

CONTRIBUTOR

Aye M. Soe, CFA
Senior Director
Global Research & Design
aye.soe@spglobal.com

Does Past Performance Matter? The Persistence Scorecard

SUMMARY OF RESULTS

- When it comes to the active versus passive debate, one of the key measurements of successful active management lies in the ability of a manager or a strategy to deliver above-average returns consistently over multiple periods. Demonstrating the ability to outperform peers repeatedly is the only proven way to differentiate a manager's luck from skill.
- According to the S&P Persistence Scorecard, relatively few funds can consistently stay at the top. Out of 641 domestic equity funds that were in the top quartile as of March 2014, only 7.33% managed to stay in the top quartile at the end of March 2016. Furthermore, 8.5% of the large-cap funds, 3.26% of the mid-cap funds, and 0.68% of the small-cap funds remained in the top quartile.
- For the three-year period that ended in March 2016, persistence figures for funds in the top half were mixed. Over three consecutive 12-month periods, 30.36% of large-cap funds, 24.04% of mid-cap funds, and 19.18% of small-cap funds maintained a top-half ranking.
- An inverse relationship generally exists between the measurement time horizon and the ability of top-performing funds to maintain their status. It is worth noting that only 0.78% of large-cap funds and no mid-cap or small-cap funds managed to remain in the top quartile at the end of the five-year measurement period. This figure paints a negative picture regarding the lack of long-term persistence in mutual fund returns.
- Similarly, only 3.7% of large-cap funds, 5.79% of mid-cap funds, and 7.82% of small-cap funds maintained top-half performance over five consecutive 12-month periods. Random expectations would suggest a repeat rate of 6.25%.

- The transition matrices are designed to track the performance of top- and bottom-quartile performers over subsequent time periods. The data show a stronger likelihood for the best-performing funds to become the worst-performing funds than vice versa. Of the 434 funds that were in the bottom quartile, 15.21% moved to the top quartile over the five-year horizon, while 29.49% of the 434 funds that were in the top quartile moved into the bottom quartile during the same period.
- Our research also suggests that there is consistency in the death rate of bottom-quartile funds. Across all market cap categories and all periods studied, fourth-quartile funds had a much higher rate of being merged or liquidated. The five-year transition matrix shows that 32.72% of large-cap funds, 35% of mid-cap funds, and 32.04% of small-cap funds in the fourth quartile disappeared.
- While much has been written about the persistence of equity funds, there is little research on the persistence of fixed income funds. In March 2015, we added a fixed income persistence section.
- Compared with domestic equity funds, there was a higher level of performance persistence among the top-quartile fixed income funds over the three-year period ending March 2016. Intermediate-term government funds, global income funds, and New York municipal funds were the only categories in which the results show no performance persistence.
- Over the five-year measurement horizon, the results show a lack of persistence among nearly all the top-quartile fixed income categories. Funds investing in mortgage-backed securities and general municipal debt funds were the only two groups in which a noticeable level of persistence was observed.

ABOUT THE PERSISTENCE SCORECARD

The phrase “past performance is not an indicator of future outcomes” (or some variation thereof) can be found in the fine print of most mutual fund literature. Yet, due to either force of habit or conviction, investors and advisors consider past performance and related metrics to be important factors in fund selection. So does past performance really matter?

To answer this question on a continuous basis, the S&P Persistence Scorecard, released twice per year, tracks the consistency of top performers over yearly consecutive periods and measures performance persistence through transition matrices. As in our widely followed SPIVA[®] Scorecards, the University of Chicago’s Center for Research in Security Prices (CRSP) Survivorship Bias Free Mutual Fund Database serves as our underlying data source.

S&P Dow Jones Indices is one of the world’s leading index providers, maintaining a wide variety of investable and benchmark indices to meet an array of investor needs. Our Global Research & Design team is dedicated to conducting unbiased, in-depth analysis on a broad range of topics and issues facing investors in today’s marketplace. This scorecard highlights performance persistence over three- and five-year consecutive 12-month periods and two non-overlapping three- and five-year periods.

Key features of the S&P Persistence Scorecard include the following.

- **Historical rankings without survivorship bias:** For anyone making an investment decision, all funds available at the time of that decision are part of the initial opportunity set. Nevertheless, in their persistence calculations, analysts often limit their sample to funds that continue to exist over the complete time period examined, ranking only the survivors. If that happens, funds that liquidate or merge during a period of study are disregarded, biasing measurements of persistence. Using the University of Chicago's CRSP Survivorship Bias Free Mutual Fund Database, the S&P Persistence Scorecard ranks all funds available at each point in time and tracks the top-quartile and top-half performers throughout the time period. This approach accounts for all initially available funds.
- **Clean universe:** The mutual fund universe used in these reports comprises actively managed domestic U.S. equity funds. Index funds, sector funds, and index-based dynamic (bull or bear) funds are excluded from the sample. To avoid double counting multiple share classes, only the share class with the highest previous period return of each fund is used.
- **Transition matrices:** Transition matrices show the movements between quartiles and halves over two non-overlapping, three- and five-year periods. They also track the percentage of funds that have merged or liquidated. In addition, we monitor movements between capitalization levels. This helps us capture, for example, the conversion of some large-cap funds to mid- and small-cap funds.
- **Tracking reports of top performers:** The tracking reports show the percentages of funds that remain in the top-quartile or top-half rankings over consecutive three- and five-year periods.

EXHIBITS

Exhibit 1: Performance Persistence of Domestic Equity Funds Over Three Consecutive 12-Month Periods				
Mutual Fund Category	Fund Count at Start (March 2014)	Percentage Remaining in Top Quartile		
		March 2015		March 2016
Top Quartile				
All Domestic Funds	641	29.80		7.33
Large-Cap Funds	247	43.32		8.50
Mid-Cap Funds	92	22.83		3.26
Small-Cap Funds	146	24.66		0.68
Multi-Cap Funds	156	29.49		4.49
Mutual Fund Category	Fund Count at Start (March 2014)	Percentage Remaining in Top Half		
		March 2015		March 2016
Top Half				
All Domestic Funds	1,281	52.69		27.48
Large-Cap Funds	494	55.47		30.36
Mid-Cap Funds	183	49.18		24.04
Small-Cap Funds	292	52.40		19.18
Multi-Cap Funds	312	50.00		22.76

Source: S&P Dow Jones Indices LLC. Data for periods ending March 31, 2016. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Exhibit 2: Performance Persistence of Domestic Equity Funds Over Five Consecutive 12-Month Periods					
Mutual Fund Category	Fund Count at Start (March 2012)	Percentage Remaining in Top Quartile			
		March 2013	March 2014	March 2015	March 2016
Top Quartile					
All Domestic Funds	664	11.90	2.26	0.75	0.30
Large-Cap Funds	257	15.56	1.95	0.78	0.78
Mid-Cap Funds	95	11.58	3.16	2.11	0.00
Small-Cap Funds	147	23.13	4.08	0.68	0.00
Multi-Cap Funds	165	19.39	4.85	3.03	1.21
Mutual Fund Category	Fund Count at Start (March 2012)	Percentage Remaining in Top Half			
		March 2013	March 2014	March 2015	March 2016
Top Half					
All Domestic Funds	1,328	43.67	18.22	10.39	6.02
Large-Cap Funds	513	37.04	13.65	8.38	3.70
Mid-Cap Funds	190	37.37	16.84	7.89	5.79
Small-Cap Funds	294	51.36	24.83	15.65	7.82
Multi-Cap Funds	331	39.27	17.52	10.27	5.74

Source: S&P Dow Jones Indices LLC. Data for periods ending March 31, 2016. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Exhibit 3: Three-Year Transition Matrix—Performance Over Two Non-Overlapping Three-Year Periods (Based on Quartiles)								
All Domestic Funds	No. of Funds at Start (March 2013)	Three-Year Percentages at End						
		1st Quartile (%)	2nd Quartile (%)	3rd Quartile (%)	4th Quartile (%)	Merged/Liquidated (%)	Style Changed (%)	Total (%)
1st Quartile	593	16.53	21.42	25.80	29.51	6.75	0.00	100
2nd Quartile	594	27.10	23.06	21.89	19.19	8.75	0.00	100
3rd Quartile	593	26.31	21.92	19.90	16.02	15.85	0.00	100
4th Quartile	593	15.18	18.72	17.37	20.40	28.33	0.00	100
Large-Cap Funds								
1st Quartile	223	25.11	22.87	21.08	19.73	4.04	7.17	100
2nd Quartile	223	19.73	21.08	14.80	21.52	13.90	8.97	100
3rd Quartile	222	18.47	16.67	22.07	18.02	13.96	10.81	100
4th Quartile	223	13.45	16.14	18.83	17.49	24.22	9.87	100
Mid-Cap Funds								
1st Quartile	87	18.39	13.79	19.54	27.59	5.75	14.94	100
2nd Quartile	87	28.74	19.54	18.39	13.79	9.20	10.34	100
3rd Quartile	87	18.39	26.44	19.54	11.49	14.94	9.20	100
4th Quartile	87	8.05	13.79	14.94	20.69	22.99	19.54	100
Small-Cap Funds								
1st Quartile	136	33.82	21.32	18.38	20.59	5.88	0.00	100
2nd Quartile	135	19.26	27.41	28.15	16.30	8.15	0.74	100
3rd Quartile	136	16.18	20.59	25.00	25.00	10.29	2.94	100
4th Quartile	135	17.78	17.04	15.56	24.44	20.00	5.19	100
Multi-Cap Funds								
1st Quartile	148	22.97	19.59	20.95	14.19	8.11	14.19	100
2nd Quartile	148	22.97	23.65	17.57	9.46	8.78	17.57	100
3rd Quartile	148	11.49	8.11	13.51	16.22	31.76	18.92	100
4th Quartile	148	4.73	11.49	10.14	22.30	34.46	16.89	100

Source: S&P Dow Jones Indices LLC. Data for periods ending March 31, 2016. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Exhibit 4: Three-Year Transition Matrix—Performance Over Two Non-Overlapping Three-Year Periods (Based on Halves)						
All Domestic Funds	No. of funds at Start (March 2013)	Three-Year Percentages at End				
		Top Half (%)	Bottom Half (%)	Merged/Liquidated (%)	Style Changed (%)	Total (%)
Top Half	1,187	44.06	48.19	7.75	0.00	100
Bottom Half	1,186	41.06	36.85	22.09	0.00	100
Large-Cap Funds						
Top Half	446	44.39	38.57	8.97	8.07	100
Bottom Half	445	32.36	38.20	19.10	10.34	100
Mid-Cap Funds						
Top Half	174	40.23	39.66	7.47	12.64	100
Bottom Half	174	33.33	33.33	18.97	14.37	100
Small-Cap Funds						
Top Half	271	50.92	41.70	7.01	0.37	100
Bottom Half	271	35.79	45.02	15.13	4.06	100
Multi-Cap Funds						
Top Half	296	44.59	31.08	8.45	15.88	100
Bottom Half	296	17.91	31.08	33.11	17.91	100

Source: S&P Dow Jones Indices LLC. Data for periods ending March 31, 2016. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Exhibit 5: Five-Year Transition Matrix—Performance Over Two Non-Overlapping Five-Year Periods (Based on Quartiles)								
All Domestic Funds	No. of Funds at Start (March 2011)	Five-Year Percentages at End						
		1st Quartile (%)	2nd Quartile (%)	3rd Quartile (%)	4th Quartile (%)	Merged/Liquidated (%)	Style Changed (%)	Total (%)
1st Quartile	434	17.28	18.66	22.58	29.49	11.98	0.00	100
2nd Quartile	434	23.96	15.21	18.66	20.05	22.12	0.00	100
3rd Quartile	433	19.17	22.40	19.40	12.47	26.56	0.00	100
4th Quartile	434	15.21	19.35	14.98	13.59	36.87	0.00	100
Large-Cap Funds								
1st Quartile	162	21.60	20.37	16.67	14.20	17.28	9.88	100
2nd Quartile	162	17.90	15.43	12.35	19.75	22.22	12.35	100
3rd Quartile	161	13.04	15.53	17.39	11.80	27.33	14.91	100
4th Quartile	162	9.88	10.49	16.05	16.05	32.72	14.81	100
Mid-Cap Funds								
1st Quartile	60	13.33	11.67	15.00	20.00	18.33	21.67	100
2nd Quartile	60	16.67	20.00	15.00	11.67	13.33	23.33	100
3rd Quartile	60	16.67	20.00	18.33	10.00	21.67	13.33	100
4th Quartile	60	11.67	8.33	10.00	16.67	35.00	18.33	100
Small-Cap Funds								
1st Quartile	103	18.45	17.48	27.18	23.30	9.71	3.88	100
2nd Quartile	103	19.42	19.42	20.39	25.24	11.65	3.88	100
3rd Quartile	102	16.67	22.55	15.69	20.59	21.57	2.94	100
4th Quartile	103	24.27	18.45	15.53	8.74	32.04	0.97	100
Multi-Cap Funds								
1st Quartile	109	16.51	12.84	14.68	17.43	13.76	24.77	100
2nd Quartile	110	13.64	9.09	13.64	10.91	30.00	22.73	100
3rd Quartile	109	11.93	16.51	11.01	9.17	32.11	19.27	100
4th Quartile	109	6.42	11.01	9.17	11.01	44.95	17.43	100

Source: S&P Dow Jones Indices LLC. Data for periods ending March 31, 2016. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Exhibit 6: Five-Year Transition Matrix—Performance Over Two Non-Overlapping Five-Year Periods (Based on Halves)						
All Domestic Funds	No. of Funds at Start (March 2011)	Five-Year Percentages at End				
		Top Half (%)	Bottom Half (%)	Merged/Liquidated (%)	Style Changed (%)	Total (%)
Top Half	868	37.56	45.39	17.05	0.00	100
Bottom Half	867	38.06	30.22	31.72	0.00	100
Large-Cap Funds						
Top Half	324	37.65	31.48	19.75	11.11	100
Bottom Half	323	24.46	30.65	30.03	14.86	100
Mid-Cap Funds						
Top Half	120	30.83	30.83	15.83	22.50	100
Bottom Half	120	28.33	27.50	28.33	15.83	100
Small-Cap Funds						
Top Half	206	37.38	48.06	10.68	3.88	100
Bottom Half	205	40.98	30.24	26.83	1.95	100
Multi-Cap Funds						
Top Half	219	26.03	28.31	21.92	23.74	100
Bottom Half	218	22.94	20.18	38.53	18.35	100

Source: S&P Dow Jones Indices LLC. Data for periods ending March 31, 2016. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Exhibit 7: Performance Persistence of Domestic Fixed Income Funds Over Three Consecutive 12-Month Periods				
Mutual Fund Category	Fund Count at Start (March 2014)	Percentage Remaining in Top Quartile (%)		
		March 2015	March 2016	
Top Quartile				
Government Long Funds	16	6.25	6.25	
Government Intermediate Funds	7	14.29	0.00	
Government Short Funds	10	20.00	10.00	
Investment-Grade Long Funds	25	24.00	4.00	
Investment-Grade Intermediate Funds	60	21.67	5.00	
Investment-Grade Short Funds	19	57.89	26.32	
High-Yield Funds	53	20.75	5.66	
Mortgage-Backed Securities Funds	15	33.33	6.67	
Global Income Funds	30	23.33	0.00	
Emerging Markets Debt Funds	13	53.85	15.38	
General Municipal Debt Funds	20	20.00	10.00	
California Municipal Debt Funds	9	33.33	22.22	
New York Municipal Debt Funds	7	0.00	0.00	
Mutual Fund Category	Fund Count at Start (March 2014)	Percentage Remaining in Top Half (%)		
		March 2015	March 2016	
Top Half				
Government Long Funds	31	38.71	32.26	
Government Intermediate Funds	14	28.57	21.43	
Government Short Funds	20	55.00	30.00	
Investment-Grade Long Funds	50	50.00	16.00	
Investment-Grade Intermediate Funds	120	42.50	16.67	
Investment-Grade Short Funds	38	63.16	36.84	
High-Yield Funds	106	43.40	24.53	
Mortgage-Backed Securities Funds	31	61.29	35.48	
Global Income Funds	60	43.33	8.33	
Emerging Markets Debt Funds	26	73.08	46.15	
General Municipal Debt Funds	40	50.00	30.00	
California Municipal Debt Funds	18	50.00	38.89	
New York Municipal Debt Funds	14	42.86	35.71	

Source: S&P Dow Jones Indices LLC. Data for periods ending March 31, 2016. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Exhibit 8: Performance Persistence of Domestic Fixed Income Funds Over Five Consecutive 12-Month Periods						
Mutual Fund Category	Fund Count at Start (March 2012)	Percentage Remaining in Top Quartile (%)				
		March 2013	March 2014	March 2015	March 2016	
Top Quartile						
Government Long Funds	20	35.00	0.00	0.00	0.00	
Government Intermediate Funds	8	50.00	0.00	0.00	0.00	
Government Short Funds	11	54.55	18.18	9.09	0.00	
Investment-Grade Long Funds	29	41.38	20.69	10.34	0.00	
Investment-Grade Intermediate Funds	69	34.78	10.14	7.25	0.00	
Investment-Grade Short Funds	19	42.11	21.05	15.79	0.00	
High-Yield Funds	50	24.00	20.00	2.00	0.00	
Mortgage-Backed Securities Funds	16	31.25	18.75	18.75	6.25	
Global Income Funds	27	33.33	3.70	0.00	0.00	
Emerging Markets Debt Funds	11	18.18	9.09	9.09	0.00	
General Municipal Debt Funds	19	57.89	15.79	10.53	10.53	
California Municipal Debt Funds	8	50.00	12.50	0.00	0.00	
New York Municipal Debt Funds	7	42.86	14.29	0.00	0.00	
Mutual Fund Category	Fund Count at Start (March 2012)	Percentage Remaining in Top Half (%)				
		March 2013	March 2014	March 2015	March 2016	
Top Half						
Government Long Funds	40	52.50	12.50	10.00	10.00	
Government Intermediate Funds	17	64.71	23.53	23.53	17.65	
Government Short Funds	21	66.67	42.86	42.86	28.57	
Investment-Grade Long Funds	58	50.00	37.93	27.59	8.62	
Investment-Grade Intermediate Funds	139	61.87	27.34	22.30	7.91	
Investment-Grade Short Funds	38	55.26	34.21	31.58	23.68	
High-Yield Funds	101	40.59	26.73	10.89	8.91	
Mortgage-Backed Securities Funds	32	56.25	34.38	25.00	15.63	
Global Income Funds	54	46.30	22.22	16.67	7.41	
Emerging Markets Debt Funds	22	45.45	27.27	27.27	27.27	
General Municipal Debt Funds	37	75.68	40.54	29.73	21.62	
California Municipal Debt Funds	17	70.59	35.29	29.41	29.41	
New York Municipal Debt Funds	15	80.00	26.67	20.00	13.33	

Source: S&P Dow Jones Indices LLC. Data for periods ending March 31, 2016. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Exhibit 9: Three-Year Transition Matrix Over Two Non-Overlapping Three-Year Periods (Based on Quartiles)								
Mutual Fund Category	No. of Funds at Start (March 2013)	Three-Year Percentages at End						
		1st Quartile (%)	2nd Quartile (%)	3rd Quartile (%)	4th Quartile (%)	Merged/Liquidated (%)	Style Changed (%)	Total (%)
Government Long Funds								
1st Quartile	15	46.67	26.67	6.67	6.67	13.33	0.00	100
2nd Quartile	15	40.00	26.67	13.33	0.00	20.00	0.00	100
3rd Quartile	15	0.00	26.67	46.67	20.00	6.67	0.00	100
4th Quartile	15	0.00	0.00	20.00	53.33	26.67	0.00	100
Government Intermediate Funds								
1st Quartile	7	42.86	28.57	0.00	0.00	28.57	0.00	100
2nd Quartile	8	37.50	25.00	25.00	0.00	12.50	0.00	100
3rd Quartile	7	0.00	28.57	14.29	14.29	42.86	0.00	100
4th Quartile	7	0.00	0.00	28.57	71.43	0.00	0.00	100
Government Short Funds								
1st Quartile	9	66.67	22.22	11.11	0.00	0.00	0.00	100
2nd Quartile	9	11.11	44.44	22.22	0.00	22.22	0.00	100
3rd Quartile	9	0.00	11.11	22.22	33.33	33.33	0.00	100
4th Quartile	9	0.00	0.00	22.22	44.44	33.33	0.00	100
Investment-Grade Long Funds								
1st Quartile	26	46.15	11.54	19.23	7.69	15.38	0.00	100
2nd Quartile	27	25.93	33.33	11.11	11.11	18.52	0.00	100
3rd Quartile	26	0.00	30.77	30.77	15.38	23.08	0.00	100
4th Quartile	26	3.85	0.00	11.54	42.31	42.31	0.00	100
Investment-Grade Intermediate Funds								
1st Quartile	63	23.81	12.70	9.52	6.35	47.62	0.00	100
2nd Quartile	63	19.05	30.16	14.29	3.17	33.33	0.00	100
3rd Quartile	62	17.74	20.97	14.52	12.90	33.87	0.00	100
4th Quartile	63	1.59	0.00	23.81	39.68	34.92	0.00	100
Investment-Grade Short Funds								
1st Quartile	17	47.06	17.65	11.76	23.53	0.00	0.00	100
2nd Quartile	17	29.41	23.53	23.53	17.65	5.88	0.00	100
3rd Quartile	17	11.76	35.29	35.29	5.88	11.76	0.00	100
4th Quartile	17	0.00	5.88	17.65	35.29	41.18	0.00	100
High-Yield Funds								
1st Quartile	45	33.33	15.56	20.00	26.67	4.44	0.00	100
2nd Quartile	44	27.27	31.82	15.91	15.91	9.09	0.00	100
3rd Quartile	45	13.33	22.22	35.56	17.78	11.11	0.00	100
4th Quartile	44	15.91	20.45	18.18	29.55	15.91	0.00	100

Source: S&P Dow Jones Indices LLC. Data for periods ending March 31, 2016. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Exhibit 9: Three-Year Transition Matrix Over Two Non-Overlapping Three-Year Periods (Based on Quartiles) (cont.)								
Mutual Fund Category	No. of Funds at Start (March 2013)	Three-Year Percentages at End						
		1st Quartile (%)	2nd Quartile (%)	3rd Quartile (%)	4th Quartile (%)	Merged/Liquidated (%)	Style Changed (%)	Total (%)
Mortgage-Backed Securities Funds								
1st Quartile	14	50.00	14.29	21.43	0.00	14.29	0.00	100
2nd Quartile	15	20.00	40.00	13.33	20.00	6.67	0.00	100
3rd Quartile	14	7.14	14.29	21.43	42.86	14.29	0.00	100
4th Quartile	14	0.00	14.29	21.43	14.29	50.00	0.00	100
Global Income Funds								
1st Quartile	22	27.27	22.73	18.18	18.18	13.64	0.00	100
2nd Quartile	22	18.18	13.64	27.27	22.73	18.18	0.00	100
3rd Quartile	22	31.82	22.73	13.64	18.18	13.64	0.00	100
4th Quartile	22	4.55	27.27	22.73	22.73	22.73	0.00	100
Emerging Markets Debt Funds								
1st Quartile	6	33.33	16.67	16.67	33.33	0.00	0.00	100
2nd Quartile	6	33.33	50.00	16.67	0.00	0.00	0.00	100
3rd Quartile	5	40.00	40.00	0.00	20.00	0.00	0.00	100
4th Quartile	6	0.00	0.00	50.00	50.00	0.00	0.00	100
General Municipal Debt Funds								
1st Quartile	18	44.44	27.78	16.67	0.00	11.11	0.00	100
2nd Quartile	18	33.33	22.22	27.78	5.56	11.11	0.00	100
3rd Quartile	18	11.11	33.33	22.22	33.33	0.00	0.00	100
4th Quartile	18	5.56	11.11	22.22	55.56	5.56	0.00	100
California Municipal Debt Funds								
1st Quartile	9	55.56	11.11	22.22	11.11	0.00	0.00	100
2nd Quartile	8	25.00	25.00	25.00	25.00	0.00	0.00	100
3rd Quartile	9	22.22	33.33	11.11	33.33	0.00	0.00	100
4th Quartile	8	0.00	25.00	50.00	25.00	0.00	0.00	100
New York Municipal Debt Funds								
1st Quartile	7	28.57	28.57	14.29	28.57	0.00	0.00	100
2nd Quartile	7	14.29	42.86	28.57	0.00	14.29	0.00	100
3rd Quartile	6	16.67	16.67	16.67	33.33	16.67	0.00	100
4th Quartile	7	28.57	14.29	28.57	28.57	0.00	0.00	100

Source: S&P Dow Jones Indices LLC. Data for periods ending March 31, 2016. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Exhibit 10: Three-Year Transition Matrix Over Two Non-Overlapping Three-Year Periods (Based on Halves)						
Mutual Fund Category	No. of Funds at Start (March 2013)	Three-Year Percentages at End				
		Top Half (%)	Bottom Half (%)	Merged/Liquidated (%)	Style Changed (%)	Total (%)
Government Long Funds						
Top Half	30	70	13.33	16.67	0.00	100
Bottom Half	30	13.33	70.00	16.67	0.00	100
Government Intermediate Funds						
Top Half	15	66.67	13.33	20.00	0.00	100
Bottom Half	14	14.29	64.29	21.43	0.00	100
Government Short Funds						
Top Half	18	72.22	16.67	11.11	0.00	100
Bottom Half	18	5.56	61.11	33.33	0.00	100
Investment-Grade Long Funds						
Top Half	53	58.49	24.53	16.98	0.00	100
Bottom Half	52	17.31	50.00	32.69	0.00	100
Investment-Grade Intermediate Funds						
Top Half	126	42.86	16.67	40.48	0.00	100
Bottom Half	125	20.00	45.60	34.40	0.00	100
Investment-Grade Short Funds						
Top Half	34	58.82	38.24	2.94	0.00	100
Bottom Half	34	26.47	47.06	26.47	0.00	100
High-Yield Funds						
Top Half	89	53.93	39.33	6.74	0.00	100
Bottom Half	89	35.96	50.56	13.48	0.00	100
Mortgage-Backed Securities Funds						
Top Half	29	62.07	27.59	10.34	0.00	100
Bottom Half	28	17.86	50.00	32.14	0.00	100
Global Income Funds						
Top Half	44	40.91	43.18	15.91	0.00	100
Bottom Half	44	43.18	38.64	18.18	0.00	100
Emerging Markets Debt Funds						
Top Half	12	66.67	33.33	0.00	0.00	100
Bottom Half	11	36.36	63.64	0.00	0.00	100
General Municipal Debt Funds						
Top Half	36	63.89	25.00	11.11	0.00	100
Bottom Half	36	30.56	66.67	2.78	0.00	100
California Municipal Debt Funds						
Top Half	17	58.82	41.18	0.00	0.00	100
Bottom Half	17	41.18	58.82	0.00	0.00	100
New York Municipal Debt Funds						
Top Half	14	57.14	35.71	7.14	0.00	100
Bottom Half	13	38.46	53.85	7.69	0.00	100

Source: S&P Dow Jones Indices LLC. Data for periods ending March 31, 2016. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Exhibit 11: Five-Year Transition Matrix Over Two Non-Overlapping Five-Year Periods (Based on Quartiles)								
Mutual Fund Category	No. of Funds at Start (March 2011)	Five-Year Percentages at End						
		1st Quartile (%)	2nd Quartile (%)	3rd Quartile (%)	4th Quartile (%)	Merged/Liquidated (%)	Style Changed (%)	Total (%)
Government Long Funds								
1st Quartile	11	36.36	27.27	18.18	9.09	9.09	0.00	100
2nd Quartile	10	20.00	20.00	20.00	10.00	30.00	0.00	100
3rd Quartile	11	0.00	9.09	9.09	27.27	54.55	0.00	100
4th Quartile	10	10.00	10.00	20.00	20.00	40.00	0.00	100
Government Intermediate Funds								
1st Quartile	10	30.00	20.00	10.00	10.00	30.00	0.00	100
2nd Quartile	9	22.22	22.22	22.22	11.11	22.22	0.00	100
3rd Quartile	10	10.00	0.00	20.00	10.00	60.00	0.00	100
4th Quartile	9	0.00	11.11	11.11	22.22	55.56	0.00	100
Government Short Funds								
1st Quartile	10	40.00	20.00	20.00	0.00	20.00	0.00	100
2nd Quartile	10	0.00	30.00	10.00	30.00	30.00	0.00	100
3rd Quartile	9	11.11	0.00	11.11	11.11	66.67	0.00	100
4th Quartile	10	10.00	10.00	20.00	20.00	40.00	0.00	100
Investment-Grade Long Funds								
1st Quartile	19	36.84	26.32	10.53	0.00	26.32	0.00	100
2nd Quartile	18	11.11	22.22	16.67	22.22	27.78	0.00	100
3rd Quartile	19	15.79	10.53	15.79	26.32	31.58	0.00	100
4th Quartile	18	0.00	5.56	16.67	16.67	61.11	0.00	100
Investment-Grade Intermediate Funds								
1st Quartile	48	12.50	16.67	14.58	2.08	54.17	0.00	100
2nd Quartile	49	14.29	24.49	14.29	14.29	32.65	0.00	100
3rd Quartile	48	12.50	10.42	16.67	20.83	39.58	0.00	100
4th Quartile	48	18.75	6.25	10.42	20.83	43.75	0.00	100
Investment-Grade Short Funds								
1st Quartile	17	29.41	35.29	5.88	17.65	11.76	0.00	100
2nd Quartile	17	11.76	23.53	29.41	29.41	5.88	0.00	100
3rd Quartile	16	25.00	12.50	18.75	18.75	25.00	0.00	100
4th Quartile	17	11.76	11.76	23.53	11.76	41.18	0.00	100
High-Yield Funds								
1st Quartile	30	23.33	36.67	16.67	13.33	10.00	0.00	100
2nd Quartile	30	26.67	13.33	20.00	30.00	10.00	0.00	100
3rd Quartile	29	13.79	20.69	34.48	20.69	10.34	0.00	100
4th Quartile	30	20.00	16.67	13.33	20.00	30.00	0.00	100

Source: S&P Dow Jones Indices LLC. Data for periods ending March 31, 2016. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Exhibit 11: Five-Year Transition Matrix Over Two Non-Overlapping Five-Year Periods (Based on Quartiles) (cont.)								
Mutual Fund Category	No. of Funds at Start (March 2011)	Five-Year Percentages at End						
		1st Quartile (%)	2nd Quartile (%)	3rd Quartile (%)	4th Quartile (%)	Merged/Liquidated (%)	Style Changed (%)	Total (%)
Mortgage-Backed Securities Funds								
1st Quartile	13	30.77	46.15	7.69	7.69	7.69	0.00	100
2nd Quartile	13	7.69	0.00	46.15	23.08	23.08	0.00	100
3rd Quartile	13	0.00	15.38	15.38	38.46	30.77	0.00	100
4th Quartile	13	38.46	15.38	7.69	7.69	30.77	0.00	100
Global Income Funds								
1st Quartile	13	15.38	23.08	30.77	7.69	23.08	0.00	100
2nd Quartile	13	15.38	23.08	15.38	30.77	15.38	0.00	100
3rd Quartile	12	16.67	16.67	8.33	16.67	41.67	0.00	100
4th Quartile	13	23.08	7.69	15.38	15.38	38.46	0.00	100
Emerging Markets Debt Funds								
1st Quartile	5	0.00	20.00	20.00	60.00	0.00	0.00	100
2nd Quartile	5	60.00	0.00	40.00	0.00	0.00	0.00	100
3rd Quartile	4	25.00	25.00	25.00	0.00	25.00	0.00	100
4th Quartile	5	0.00	40.00	0.00	20.00	40.00	0.00	100
General Municipal Debt Funds								
1st Quartile	17	17.65	11.76	23.53	35.29	11.76	0.00	100
2nd Quartile	18	5.56	44.44	11.11	11.11	27.78	0.00	100
3rd Quartile	17	23.53	11.76	35.29	11.76	17.65	0.00	100
4th Quartile	17	35.29	11.76	11.76	23.53	17.65	0.00	100
California Municipal Debt Funds								
1st Quartile	9	11.11	22.22	33.33	22.22	11.11	0.00	100
2nd Quartile	9	0.00	22.22	0.00	66.67	11.11	0.00	100
3rd Quartile	9	11.11	22.22	55.56	0.00	11.11	0.00	100
4th Quartile	9	66.67	22.22	0.00	0.00	11.11	0.00	100
New York Municipal Debt Funds								
1st Quartile	8	12.50	12.50	62.50	0.00	12.50	0.00	100
2nd Quartile	7	14.29	28.57	0.00	42.86	14.29	0.00	100
3rd Quartile	8	12.50	12.50	12.50	25.00	37.50	0.00	100
4th Quartile	7	42.86	28.57	0.00	14.29	14.29	0.00	100

Source: S&P Dow Jones Indices LLC. Data for periods ending March 31, 2016. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Exhibit 12: Five-Year Transition Matrix Over Two Non-Overlapping Five-Year Periods (Based on Halves)						
Mutual Fund Category	No. of Funds at Start (March 2011)	Five-Year Percentages at End				
		Top Half (%)	Bottom Half (%)	Merged/Liquidated (%)	Style Changed (%)	Total (%)
Government Long Funds						
Top Half	21	52.38	28.57	19.05	0.00	100
Bottom Half	21	14.29	38.10	47.62	0.00	100
Government Intermediate Funds						
Top Half	19	47.37	26.32	26.32	0.00	100
Bottom Half	19	10.53	31.58	57.89	0.00	100
Government Short Funds						
Top Half	20	45.00	30.00	25.00	0.00	100
Bottom Half	19	15.79	31.58	52.63	0.00	100
Investment-Grade Long Funds						
Top Half	37	48.65	24.32	27.03	0.00	100
Bottom Half	37	16.22	37.84	45.95	0.00	100
Investment-Grade Intermediate Funds						
Top Half	97	34.02	22.68	43.30	0.00	100
Bottom Half	96	23.96	34.38	41.67	0.00	100
Investment-Grade Short Funds						
Top Half	34	50.00	41.18	8.82	0.00	100
Bottom Half	33	30.30	36.36	33.33	0.00	100
High-Yield Funds						
Top Half	60	50.00	40.00	10.00	0.00	100
Bottom Half	59	35.59	44.07	20.34	0.00	100
Mortgage-Backed Securities Funds						
Top Half	26	42.31	42.31	15.38	0.00	100
Bottom Half	26	34.62	34.62	30.77	0.00	100
Global Income Funds						
Top Half	26	38.46	42.31	19.23	0.00	100
Bottom Half	25	32.00	28.00	40.00	0.00	100
Emerging Markets Debt Funds						
Top Half	10	40.00	60.00	0.00	0.00	100
Bottom Half	9	44.44	22.22	33.33	0.00	100
General Municipal Debt Funds						
Top Half	35	40.00	40.00	20.00	0.00	100
Bottom Half	34	41.18	41.18	17.65	0.00	100
California Municipal Debt Funds						
Top Half	18	27.78	61.11	11.11	0.00	100
Bottom Half	18	61.11	27.78	11.11	0.00	100
New York Municipal Debt Funds						
Top Half	15	33.33	53.33	13.33	0.00	100
Bottom Half	15	46.67	26.67	26.67	0.00	100

Source: S&P Dow Jones Indices LLC. Data for periods ending March 31, 2016. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

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