective benchmarks did not differ significantly, indicating the cyclicity of style box investing.
- Across nine U.S. style categories, large-cap value was the best-performing category over the 10- and 15-year horizons, with 23.79% and 16.95% of managers outperforming the benchmark, the [S&P 500 Value](#).
- The headline international equity and emerging market equity indices remained positive in the 12-month period ending June 30, 2018. The [S&P Global 1200](#) posted 11.57%, while the [S&P Developed Ex-U.S. Small Cap](#), [S&P/IFCI Composite](#) and [S&P 700](#) reported 11.43%, 8.80%, and 7.82%, respectively, over the same period.
- Over the 1-, 3-, 5-, 10-, and 15-year investment horizons, managers across all international equity categories underperformed their benchmarks. Furthermore, the longer the time horizon, in general, the more funds underperformed. Compared with six months prior, more managers underperformed their benchmarks in the one-year investment horizon, especially in the international small-cap category.
- The 10-Year U.S. Treasury yield curve remained flat. During the one-year period ending June 30, 2018, the majority of active fixed income managers investing in long-term government and long-term investment-grade bonds underperformed their benchmarks, but their relative performance over their benchmarks improved compared with six months prior. In contrast, funds investing in short- and intermediate-term investment-grade bonds outperformed their benchmarks.
- Within the emerging market debt funds, 88.14% underperformed the benchmark in the one-year period, compared with 22.58% underperforming six months prior.
- The majority of municipal funds outperformed over the 12-month period, despite having mixed results over the three- and five-year investment horizons. However, over the 10- and 15-year periods, most muni funds underperformed their benchmarks. While these funds underperformed over the long term, it should be noted that municipal categories have some of the best survivorship statistics.
- Funds disappear at a meaningful rate. Over the 15-year period, 58.58% of domestic equity funds, 53.66% of international equity funds, and an average of 52.16% of all fixed income funds were merged or liquidated. This finding highlights the importance of addressing survivorship bias in mutual fund analysis.

A UNIQUE SCORECARD FOR THE ACTIVE VERSUS PASSIVE DEBATE

There is nothing novel about the index versus active debate. It has been a contentious subject for decades, and there are few strong believers on both sides, with the vast majority of market participants falling somewhere in between. Since its first publication 16 years ago, the SPIVA Scorecard has served as the de facto scorekeeper of the active versus passive debate. For more than a decade, we have heard passionate arguments from believers in both camps when headline numbers have deviated from their beliefs.

Beyond the SPIVA Scorecard's widely cited headline numbers is a rich data set that addresses issues related to measurement techniques, universe composition, and fund survivorship that are far less frequently discussed, but are often far more fascinating. These data sets are rooted in the following fundamental principles of the SPIVA Scorecard, with which regular readers will be familiar.

- **Survivorship Bias Correction:** Many funds might be liquidated or merged during a period of study. However, for someone making an investment decision at the beginning of the period, these funds are part of the opportunity set. Unlike other commonly available comparison reports, SPIVA Scorecards account for the entire opportunity set—not just the survivors—thereby eliminating survivorship bias.
- **Apples-to-Apples Comparison:** Fund returns are often compared to popular benchmarks such as the S&P 500, regardless of size or style classification. SPIVA Scorecards avoid this pitfall by measuring a fund's returns against the returns of a benchmark appropriate for that particular investment category.
- **Asset-Weighted Returns:** Average returns for a fund group are often calculated using only equal weighting, which results in the returns of a USD 10 billion fund affecting the average in the same manner as the returns of a USD 10 million fund. An accurate representation of how market participants fared in a particular period can be ascertained by calculating weighted average returns where each fund's return is weighted by net assets. SPIVA Scorecards show both equal- and asset-weighted averages.
- **Style Consistency:** SPIVA Scorecards measure style consistency for each style category across different time horizons. Style consistency is an important metric because style drift (the tendency of funds to diverge from their initial investment categorization) can have an impact on asset allocation decisions.
- **Data Cleaning:** SPIVA Scorecards avoid double counting multiple share classes in all count-based calculations, using only the share class with greater assets. Since this is meant to be a scorecard for active managers, index funds, leveraged and inverse funds, and other index-linked products are excluded.

REPORTS

Report 1: Percentage of U.S. Equity Funds Outperformed by Benchmarks						
FUND CATEGORY	COMPARISON INDEX	1-YEAR (%)	3-YEAR (%)	5-YEAR (%)	10-YEAR (%)	15-YEAR (%)
All Domestic Funds	S&P Composite 1500	57.98	82.12	80.13	85.93	83.76
All Large-Cap Funds	S&P 500	63.46	78.64	76.49	89.15	92.43
All Mid-Cap Funds	S&P MidCap 400	54.18	83.28	81.74	92.68	95.13
All Small-Cap Funds	S&P SmallCap 600	72.88	93.59	92.90	93.36	97.70
All Multi-Cap Funds	S&P Composite 1500	60.84	82.42	81.01	89.07	88.26
Large-Cap Growth Funds	S&P 500 Growth	36.29	66.67	66.31	91.54	92.82
Large-Cap Core Funds	S&P 500	71.38	89.67	88.10	94.01	92.68
Large-Cap Value Funds	S&P 500 Value	42.01	68.73	75.08	76.21	83.05
Mid-Cap Growth Funds	S&P MidCap 400 Growth	31.54	81.13	73.08	94.08	94.05
Mid-Cap Core Funds	S&P MidCap 400	77.59	88.98	91.06	93.33	96.81
Mid-Cap Value Funds	S&P MidCap 400 Value	75.47	87.93	87.88	87.37	95.40
Small-Cap Growth Funds	S&P SmallCap 600 Growth	42.05	86.60	86.49	90.40	98.76
Small-Cap Core Funds	S&P SmallCap 600	93.31	99.15	99.56	95.15	98.56
Small-Cap Value Funds	S&P SmallCap 600 Value	90.72	93.16	100.00	96.97	94.57
Multi-Cap Growth Funds	S&P Composite 1500 Growth	52.78	81.97	75.81	91.14	86.26
Multi-Cap Core Funds	S&P Composite 1500	76.17	94.90	91.38	89.63	90.64
Multi-Cap Value Funds	S&P Composite 1500 Value	56.60	79.63	79.59	85.38	85.88
Real Estate Funds	S&P United States REIT	53.66	74.12	67.09	77.19	82.76

Source: S&P Dow Jones Indices LLC. Data as of June 30, 2018. Returns shown are annualized. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 2: Survivorship and Style Consistency of U.S. Equity Funds			
FUND CATEGORY	NO. OF FUNDS AT START	SURVIVORSHIP (%)	STYLE CONSISTENCY (%)
1-YEAR			
All Domestic Funds	2208	96.06	95.74
All Large-Cap Funds	839	96.19	90.23
All Mid-Cap Funds	300	95.67	89.67
All Small-Cap Funds	545	95.96	93.94
All Multi-Cap Funds	524	96.18	84.54
Large-Cap Growth Funds	237	95.78	88.61
Large-Cap Core Funds	280	96.07	80.71
Large-Cap Value Funds	322	96.58	91.93
Mid-Cap Growth Funds	131	94.66	86.26
Mid-Cap Core Funds	116	96.55	89.66
Mid-Cap Value Funds	53	96.23	79.25
Small-Cap Growth Funds	177	96.05	94.35
Small-Cap Core Funds	271	95.57	90.04
Small-Cap Value Funds	97	96.91	83.51
Multi-Cap Growth Funds	180	95.56	77.22
Multi-Cap Core Funds	237	97.05	78.90
Multi-Cap Value Funds	107	95.33	83.18
Real Estate Funds	82	96.34	97.56
3-YEAR			
All Domestic Funds	2335	85.18	84.37
All Large-Cap Funds	901	85.68	75.36
All Mid-Cap Funds	336	84.23	68.45
All Small-Cap Funds	549	86.34	84.15
All Multi-Cap Funds	549	83.79	62.84
Large-Cap Growth Funds	255	85.49	72.55
Large-Cap Core Funds	304	86.84	66.12
Large-Cap Value Funds	342	84.80	72.51
Mid-Cap Growth Funds	160	83.75	63.75
Mid-Cap Core Funds	118	82.20	55.08
Mid-Cap Value Funds	58	89.66	53.45
Small-Cap Growth Funds	195	85.64	77.44
Small-Cap Core Funds	237	87.76	76.37
Small-Cap Value Funds	117	84.62	54.70
Multi-Cap Growth Funds	183	86.89	56.83
Multi-Cap Core Funds	257	83.66	56.03
Multi-Cap Value Funds	109	78.90	55.05
Real Estate Funds	85	90.59	90.59

Source: S&P Dow Jones Indices LLC. Data as of June 30, 2018. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 2: Survivorship and Style Consistency of U.S. Equity Funds (cont.)			
FUND CATEGORY	NO. OF FUNDS AT START	SURVIVORSHIP (%)	STYLE CONSISTENCY (%)
5-YEAR			
All Domestic Funds	2394	80.66	77.11
All Large-Cap Funds	947	79.41	66.21
All Mid-Cap Funds	346	78.61	60.40
All Small-Cap Funds	524	83.02	79.96
All Multi-Cap Funds	577	81.80	50.09
Large-Cap Growth Funds	282	75.89	62.77
Large-Cap Core Funds	357	80.11	52.66
Large-Cap Value Funds	308	81.82	67.86
Mid-Cap Growth Funds	157	76.43	59.24
Mid-Cap Core Funds	123	74.80	44.72
Mid-Cap Value Funds	66	90.91	42.42
Small-Cap Growth Funds	186	79.57	72.04
Small-Cap Core Funds	231	85.28	71.00
Small-Cap Value Funds	107	84.11	51.40
Multi-Cap Growth Funds	186	81.72	46.77
Multi-Cap Core Funds	292	84.25	41.44
Multi-Cap Value Funds	99	74.75	41.41
Real Estate Funds	79	91.14	89.87
10-YEAR			
All Domestic Funds	2054	54.33	50.93
All Large-Cap Funds	645	53.80	40.78
All Mid-Cap Funds	369	52.85	32.79
All Small-Cap Funds	482	55.81	51.87
All Multi-Cap Funds	558	54.66	28.85
Large-Cap Growth Funds	201	47.26	33.33
Large-Cap Core Funds	217	55.30	31.80
Large-Cap Value Funds	227	58.15	42.29
Mid-Cap Growth Funds	169	44.38	25.44
Mid-Cap Core Funds	105	56.19	25.71
Mid-Cap Value Funds	95	64.21	21.05
Small-Cap Growth Funds	177	50.28	38.98
Small-Cap Core Funds	206	55.83	37.38
Small-Cap Value Funds	99	65.66	28.28
Multi-Cap Growth Funds	158	52.53	22.15
Multi-Cap Core Funds	270	56.30	16.67
Multi-Cap Value Funds	130	53.85	23.85
Real Estate Funds	57	73.68	68.42

Source: S&P Dow Jones Indices LLC. Data as of June 30, 2018. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 2: Survivorship and Style Consistency of U.S. Equity Funds (cont.)			
FUND CATEGORY	NO. OF FUNDS AT START	SURVIVORSHIP (%)	STYLE CONSISTENCY (%)
15-YEAR			
All Domestic Funds	1953	41.42	38.50
All Large-Cap Funds	701	35.24	26.39
All Mid-Cap Funds	349	46.42	24.64
All Small-Cap Funds	392	47.45	42.60
All Multi-Cap Funds	511	41.88	18.98
Large-Cap Growth Funds	209	25.36	18.66
Large-Cap Core Funds	314	35.67	18.47
Large-Cap Value Funds	178	46.07	32.58
Mid-Cap Growth Funds	168	34.52	20.24
Mid-Cap Core Funds	94	51.06	17.02
Mid-Cap Value Funds	87	64.37	12.64
Small-Cap Growth Funds	161	39.75	30.43
Small-Cap Core Funds	139	51.80	31.65
Small-Cap Value Funds	92	54.35	20.65
Multi-Cap Growth Funds	131	35.88	13.74
Multi-Cap Core Funds	203	42.36	13.30
Multi-Cap Value Funds	177	45.76	11.86
Real Estate Funds	58	62.07	50.00

Source: S&P Dow Jones Indices LLC. Data as of June 30, 2018. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 3: Average U.S. Equity Fund Performance (Equal-Weighted)						
CATEGORY	1-YEAR (%)	3-YEAR (%)	5-YEAR (%)	10-YEAR (%)	15-YEAR (%)	
S&P Composite 1500	14.50	11.90	13.40	10.29	9.57	
All Domestic Funds	14.13	9.32	11.36	8.65	8.52	
S&P 500	14.37	11.93	13.42	10.17	9.30	
All Large-Cap Funds	13.14	9.68	11.55	8.40	7.82	
S&P MidCap 400	13.50	10.89	12.69	10.78	11.39	
All Mid-Cap Funds	13.49	8.12	10.92	8.62	9.24	
S&P SmallCap 600	20.50	13.84	14.60	12.25	12.03	
All Small-Cap Funds	16.81	9.54	11.17	9.47	9.42	
S&P Composite 1500	14.50	11.90	13.40	10.29	9.57	
All Multi-Cap Funds	13.51	8.97	11.19	8.14	8.16	
LARGE-CAP						
S&P 500 Growth	20.63	14.48	15.99	11.70	10.04	
Large-Cap Growth Funds	21.82	12.95	14.98	9.80	8.77	
S&P 500	14.37	11.93	13.42	10.17	9.30	
Large-Cap Core Funds	12.33	9.48	11.31	8.24	7.51	
S&P 500 Value	7.58	8.82	10.45	8.44	8.38	
Large-Cap Value Funds	8.00	7.52	9.17	7.40	7.40	
MID-CAP						
S&P MidCap 400 Growth	15.69	11.33	13.14	10.98	11.43	
Mid-Cap Growth Funds	18.71	9.36	12.11	8.76	9.30	
S&P MidCap 400	13.50	10.89	12.69	10.78	11.39	
Mid-Cap Core Funds	10.45	7.19	9.94	8.24	8.96	
S&P MidCap 400 Value	11.17	10.08	11.96	10.44	11.20	
Mid-Cap Value Funds	8.34	7.35	9.97	8.86	9.51	
SMALL-CAP						
S&P SmallCap 600 Growth	22.50	14.37	15.54	12.66	12.57	
Small-Cap Growth Funds	24.41	10.92	12.94	10.13	9.56	
S&P SmallCap 600	20.50	13.84	14.60	12.25	12.03	
Small-Cap Core Funds	13.35	8.67	10.32	9.01	9.34	
S&P SmallCap 600 Value	18.46	13.26	13.58	11.77	11.45	
Small-Cap Value Funds	12.28	9.16	9.94	9.21	9.44	
MULTI-CAP						
S&P Composite 1500 Growth	20.35	14.24	15.77	11.70	10.28	
Multi-Cap Growth Funds	20.38	11.27	13.72	9.18	9.05	
S&P Composite 1500	14.50	11.90	13.40	10.29	9.57	
Multi-Cap Core Funds	11.39	8.05	10.18	7.65	7.71	
S&P Composite 1500 Value	8.17	9.04	10.66	8.71	8.93	
Multi-Cap Value Funds	7.64	7.30	9.37	7.46	7.53	
REAL ESTATE						
S&P United States REIT	3.62	7.81	8.08	7.82	9.89	
Real Estate Funds	3.03	7.19	7.65	6.88	8.94	

Source: S&P Dow Jones Indices LLC. Data as of June 30, 2018. Returns shown are annualized. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 4: Average U.S. Equity Fund Performance (Asset-Weighted)						
CATEGORY	1-YEAR (%)	3-YEAR (%)	5-YEAR (%)	10-YEAR (%)	15-YEAR (%)	
S&P Composite 1500	14.50	11.90	13.40	10.29	9.57	
All Domestic Funds	15.45	10.86	12.54	9.15	9.02	
S&P 500	14.37	11.93	13.42	10.17	9.30	
All Large-Cap Funds	15.28	11.46	12.90	9.20	8.46	
S&P MidCap 400	13.50	10.89	12.69	10.78	11.39	
All Mid-Cap Funds	15.06	9.43	11.89	9.20	10.10	
S&P SmallCap 600	20.50	13.84	14.60	12.25	12.03	
All Small-Cap Funds	17.01	10.30	11.58	9.75	10.11	
S&P Composite 1500	14.50	11.90	13.40	10.29	9.57	
All Multi-Cap Funds	15.53	9.99	12.27	8.75	9.09	
LARGE-CAP						
S&P 500 Growth	20.63	14.48	15.99	11.70	10.04	
Large-Cap Growth Funds	23.57	14.56	16.14	10.48	9.40	
S&P 500	14.37	11.93	13.42	10.17	9.30	
Large-Cap Core Funds	13.57	11.08	12.45	8.69	7.90	
S&P 500 Value	7.58	8.82	10.45	8.44	8.38	
Large-Cap Value Funds	8.97	8.77	10.24	8.25	8.02	
MID-CAP						
S&P MidCap 400 Growth	15.69	11.33	13.14	10.98	11.43	
Mid-Cap Growth Funds	19.36	10.76	13.10	9.45	10.43	
S&P MidCap 400	13.50	10.89	12.69	10.78	11.39	
Mid-Cap Core Funds	10.97	8.03	10.66	9.02	9.76	
S&P MidCap 400 Value	11.17	10.08	11.96	10.44	11.20	
Mid-Cap Value Funds	10.89	8.58	10.59	8.72	9.87	
SMALL-CAP						
S&P SmallCap 600 Growth	22.50	14.37	15.54	12.66	12.57	
Small-Cap Growth Funds	23.87	12.05	13.63	11.17	10.66	
S&P SmallCap 600	20.50	13.84	14.60	12.25	12.03	
Small-Cap Core Funds	13.09	9.26	10.36	8.87	9.79	
S&P SmallCap 600 Value	18.46	13.26	13.58	11.77	11.45	
Small-Cap Value Funds	11.93	9.28	10.04	9.12	9.62	
MULTI-CAP						
S&P Composite 1500 Growth	20.35	14.24	15.77	11.70	10.28	
Multi-Cap Growth Funds	21.78	12.55	15.18	10.32	10.54	
S&P Composite 1500	14.50	11.90	13.40	10.29	9.57	
Multi-Cap Core Funds	12.95	8.72	10.82	8.25	8.50	
S&P Composite 1500 Value	8.17	9.04	10.66	8.71	8.93	
Multi-Cap Value Funds	6.63	6.89	9.07	7.19	7.34	
REAL ESTATE						
S&P United States REIT	3.62	7.81	8.08	7.82	9.89	
Real Estate Funds	3.89	7.53	8.15	7.03	9.31	

Source: S&P Dow Jones Indices LLC. Data as of June 30, 2018. Returns shown are annualized. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 5: Quartile Breakpoints of U.S. Equity Funds			
FUND CATEGORY	THIRD QUARTILE (%)	SECOND QUARTILE (%)	FIRST QUARTILE (%)
1-YEAR			
All Domestic Funds	9.33	13.50	18.94
All Large-Cap Funds	8.56	12.15	18.19
All Mid-Cap Funds	8.39	13.30	18.15
All Small-Cap Funds	11.67	15.24	21.67
All Multi-Cap Funds	8.42	12.93	18.34
Large-Cap Growth Funds	19.13	22.33	25.94
Large-Cap Core Funds	10.38	12.50	14.71
Large-Cap Value Funds	6.25	8.44	10.73
Mid-Cap Growth Funds	15.12	18.16	20.97
Mid-Cap Core Funds	7.36	10.45	13.18
Mid-Cap Value Funds	6.29	7.86	10.89
Small-Cap Growth Funds	20.14	23.79	29.53
Small-Cap Core Funds	10.78	13.95	16.34
Small-Cap Value Funds	9.79	11.84	14.78
Multi-Cap Growth Funds	16.24	20.27	25.21
Multi-Cap Core Funds	8.16	11.63	14.28
Multi-Cap Value Funds	6.33	7.81	9.85
Real Estate Funds	2.08	3.44	4.71
3-YEAR			
All Domestic Funds	7.59	9.50	11.48
All Large-Cap Funds	7.93	9.82	11.90
All Mid-Cap Funds	6.92	8.39	10.47
All Small-Cap Funds	8.17	9.89	11.56
All Multi-Cap Funds	6.97	9.20	11.35
Large-Cap Growth Funds	11.56	13.64	15.38
Large-Cap Core Funds	8.34	9.91	11.14
Large-Cap Value Funds	6.75	8.08	9.33
Mid-Cap Growth Funds	7.67	9.25	11.25
Mid-Cap Core Funds	5.58	7.85	9.79
Mid-Cap Value Funds	7.04	7.88	9.21
Small-Cap Growth Funds	8.99	11.11	12.72
Small-Cap Core Funds	7.60	9.27	10.78
Small-Cap Value Funds	8.01	9.67	11.04
Multi-Cap Growth Funds	9.64	11.91	13.92
Multi-Cap Core Funds	6.50	8.40	10.22
Multi-Cap Value Funds	6.34	7.39	9.38
Real Estate Funds	6.06	6.94	8.03

Source: S&P Dow Jones Indices LLC. Data as of June 30, 2018. Returns shown are annualized. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 5: Quartile Breakpoints of U.S. Equity Funds (cont.)			
FUND CATEGORY	THIRD QUARTILE (%)	SECOND QUARTILE (%)	FIRST QUARTILE (%)
5-YEAR			
All Domestic Funds	9.68	11.38	13.36
All Large-Cap Funds	9.74	11.52	13.90
All Mid-Cap Funds	9.88	11.32	12.60
All Small-Cap Funds	9.88	11.41	13.06
All Multi-Cap Funds	9.32	11.04	13.23
Large-Cap Growth Funds	14.04	15.61	17.08
Large-Cap Core Funds	10.28	11.74	12.86
Large-Cap Value Funds	8.75	9.60	10.64
Mid-Cap Growth Funds	11.39	12.46	13.98
Mid-Cap Core Funds	8.60	10.54	11.86
Mid-Cap Value Funds	9.43	10.34	11.18
Small-Cap Growth Funds	11.58	13.39	14.59
Small-Cap Core Funds	9.58	11.05	12.24
Small-Cap Value Funds	9.16	10.52	11.51
Multi-Cap Growth Funds	11.85	13.77	16.19
Multi-Cap Core Funds	8.84	10.38	11.89
Multi-Cap Value Funds	9.20	9.86	10.83
Real Estate Funds	7.02	7.71	8.60
10-YEAR			
All Domestic Funds	7.75	9.01	10.33
All Large-Cap Funds	7.68	8.66	9.88
All Mid-Cap Funds	7.83	9.01	10.20
All Small-Cap Funds	8.70	10.07	11.20
All Multi-Cap Funds	6.89	8.53	9.82
Large-Cap Growth Funds	8.89	10.26	11.27
Large-Cap Core Funds	7.63	8.65	9.40
Large-Cap Value Funds	7.13	8.15	9.03
Mid-Cap Growth Funds	8.41	9.36	10.44
Mid-Cap Core Funds	7.60	8.88	10.13
Mid-Cap Value Funds	7.67	8.71	10.09
Small-Cap Growth Funds	9.33	10.78	12.19
Small-Cap Core Funds	8.38	9.77	10.79
Small-Cap Value Funds	8.92	9.78	10.62
Multi-Cap Growth Funds	8.04	9.69	10.90
Multi-Cap Core Funds	6.66	8.20	9.51
Multi-Cap Value Funds	6.66	8.11	8.86
Real Estate Funds	6.13	7.26	8.28

Source: S&P Dow Jones Indices LLC. Data as of June 30, 2018. Returns shown are annualized. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 5: Quartile Breakpoints of U.S. Equity Funds (cont.)

FUND CATEGORY	THIRD QUARTILE (%)	SECOND QUARTILE (%)	FIRST QUARTILE (%)
15-YEAR			
All Domestic Funds	8.05	9.12	10.30
All Large-Cap Funds	7.67	8.59	9.23
All Mid-Cap Funds	8.44	9.59	10.73
All Small-Cap Funds	9.35	10.25	10.94
All Multi-Cap Funds	7.45	8.60	9.74
Large-Cap Growth Funds	8.68	9.20	10.16
Large-Cap Core Funds	7.62	8.49	9.20
Large-Cap Value Funds	7.41	8.11	8.85
Mid-Cap Growth Funds	8.71	10.16	11.08
Mid-Cap Core Funds	8.67	9.53	10.52
Mid-Cap Value Funds	7.97	9.36	10.34
Small-Cap Growth Funds	9.69	10.62	11.15
Small-Cap Core Funds	9.23	10.01	10.83
Small-Cap Value Funds	9.20	10.13	10.64
Multi-Cap Growth Funds	8.70	9.86	11.19
Multi-Cap Core Funds	7.38	8.34	9.41
Multi-Cap Value Funds	6.99	8.36	9.28
Real Estate Funds	8.06	8.91	10.06

Source: S&P Dow Jones Indices LLC. Data as of June 30, 2018. Returns shown are annualized. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 6: Percentage of International Equity Funds Outperformed by Benchmarks

FUND CATEGORY	COMPARISON INDEX	1-YEAR (%)	3-YEAR (%)	5-YEAR (%)	10-YEAR (%)	15-YEAR (%)
Global Funds	S&P Global 1200	62.13	75.42	75.44	79.84	81.52
International Funds	S&P 700	68.60	76.78	74.05	76.75	89.43
International Small-Cap Funds	S&P Developed Ex-U.S. Small Cap	58.33	67.53	71.93	63.27	74.19
Emerging Markets Funds	S&P/IFCI Composite	72.02	73.89	86.19	86.25	94.44

Source: S&P Dow Jones Indices LLC. Data as of June 30, 2018. Returns shown are annualized. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 7: Survivorship and Style Consistency of International Equity Funds			
FUND CATEGORY	NO. OF FUNDS AT START	SURVIVORSHIP (%)	STYLE CONSISTENCY (%)
1-YEAR			
Global Funds	235	95.32	91.06
International Funds	364	95.88	95.05
International Small-Cap Funds	84	95.24	96.43
Emerging Markets Funds	218	94.04	94.04
3-YEAR			
Global Funds	240	85.00	77.08
International Funds	367	87.74	85.56
International Small-Cap Funds	77	87.01	85.71
Emerging Markets Funds	226	82.74	81.86
5-YEAR			
Global Funds	171	75.44	61.40
International Funds	262	77.86	74.05
International Small-Cap Funds	57	84.21	84.21
Emerging Markets Funds	181	77.90	76.80
10-YEAR			
Global Funds	124	58.87	46.77
International Funds	271	61.25	57.93
International Small-Cap Funds	49	75.51	67.35
Emerging Markets Funds	80	66.25	61.25
15-YEAR			
Global Funds	92	47.83	33.70
International Funds	246	46.34	42.68
International Small-Cap Funds	31	61.29	58.06
Emerging Markets Funds	54	62.96	59.26

Source: S&P Dow Jones Indices LLC. Data as of June 30, 2018. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 8: Average International Equity Fund Performance (Equal-Weighted)					
CATEGORY	1-YEAR (%)	3-YEAR (%)	5-YEAR (%)	10-YEAR (%)	15-YEAR (%)
S&P Global 1200	11.57	9.29	10.52	6.85	8.76
Global Funds	10.13	7.49	8.87	5.44	7.59
S&P 700	7.82	5.84	6.93	3.30	8.17
International Funds	6.78	4.57	5.88	2.22	6.44
S&P Developed Ex-U.S. Small Cap	11.43	9.31	10.80	6.12	10.80
International Small-Cap Funds	10.71	7.64	8.67	5.36	10.00
S&P/IFCI Composite	8.80	6.43	6.13	3.17	11.73
Emerging Markets Funds	5.61	4.37	3.73	0.85	9.20

Source: S&P Dow Jones Indices LLC. Data as of June 30, 2018. Returns shown are annualized. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 9: Average International Equity Fund Performance (Asset-Weighted)

CATEGORY	1-YEAR (%)	3-YEAR (%)	5-YEAR (%)	10-YEAR (%)	15-YEAR (%)
S&P Global 1200	11.57	9.29	10.52	6.85	8.76
Global Funds	10.15	8.05	9.51	6.46	8.74
S&P 700	7.82	5.84	6.93	3.30	8.17
International Funds	6.32	4.83	6.50	3.21	7.60
S&P Developed Ex-U.S. Small Cap	11.43	9.31	10.80	6.12	10.80
International Small-Cap Funds	12.52	8.81	9.43	6.23	10.90
S&P/IFCI Composite	8.80	6.43	6.13	3.17	11.73
Emerging Markets Funds	7.45	5.93	4.93	2.23	10.36

Source: S&P Dow Jones Indices LLC. Data as of June 30, 2018. Returns shown are annualized. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 10: Quartile Breakpoints of International Equity Funds

FUND CATEGORY	THIRD QUARTILE (%)	SECOND QUARTILE (%)	FIRST QUARTILE (%)
1-YEAR			
Global Funds	6.43	10.48	13.92
International Funds	4.29	6.45	8.63
International Small-Cap Funds	7.86	10.50	13.47
Emerging Markets Funds	2.64	6.33	9.67
3-YEAR			
Global Funds	6.13	7.66	9.46
International Funds	3.35	4.54	5.98
International Small-Cap Funds	6.53	8.39	9.67
Emerging Markets Funds	3.25	5.25	6.98
5-YEAR			
Global Funds	7.17	9.17	11.00
International Funds	5.25	6.26	7.42
International Small-Cap Funds	7.70	9.73	11.22
Emerging Markets Funds	2.52	4.40	5.58
10-YEAR			
Global Funds	4.93	6.22	7.31
International Funds	1.57	2.88	3.86
International Small-Cap Funds	5.21	5.89	7.15
Emerging Markets Funds	0.74	1.87	2.79
15-YEAR			
Global Funds	7.43	8.23	9.46
International Funds	6.09	7.21	8.13
International Small-Cap Funds	9.40	9.97	12.00
Emerging Markets Funds	8.67	9.98	10.82

Source: S&P Dow Jones Indices LLC. Data as of June 30, 2018. Returns shown are annualized. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 11: Percentage of Fixed Income Funds Outperformed by Benchmarks

FUND CATEGORY	COMPARISON INDEX	1-YEAR (%)	3-YEAR (%)	5-YEAR (%)	10-YEAR (%)	15-YEAR (%)
Government Long Funds	Barclays US Government Long	85.71	100.00	98.31	95.00	98.08
Government Intermediate Funds	Barclays US Government Intermediate	63.16	73.91	69.57	79.49	90.00
Government Short Funds	Barclays US Government (1-3 Year)	56.52	61.54	58.62	69.70	88.24
Investment-Grade Long Funds	Barclays US Government/Credit Long	53.93	97.85	98.06	96.34	97.73
Investment-Grade Intermediate Funds	Barclays US Government/Credit Intermediate	47.98	31.61	39.37	50.00	72.41
Investment-Grade Short Funds	Barclays US Government/Credit (1-3 Year)	32.98	37.93	40.00	52.38	68.18
High Yield Funds	Barclays US Corporate High Yield	73.33	92.79	94.27	97.52	98.25
Mortgage-Backed Securities Funds	Barclays US Aggregate Securitized - MBS	72.55	78.18	79.31	75.00	95.83
Global Income Funds	Barclays Global Aggregate	83.02	68.81	58.33	57.69	68.57
Emerging Markets Debt Funds	Barclays Emerging Markets	88.14	69.64	94.87	77.27	78.57
General Municipal Debt Funds	S&P National AMT-Free Municipal Bond	38.96	51.81	39.24	60.00	81.08
California Municipal Debt Funds	S&P California AMT-Free Municipal Bond	41.18	33.33	38.89	60.00	84.78
New York Municipal Debt Funds	S&P New York AMT-Free Municipal Bond	23.08	37.04	46.43	67.65	84.62
Loan Participation Funds	S&P/LSTA U.S. Leveraged Loan 100	72.55	68.75	50.00	90.00	-

Source: S&P Dow Jones Indices LLC, Bloomberg. Data as of June 30, 2018. Returns shown are annualized. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 12: Survivorship and Style Consistency of Fixed Income Funds

FUND CATEGORY	NO. OF FUNDS AT START	SURVIVORSHIP (%)	STYLE CONSISTENCY (%)
1-YEAR			
Government Long Funds	57	92.98	92.98
Government Intermediate Funds	19	89.47	89.47
Government Short Funds	23	95.65	95.65
Investment-Grade Long Funds	92	96.74	93.48
Investment-Grade Intermediate Funds	198	98.48	97.98
Investment-Grade Short Funds	94	98.94	96.81
High-Yield Funds	212	94.81	93.87
Mortgage-Backed Securities Funds	51	96.08	96.08
Global Income Funds	106	91.51	89.62
Emerging Markets Debt Funds	59	84.75	83.05
General Municipal Debt Funds	77	96.10	94.81
California Municipal Debt Funds	34	97.06	97.06
New York Municipal Debt Funds	26	96.15	96.15
Loan Participation Funds	51	96.08	96.08

Source: S&P Dow Jones Indices LLC, Bloomberg. Data as of June 30, 2018. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 12: Survivorship and Style Consistency of Fixed Income Funds (cont.)			
FUND CATEGORY	NO. OF FUNDS AT START	SURVIVORSHIP (%)	STYLE CONSISTENCY (%)
3-YEAR			
Government Long Funds	57	85.96	85.96
Government Intermediate Funds	23	73.91	73.91
Government Short Funds	26	88.46	84.62
Investment-Grade Long Funds	97	90.72	80.41
Investment-Grade Intermediate Funds	193	90.16	87.56
Investment-Grade Short Funds	88	90.91	87.50
High-Yield Funds	211	87.68	87.68
Mortgage-Backed Securities Funds	55	94.55	85.45
Global Income Funds	111	81.98	77.48
Emerging Markets Debt Funds	56	78.57	76.79
General Municipal Debt Funds	83	92.77	86.75
California Municipal Debt Funds	36	94.44	91.67
New York Municipal Debt Funds	27	96.30	92.59
Loan Participation Funds	48	93.75	91.67
5-YEAR			
Government Long Funds	60	83.33	80.00
Government Intermediate Funds	23	73.91	69.57
Government Short Funds	29	79.31	68.97
Investment-Grade Long Funds	107	92.52	71.03
Investment-Grade Intermediate Funds	254	85.43	57.87
Investment-Grade Short Funds	61	88.52	81.97
High-Yield Funds	195	83.59	82.56
Mortgage-Backed Securities Funds	58	86.21	74.14
Global Income Funds	110	78.18	71.82
Emerging Markets Debt Funds	39	76.92	69.23
General Municipal Debt Funds	79	91.14	82.28
California Municipal Debt Funds	36	94.44	91.67
New York Municipal Debt Funds	28	92.86	89.29
Loan Participation Funds	40	97.50	92.50

Source: S&P Dow Jones Indices LLC, Bloomberg. Data as of June 30, 2018. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 12: Survivorship and Style Consistency of Fixed Income Funds (cont.)			
FUND CATEGORY	NO. OF FUNDS AT START	SURVIVORSHIP (%)	STYLE CONSISTENCY (%)
10-YEAR			
Government Long Funds	41	56.10	53.66
Government Intermediate Funds	39	53.85	38.46
Government Short Funds	33	57.58	45.45
Investment-Grade Long Funds	83	69.88	44.58
Investment-Grade Intermediate Funds	184	64.13	45.11
Investment-Grade Short Funds	64	64.06	56.25
High-Yield Funds	122	69.67	66.39
Mortgage-Backed Securities Funds	44	77.27	68.18
Global Income Funds	53	69.81	56.60
Emerging Markets Debt Funds	22	86.36	63.64
General Municipal Debt Funds	75	74.67	68.00
California Municipal Debt Funds	40	72.50	72.50
New York Municipal Debt Funds	34	67.65	64.71
Loan Participation Funds	20	90.00	85.00
15-YEAR			
Government Long Funds	53	41.51	32.08
Government Intermediate Funds	60	35.00	23.33
Government Short Funds	34	38.24	29.41
Investment-Grade Long Funds	132	40.91	19.70
Investment-Grade Intermediate Funds	174	44.25	32.18
Investment-Grade Short Funds	44	56.82	54.55
High-Yield Funds	114	53.51	50.00
Mortgage-Backed Securities Funds	48	52.08	43.75
Global Income Funds	36	63.89	55.56
Emerging Markets Debt Funds	14	78.57	71.43
General Municipal Debt Funds	111	46.85	42.34
California Municipal Debt Funds	46	58.70	56.52
New York Municipal Debt Funds	39	56.41	51.28
Loan Participation Funds	-	-	-

Source: S&P Dow Jones Indices LLC, Bloomberg. Data as of June 30, 2018. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 13: Average Fixed Income Fund Performance (Equal-Weighted)					
CATEGORY	1-YEAR (%)	3-YEAR (%)	5-YEAR (%)	10-YEAR (%)	15-YEAR (%)
Barclays US Government Long	-0.13	3.40	4.56	6.02	5.57
Government Long Funds	-1.10	0.63	1.22	2.70	2.68
Barclays US Government Intermediate	-0.73	0.63	1.04	2.41	2.81
Government Intermediate Funds	-0.98	0.19	0.67	1.88	2.10
Barclays US Government (1-3 Year)	0.03	0.42	0.59	1.32	1.98
Government Short Funds	0.05	0.28	0.32	0.99	1.47
Barclays US Government/Credit Long	-0.78	4.34	5.10	6.79	5.84
Investment-Grade Long Funds	-0.92	2.23	2.81	4.24	3.76
Barclays US Government/Credit Intermediate	-0.58	1.16	1.60	3.08	3.21
Investment-Grade Intermediate Funds	-0.58	1.30	1.69	3.13	2.87
Barclays US Government/Credit (1-3 Year)	0.21	0.71	0.84	1.65	2.22
Investment-Grade Short Funds	0.40	0.93	0.94	1.46	1.62
Barclays US Corporate High Yield	2.62	5.53	5.51	8.19	7.77
High Yield Funds	1.47	3.82	4.00	5.84	5.81
Barclays US Aggregate Securitized - MBS	0.15	1.46	2.25	3.54	3.88
Mortgage-Backed Securities Funds	-0.28	1.00	1.74	3.10	3.08
Barclays Global Aggregate	1.36	2.58	1.50	2.58	3.68
Global Income Funds	0.15	1.96	1.35	2.80	3.55
Barclays Emerging Markets	-1.04	4.05	4.46	6.62	7.48
Emerging Markets Debt Funds	-2.81	2.98	2.36	4.18	5.81
S&P National AMT-Free Municipal Bond	1.51	2.80	3.32	4.21	4.00
General Municipal Debt Funds	1.64	2.63	3.33	3.94	3.45
S&P California AMT-Free Municipal Bond	1.72	2.81	3.89	4.65	4.36
California Municipal Debt Funds	1.71	2.97	3.97	4.39	3.78
S&P New York AMT-Free Municipal Bond	0.86	2.62	3.47	4.23	4.04
New York Municipal Debt Funds	1.19	2.69	3.29	3.86	3.46
S&P/LSTA U.S. Leveraged Loan 100	3.74	3.69	3.37	4.90	-
Loan Participation Funds	3.26	3.21	3.10	3.99	-

Source: S&P Dow Jones Indices LLC, Bloomberg. Data as of June 30, 2018. Returns shown are annualized. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 14: Average Fixed Income Fund Performance (Asset-Weighted)					
CATEGORY	1-YEAR (%)	3-YEAR (%)	5-YEAR (%)	10-YEAR (%)	15-YEAR (%)
Barclays US Government Long	-0.13	3.40	4.56	6.02	5.57
Government Long Funds	-1.20	0.89	1.50	3.09	3.18
Barclays US Government Intermediate	-0.73	0.63	1.04	2.41	2.81
Government Intermediate Funds	-0.75	0.47	0.99	2.58	2.70
Barclays US Government (1-3 Year)	0.03	0.42	0.59	1.32	1.98
Government Short Funds	-0.17	0.45	0.66	1.40	1.94
Barclays US Government/Credit Long	-0.78	4.34	5.10	6.79	5.84
Investment-Grade Long Funds	-1.08	2.64	3.30	4.37	4.08
Barclays US Government/Credit Intermediate	-0.58	1.16	1.60	3.08	3.21
Investment-Grade Intermediate Funds	-0.32	1.90	2.29	3.91	3.64
Barclays US Government/Credit (1-3 Year)	0.21	0.71	0.84	1.65	2.22
Investment-Grade Short Funds	0.23	1.24	1.42	2.36	2.49
Barclays US Corporate High Yield	2.62	5.53	5.51	8.19	7.77
High Yield Funds	2.06	4.24	4.53	6.34	6.32
Barclays US Aggregate Securitized - MBS	0.15	1.46	2.25	3.54	3.88
Mortgage-Backed Securities Funds	-0.02	1.30	2.17	3.66	3.69
Barclays Global Aggregate	1.36	2.58	1.50	2.58	3.68
Global Income Funds	0.14	1.61	1.50	3.46	4.50
Barclays Emerging Markets	-1.04	4.05	4.46	6.62	7.48
Emerging Markets Debt Funds	-3.08	4.66	3.75	5.55	6.90
S&P National AMT-Free Municipal Bond	1.51	2.80	3.32	4.21	4.00
General Municipal Debt Funds	2.04	3.04	3.86	4.40	3.96
S&P California AMT-Free Municipal Bond	1.72	2.81	3.89	4.65	4.36
California Municipal Debt Funds	1.78	3.30	4.30	4.74	4.21
S&P New York AMT-Free Municipal Bond	0.86	2.62	3.47	4.23	4.04
New York Municipal Debt Funds	2.00	3.52	3.60	4.17	3.90
S&P/LSTA U.S. Leveraged Loan 100	3.74	3.69	3.37	4.90	-
Loan Participation Funds	3.43	3.65	3.32	3.96	-

Source: S&P Dow Jones Indices LLC, Bloomberg. Data as of June 30, 2018. Returns shown are annualized. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 15: Quartile Breakpoints of Fixed Income Funds			
FUND CATEGORY	THIRD QUARTILE	SECOND QUARTILE	FIRST QUARTILE
1-YEAR			
Government Long Funds	-1.01	-0.86	-0.43
Government Intermediate Funds	-1.08	-0.80	-0.49
Government Short Funds	-0.37	-0.14	0.73
Investment-Grade Long Funds	-1.37	-0.82	-0.38
Investment-Grade Intermediate Funds	-0.87	-0.51	-0.11
Investment-Grade Short Funds	0.11	0.45	0.83
High-Yield Funds	0.96	1.84	2.74
Mortgage-Backed Securities Funds	-0.70	-0.30	0.18
Global Income Funds	-1.25	0.03	1.01
Emerging Markets Debt Funds	-3.60	-2.45	-1.48
General Municipal Debt Funds	1.26	1.79	2.40
California Municipal Debt Funds	1.51	1.89	2.11
New York Municipal Debt Funds	0.94	1.17	1.46
Loan Participation Funds	2.78	3.28	3.81
3-YEAR			
Government Long Funds	0.47	0.79	1.02
Government Intermediate Funds	0.22	0.32	0.71
Government Short Funds	0.13	0.35	0.74
Investment-Grade Long Funds	1.78	2.32	2.98
Investment-Grade Intermediate Funds	1.17	1.51	1.92
Investment-Grade Short Funds	0.67	0.94	1.47
High-Yield Funds	3.55	4.12	4.72
Mortgage-Backed Securities Funds	0.80	1.02	1.40
Global Income Funds	1.49	2.20	3.18
Emerging Markets Debt Funds	2.36	3.55	4.50
General Municipal Debt Funds	2.44	2.84	3.30
California Municipal Debt Funds	2.72	3.04	3.60
New York Municipal Debt Funds	2.52	2.73	3.09
Loan Participation Funds	2.99	3.34	3.93

Source: S&P Dow Jones Indices LLC, Bloomberg. Data as of June 30, 2018. Returns shown are annualized. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 15: Quartile Breakpoints of Fixed Income Funds (cont.)			
FUND CATEGORY	THIRD QUARTILE	SECOND QUARTILE	FIRST QUARTILE
5-YEAR			
Government Long Funds	1.02	1.37	1.63
Government Intermediate Funds	0.68	0.90	1.30
Government Short Funds	0.26	0.61	0.74
Investment-Grade Long Funds	2.21	2.79	3.27
Investment-Grade Intermediate Funds	1.48	2.06	2.57
Investment-Grade Short Funds	0.76	1.03	1.30
High-Yield Funds	3.81	4.45	4.92
Mortgage-Backed Securities Funds	1.50	1.83	2.21
Global Income Funds	0.88	1.56	2.27
Emerging Markets Debt Funds	2.06	3.33	3.97
General Municipal Debt Funds	3.20	3.65	4.09
California Municipal Debt Funds	3.74	4.21	4.60
New York Municipal Debt Funds	3.23	3.61	3.89
Loan Participation Funds	3.02	3.39	3.74
10-YEAR			
Government Long Funds	2.49	2.76	3.15
Government Intermediate Funds	1.67	2.34	2.59
Government Short Funds	0.95	1.37	1.57
Investment-Grade Long Funds	3.26	4.20	5.32
Investment-Grade Intermediate Funds	3.19	3.84	4.29
Investment-Grade Short Funds	1.63	2.05	2.44
High-Yield Funds	5.97	6.56	6.90
Mortgage-Backed Securities Funds	2.97	3.30	3.63
Global Income Funds	1.97	2.81	4.04
Emerging Markets Debt Funds	3.11	5.80	6.43
General Municipal Debt Funds	3.89	4.27	4.69
California Municipal Debt Funds	4.44	4.68	4.98
New York Municipal Debt Funds	3.85	4.19	4.51
Loan Participation Funds	3.54	4.10	4.44

Source: S&P Dow Jones Indices LLC, Bloomberg. Data as of June 30, 2018. Returns shown are annualized. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 15: Quartile Breakpoints of Fixed Income Funds (cont.)			
FUND CATEGORY	THIRD QUARTILE	SECOND QUARTILE	FIRST QUARTILE
15-YEAR			
Government Long Funds	2.76	3.01	4.08
Government Intermediate Funds	2.14	2.45	2.87
Government Short Funds	1.53	1.80	2.00
Investment-Grade Long Funds	3.14	3.67	4.40
Investment-Grade Intermediate Funds	2.81	3.47	3.99
Investment-Grade Short Funds	1.78	2.29	2.58
High-Yield Funds	6.06	6.36	6.77
Mortgage-Backed Securities Funds	2.99	3.33	3.77
Global Income Funds	3.23	3.76	4.69
Emerging Markets Debt Funds	6.82	7.36	7.50
General Municipal Debt Funds	3.51	3.90	4.09
California Municipal Debt Funds	4.00	4.14	4.39
New York Municipal Debt Funds	3.64	3.82	4.06
Loan Participation Funds	-	-	-

Source: S&P Dow Jones Indices LLC, Bloomberg. Data as of June 30, 2018. Returns shown are annualized. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

APPENDIX A

SPIVA Styles and Lipper Fund Classifications

The CRSP Survivor-Bias-Free US Mutual Fund Database is the only complete database of both active and liquidated or merged mutual funds. It was created in 1995 and contains fund data from December 1961. Current and historical data from August 1998 has been supplied by Lipper and Thomson Reuters. The fund classifications are based upon the Lipper fund classification system. The SPIVA Scorecard covers domestic equity, global equity, and global fixed income categories.

U.S. Equity

SPIVA covers major capitalization levels (large-, mid-, small-, and multi-cap funds) and investment styles (growth, core, and value). S&P Dow Jones Indices uses the Lipper fund classifications, which determine a fund portfolio's capitalization and investment style assignments.

Lipper assigns a market capitalization to each fund based on the percentages of a fund's three-year weighted equity assets that fall into each of Lipper's three defined market capitalization slices. The market capitalization breakpoints are calculated using all common stocks, excluding all non-U.S. domiciled stocks and ADRs, trading on the NYSE, AMEX, and NASDAQ. Funds are assigned to the capitalization level in which they have a 75% or higher weighting. Any fund that has less than 75% of its three-year weighted allocation in any of the three market capitalization ranges is classified as a multi-cap fund.

For investment style selection, the Lipper classification system uses three-year fundamental portfolio characteristics (price/earnings, price/book, and three-year sales-per-share growth) and, if necessary, confirming secondary characteristics (price-to-sales and price-to-operating cash flow). Fund statistics are compared to their relevant S&P Dow Jones Indices capitalization-level index to determine the growth, core, or value style.

In some cases, S&P Dow Jones Indices combines closely related Lipper fund classifications in one SPIVA category. Exhibit 2 maps the SPIVA U.S. Equity fund categories to Lipper classifications.

Exhibit 1: U.S. Equity Category Mappings	
SPIVA CATEGORY	LIPPER FUND CLASSIFICATION
Large-Cap Growth Funds	Large-Cap Growth Funds
Large-Cap Core Funds	Large-Cap Core Funds
Large-Cap Value Funds	Large-Cap Value Funds
	Equity Income Funds
Mid-Cap Growth Funds	Mid-Cap Growth Funds
Mid-Cap Core Funds	Mid-Cap Core Funds
Mid-Cap Value Funds	Mid-Cap Value Funds
Small-Cap Growth Funds	Small-Cap Growth Funds
Small-Cap Core Funds	Small-Cap Core Funds
Small-Cap Value Funds	Small-Cap Value Funds
Multi-Cap Growth Funds	Multi-Cap Growth Funds
Multi-Cap Core Funds	Multi-Cap Core Funds
Multi-Cap Value Funds	Multi-Cap Value Funds
Real Estate Funds	Real Estate Funds

Source: S&P Dow Jones Indices LLC, Lipper. Table is provided for illustrative purposes.

International Equity

For international equity, SPIVA reports on four major categories (Global, International, International Small-Cap, and Emerging Market Funds) of interest to global asset allocators. These categories also include multiple Lipper capitalization and style classifications.

Exhibit 2: Global Equity Category Mappings	
SPIVA CATEGORY	LIPPER FUND CLASSIFICATION
Global Funds	Global Large-Cap Growth Funds
	Global Large-Cap Core Funds
	Global Large-Cap Value Funds
	Global Multi-Cap Growth Funds
	Global Multi-Cap Core Funds
	Global Multi-Cap Value Funds
International Funds	International Large-Cap Growth Funds
	International Large-Cap Core Funds
	International Large-Cap Value Funds
	International Multi-Cap Growth Funds
	International Multi-Cap Core Funds
	International Multi-Cap Value Funds
International Small-Cap Funds	International Small-/Mid-Cap Growth Funds
	International Small-/Mid-Cap Core Funds
	International Small-/Mid-Cap Value Funds
Emerging Market Funds	Emerging Markets Funds

Source: S&P Dow Jones Indices LLC, Lipper. Table is provided for illustrative purposes.

Fixed Income

SPIVA reports on nine domestic, two global, and three municipal fixed income categories. The Lipper domestic fixed income classifications are based on maturity and credit quality. For maturity, long is 10+ years, intermediate is 5-10 years, short/intermediate is 1-5 years, and short is 1-3.5 years. For credit quality, bonds are assigned to U.S. Treasury, U.S. Government (includes government and agency issues), A- or BBB-rated (according to Lipper fund rating methodology), Loan Participations, and High Yield classifications. Lipper also includes U.S. Mortgages and GNMA classifications.

In global fixed income, Lipper differentiates between global (including the U.S.) and international (excluding the U.S.) objectives. For municipal debt funds, we include the general classification (invests in the top four credit ratings) plus two state funds (California and New York).

Exhibit 3: Fixed Income Category Mappings	
SPIVA CATEGORY	LIPPER FUND CLASSIFICATION
Government Long Funds	General U.S. Government Funds
	General U.S. Treasury Funds
Government Intermediate Funds	Intermediate U.S. Government
	Short-Intermediate U.S. Government
Government Short Funds	Short U.S. Government Funds
	Short U.S. Treasury
Investment-Grade Long Funds	Corporate Debt Funds A-Rated
	Corporate Debt Funds BBB-Rated
Investment-Grade Intermediate Funds	Intermediate Investment-Grade Debt Funds
	Short-Intermediate Investment-Grade Debt Funds
Investment-Grade Short Funds	Short Investment-Grade Debt Funds
High-Yield Funds	High Current Yield Funds
Mortgage-Backed Securities Funds	U.S. Mortgage Funds
	GNMA Funds
Global Income Funds	Global Income Funds
	International Income Funds
Emerging Market Debt Funds	Emerging Market Debt Funds
General Municipal Debt Funds	General Municipal Debt Funds
California Municipal Debt Funds	California Municipal Debt Funds
New York Municipal Debt Funds	New York Municipal Debt Funds
Loan Participation Funds	Loan Participation Funds

Source: S&P Dow Jones Indices LLC, Lipper. Table is provided for illustrative purposes.

APPENDIX B: GLOSSARY

Percentage of Funds Outperformed by the Index

To correct for survivorship bias, we use the opportunity set available at the beginning of the period as the denominator. We determine the count of funds that have survived and beat the index. We then report the index outperformance percentage.

Survivorship (%)

This measure represents the percentage of funds in existence at the beginning of the time period that is still active at the end of the time period.

Style Consistency (%)

This calculation shows the percentage of funds that had the same style classification at the end of the time period as at the beginning of the time period.

Equal-Weighted Fund Performance

Equal-weighted returns for a particular style category are determined by calculating a simple average return of all active funds in that category in a particular month.

Asset-Weighted Fund Performance

Asset-weighted returns for a particular style category are determined by calculating a weighted average return of all funds in that category in a particular month, with each fund's return weighted by its total net assets. Asset-weighted returns are a better indicator of fund category performance because they more accurately reflect the returns of the total money invested in that particular style category.

Quartiles Breakpoints

The p^{th} percentile for a set of data is the value that is greater than or equal to $p\%$ of the data, but is less than or equal to $(100 - p)\%$ of the data. In other words, it is a value that divides the data into two parts: the lower $p\%$ of the values and the upper $(100-p)\%$ of the values. The first quartile is the 75th percentile, the value separating the elements of a population into the lower 75% and the upper 25%. The second quartile is the 50th percentile and the third quartile is the 25th percentile. For fund category quartiles in a particular time horizon, the data used is the return of the largest share class of the fund net of fees, excluding loads.

Survivorship Bias

Many funds might liquidate or merge during a period of study. This usually occurs due to continued poor performance by the fund. Therefore, if index returns were compared to fund returns using only surviving funds, the comparison would be biased in favor of the fund category. These reports remove this bias by (a) using the entire investment opportunity set, made up of all funds in that particular category at the outset of the period, as the denominator for outperformance calculations, (b) explicitly showing the survivorship rate in each category, and (c) constructing peer average return series for each category based on all available funds at the outset of the period.

Fees

The fund returns used are net of fees, excluding loads.

INDICES¹

A benchmark index provides an investment vehicle against which fund performance can be measured.

U.S. Equity

S&P 500

Widely regarded as the best single gauge of the U.S. equities market, this market-capitalization-weighted index includes a representative sample of 500 leading companies in the foremost industries of the U.S. economy and provides over 80% coverage of U.S. equities.

S&P MIDCAP 400

This index consists of 400 mid-sized companies and covers approximately 7% of the U.S. equities market.

¹ For more information on S&P Dow Jones Indices, please visit www.spindices.com.

S&P SMALLCAP 600

This index consists of 600 small-cap stocks and covers approximately 3% of the U.S. equities market.

S&P COMPOSITE 1500

This is a broad, market-capitalization-weighted index of 1500 stocks. This index is comprised of three size-based indices: the S&P 500, S&P MidCap 400, and S&P SmallCap 600, which measure the performance of large-, mid-, and small-cap stocks, respectively. This index represents 90% of U.S. equities.

S&P 500 GROWTH AND VALUE INDICES

These indices form an exhaustive, multi-factor style series covering the entire market capitalization of the S&P 500. Constituents, weighted according to market capitalization, are classified as growth, value, or a mix of growth and value.

S&P MIDCAP 400 GROWTH AND VALUE INDICES

These indices form an exhaustive, multi-factor style series covering the entire market capitalization of the S&P MidCap 400.

S&P SMALLCAP 600 GROWTH AND VALUE INDICES

These indices form an exhaustive, multi-factor style series covering the entire market capitalization of the S&P SmallCap 600.

S&P COMPOSITE 1500 GROWTH AND VALUE INDICES

These indices form an exhaustive, multi-factor style series covering the entire market capitalization of the S&P Composite 1500.

S&P UNITED STATES REIT INDEX

This index measures the investable universe of publicly traded real estate investment trusts.

International Equity

S&P GLOBAL 1200

Capturing approximately 70% of the world's capital markets, the S&P Global 1200 is a composite of seven headline indices, many of which are accepted leaders in their regions. It includes the S&P 500 (U.S.), [S&P Europe 350](#) (Europe), [S&P/TOPIX 150](#) (Japan), [S&P/TSX 60](#) (Canada), [S&P/ASX All Australian 50](#) (Australia), [S&P Asia 50](#) (Asia Ex-Japan), and [S&P Latin America 40](#) (Latin America).

S&P 700

This index measures the non-U.S. component of the global equity markets, covering all the regions included in the S&P Global 1200, excluding the U.S. (S&P 500).

S&P DEVELOPED EX-U.S. SMALL CAP

This index represents the small-cap segment—the bottom 15%—of the world’s universe of institutionally investable securities, excluding the U.S.

S&P/IFCI COMPOSITE INDEX

This index is widely recognized as a comprehensive and reliable measure of the world’s emerging markets. It measures the returns of stocks that are legally and practically available to foreign market participants.

Fixed Income²

BARCLAYS CAPITAL LONG GOVERNMENT BOND INDEX

This index consists of U.S. Treasury and U.S. Government agency bonds with maturities greater than 10 years.

BARCLAYS CAPITAL INTERMEDIATE GOVERNMENT BOND INDEX

This index consists of U.S. Treasury and U.S. Government agency bonds with maturities from 1 to 10 years.

BARCLAYS CAPITAL 1-3 YEAR GOVERNMENT BOND INDEX

This index consists of U.S. Treasury and U.S. Government agency bonds with maturities from one to three years.

BARCLAYS CAPITAL LONG GOVERNMENT/CREDIT BOND INDEX

This index covers corporate and non-corporate fixed income securities that are rated investment grade and have maturities greater than 10 years.

BARCLAYS CAPITAL INTERMEDIATE GOVERNMENT/CREDIT BOND INDEX

This index covers corporate and non-corporate fixed income securities that are rated investment grade with maturities from 1 to 10 years.

BARCLAYS CAPITAL 1-3 YEAR GOVERNMENT/CREDIT BOND INDEX

This index covers corporate and non-corporate fixed income securities that are rated investment grade and have one to three years until their final maturity.

BARCLAYS CAPITAL HIGH YIELD BOND INDEX

This index includes all fixed income securities with a maximum quality rating of Ba1/BB+ (including defaulted issues), a minimum amount outstanding of USD 100 million, and at least one year to maturity.

² Barclays Capital Fixed Income Indices were formerly the Lehman Brothers Indices.

BARCLAYS CAPITAL BROTHERS MORTGAGE-BACKED SECURITIES INDEX

This index includes 15- and 30-year fixed-rate securities backed by mortgage pools of the Government National Mortgage Association (GNMA), Federal Home Loan Mortgage Corporation (FHLMC), and Federal National Mortgage Association (FNMA).

BARCLAYS CAPITAL GLOBAL AGGREGATE BOND INDEX

This index covers the most-liquid portion of the global investment-grade, fixed-rate bond market, including government, credit, and collateralized securities.

BARCLAYS CAPITAL EMERGING MARKETS INDEX

This index includes fixed- and floating-rate USD-denominated debt from emerging markets.

S&P NATIONAL AMT-FREE MUNICIPAL BOND INDEX

This index is a broad, comprehensive, market-value-weighted index designed to measure the performance of the investment-grade U.S. municipal bonds that are exempt from the Alternative Minimum Tax.

S&P CALIFORNIA AMT-FREE MUNICIPAL BOND INDEX

This index is designed to measure the performance of the investment-grade California municipal bonds that are exempt from the Alternative Minimum Tax.

S&P NEW YORK AMT-FREE MUNICIPAL BOND INDEX

This index is designed to measure the performance of the investment-grade New York bonds that are exempt from the alternative minimum tax.

S&P/LSTA U.S. LEVERAGED LOAN 100 INDEX

This index is designed to reflect the performance of the largest facilities in the floating-rate bank loan, or senior loan, market.

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