
Morningstar Portfolio Risk Scoring

Empirical Analysis

Morningstar, Inc.

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Contents

- 1 Overview
- 2 United States
- 7 Canada
- 10 United Kingdom
- 15 Eurozone
- 20 Australia
- 23 New Zealand

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Overview

In this document we present a wide range of analyses of empirical results from the Morningstar Portfolio Risk Scoring system. We calculate the Morningstar Portfolio Risk Score and Alignment Score for large representative samples of open-end funds in the United States, Canada, the United Kingdom, the eurozone, Australia, and New Zealand. The analysis is organized by country/region as follows:

- Section 1: United States
- Section 2: Canada
- Section 3: United Kingdom
- Section 4: Eurozone
- Section 5: Australia
- Section 6: New Zealand

For each country/region, there are three primary subsections. In subsection “a”, for each Morningstar Category in our sample, we present the average Morningstar Portfolio Risk Score as well as the fifth, 25th, 50th, 75th, and 95th percentiles of the Morningstar Portfolio Risk Score. Subsection “b” does the same thing for the Alignment Score. Finally, in subsection “c”, we look at the stability of the Morningstar Portfolio Risk Score by calculating the MPRS as of July 2017, and then comparing it with the MPRS as of July 2021, utilizing 2021 Morningstar Target Allocation Indexes as of July 2021.

The results are relatively intuitive. Funds in bond-centric categories receive lower-risk scores; funds in equity-centric categories receive higher-risk scores; and funds in niche or sector categories receive even higher-risk scores. Moving to the Alignment Scores, funds from categories representing diversified asset-allocation funds consistently have Excellent (0 to 4) and Good (4 to 8) Alignment Scores, while funds from niche and sector categories have poor Alignment scores. Finally, across the countries/regions, in an out-of-sample test the correlation between the MPRS ranks and the subsequent four-year MPRS were between 80% and 95%. All calculations are based on data as of July 2021.

United States – Section 1a | Morningstar Portfolio Risk Score by Category

For each of the Morningstar Categories with more than 20 funds in our sample of the category, Exhibit 1 presents the average Morningstar Portfolio Risk Score as well as the Morningstar Portfolio Risk at the fifth, 25th, 50th, 75th, and 95th percentiles of the Morningstar Portfolio Risk Score within each category.

Exhibit 1 United States | Morningstar Portfolio Risk Score by Category

Category	#Funds	Morningstar Portfolio Risk Score					
		Avg	5%	25%	50%	75%	95%
US Fund Allocation--15% to 30% Equity	50	36	22	29	35	42	52
US Fund Allocation--30% to 50% Equity	115	52	34	45	50	58	73
US Fund Allocation--50% to 70% Equity	181	69	55	62	66	72	94
US Fund Allocation--70% to 85% Equity	76	86	69	80	85	91	105
US Fund Allocation--85%+ Equity	46	101	85	94	100	105	119
US Fund Bank Loan	52	45	35	39	43	49	58
US Fund Commodities Broad Basket	25	109	87	93	101	113	164
US Fund Corporate Bond	42	40	24	36	42	46	50
US Fund Diversified Emerging Mkts	182	140	116	136	141	147	158
US Fund Emerging Markets Bond	65	74	53	65	76	84	93
US Fund Energy Limited Partnership	21	216	139	186	211	240	291
US Fund Financial	24	150	121	136	144	166	184
US Fund Foreign Large Blend	182	111	90	104	110	117	128
US Fund Foreign Large Growth	95	104	82	96	104	111	125
US Fund Foreign Large Value	78	122	93	111	121	134	151
US Fund Foreign Small/Mid Blend	23	124	117	120	123	127	136
US Fund Foreign Small/Mid Growth	41	117	99	111	116	125	136
US Fund Global Real Estate	46	106	92	98	105	112	129
US Fund Health	32	108	85	90	99	114	160
US Fund High Yield Bond	163	51	29	46	51	57	72
US Fund High Yield Muni	49	36	25	32	36	40	47
US Fund Inflation-Protected Bond	44	24	11	20	22	24	50
US Fund Infrastructure	20	88	81	83	86	91	101
US Fund Intermediate Core Bond	119	20	13	19	20	22	24
US Fund Intermediate Core-Plus Bond	134	24	16	20	23	26	35
US Fund Intermediate Government	54	16	10	12	14	19	25
US Fund Large Blend	354	101	86	95	98	104	119
US Fund Large Growth	323	107	92	99	104	110	126
US Fund Large Value	294	110	85	101	109	118	134
US Fund Long-Short Equity	72	75	40	59	73	87	120
US Fund Macro Trading	25	47	20	30	49	56	79
US Fund Mid-Cap Blend	109	122	99	113	121	128	159
US Fund Mid-Cap Growth	146	122	103	110	117	125	163
US Fund Mid-Cap Value	100	132	111	122	130	139	169
US Fund Money Market - Tax-Free	63	0	0	0	0	0	0
US Fund Money Market - Taxable	154	0	0	0	0	0	0
US Fund Multisector Bond	75	43	22	30	39	47	71
US Fund Multistrategy	37	44	21	29	40	51	83
US Fund Muni California Intermediate	23	20	13	18	20	22	27
US Fund Muni California Long	24	27	22	24	26	28	31
US Fund Muni National Interm	89	21	14	18	20	24	28
US Fund Muni National Long	41	27	21	23	26	28	35
US Fund Muni National Short	61	11	1	8	10	13	18
US Fund Muni Single State Interm	53	17	14	15	17	18	21
US Fund Muni Single State Long	59	20	17	19	20	22	24
US Fund Natural Resources	20	172	103	142	153	186	243
US Fund Nontraditional Bond	81	36	16	23	31	42	75
US Fund Options Trading	29	56	38	46	57	63	77
US Fund Prime Money Market	72	0	0	0	0	0	1
US Fund Real Estate	55	104	90	99	101	110	125

Source: Morningstar. Continued to next page.

Exhibit 1 United States | Morningstar Portfolio Risk Score by Category

Category	Morningstar Portfolio Risk Score Percentile						
	#Funds	Avg	5%	25%	50%	75%	95%
US Fund Short Government	30	8	5	6	7	9	13
US Fund Short-Term Bond	132	15	6	9	12	17	31
US Fund Small Blend	181	139	122	131	139	145	161
US Fund Small Growth	158	137	115	128	134	142	172
US Fund Small Value	111	154	125	142	152	164	186
US Fund Systematic Trend	22	83	45	78	82	94	118
US Fund Tactical Allocation	81	74	37	57	70	85	132
US Fund Target-Date 2000-2010	26	40	31	35	40	46	51
US Fund Target-Date 2015	29	46	38	41	46	50	56
US Fund Target-Date 2020	39	52	42	48	52	57	64
US Fund Target-Date 2025	48	60	49	56	60	65	70
US Fund Target-Date 2030	47	69	59	66	70	75	79
US Fund Target-Date 2035	47	78	67	74	78	84	89
US Fund Target-Date 2040	47	86	72	82	86	91	96
US Fund Target-Date 2045	47	91	79	87	92	95	97
US Fund Target-Date 2050	47	93	83	90	93	97	99
US Fund Target-Date 2055	47	94	84	91	94	98	100
US Fund Target-Date 2060	40	94	85	91	95	98	100
US Fund Target-Date Retirement	34	34	23	26	34	41	49
US Fund Technology	46	131	104	114	123	134	168
US Fund Trading--Inverse Equity	30	191	98	146	185	225	316
US Fund Trading--Leveraged Equity	45	217	137	169	205	250	352
US Fund Ultrashort Bond	70	7	0	3	6	10	19
US Fund World Allocation	87	77	60	67	75	85	103
US Fund World Bond	46	39	16	30	35	46	70
US Fund World Bond-USD Hedged	23	21	5	16	21	23	39
US Fund World Large-Stock Blend	80	100	76	91	101	108	127
US Fund World Large-Stock Growth	70	103	87	94	101	110	130
US Fund World Large-Stock Value	49	112	79	95	107	122	158
US Fund World Small/Mid Stock	34	126	105	117	127	135	157

Source: Morningstar. Continued to next page.

United States – Section 1b | Alignment Score by Category

For each Morningstar Category in our sample with at least 20 funds, Exhibit 2 presents the average Alignment Score as well as the Alignment Score at the fifth, 25th, 50th, 75th, and 95th percentiles of the Alignment Score. The Alignment Score measures the mismatch between funds and the asset-allocation benchmarks that the MPRS uses to assess their risk. These mismatches are due to both asset-allocation misfit and idiosyncratic risk. Notice categories like Energy Limited Partnership or Inverse Equity have much higher alignment scores than the Allocation categories.

Exhibit 2 United States | Alignment Score by Category

Category	Alignment Score					
	Avg	5%	25%	50%	75%	95%
US Fund Allocation--15% to 30% Equity	6	1	2	4	7	15
US Fund Allocation--30% to 50% Equity	5	1	2	3	7	15
US Fund Allocation--50% to 70% Equity	6	1	2	3	7	16
US Fund Allocation--70% to 85% Equity	6	1	1	3	7	19
US Fund Allocation--85%+ Equity	5	1	1	2	5	19
US Fund Bank Loan	20	16	17	19	22	27
US Fund Commodities Broad Basket	51	40	45	47	49	86
US Fund Corporate Bond	15	9	13	16	17	19
US Fund Diversified Emerging Mkts	48	35	45	48	51	58
US Fund Emerging Markets Bond	33	22	30	34	37	43
US Fund Energy Limited Partnership	102	50	76	95	121	168
US Fund Financial	43	20	26	34	53	85
US Fund Foreign Large Blend	18	13	15	17	20	23
US Fund Foreign Large Growth	17	11	14	15	19	28
US Fund Foreign Large Value	24	16	19	22	26	44
US Fund Foreign Small/Mid Blend	18	14	15	17	19	30
US Fund Foreign Small/Mid Growth	22	14	17	20	25	33
US Fund Global Real Estate	34	27	31	34	36	42
US Fund Health	49	32	34	42	59	89
US Fund High Yield Bond	16	10	12	14	18	28
US Fund High Yield Muni	27	19	24	26	30	35
US Fund Inflation-Protected Bond	15	6	8	11	13	21
US Fund Infrastructure	29	23	27	28	30	37
US Fund Intermediate Core Bond	15	9	12	14	18	20
US Fund Intermediate Core-Plus Bond	12	7	9	10	14	20
US Fund Intermediate Government	15	10	11	14	19	25
US Fund Large Blend	7	2	3	5	8	17
US Fund Large Growth	17	5	10	14	20	38
US Fund Large Value	13	6	9	11	15	26
US Fund Long-Short Equity	32	8	18	26	40	75
US Fund Macro Trading	23	7	12	22	27	55
US Fund Mid-Cap Blend	18	9	12	16	18	38
US Fund Mid-Cap Growth	27	11	16	21	29	73
US Fund Mid-Cap Value	22	13	17	19	23	39
US Fund Money Market - Tax-Free	0	0	0	0	0	0
US Fund Money Market - Taxable	0	0	0	0	0	0
US Fund Multisector Bond	17	8	11	14	18	34
US Fund Multistrategy	16	5	8	11	18	40
US Fund Muni California Intermediate	15	10	14	16	18	20
US Fund Muni California Long	20	18	18	20	21	24
US Fund Muni National Interm	16	11	14	16	18	21
US Fund Muni National Long	21	17	19	21	22	25
US Fund Muni National Short	8	1	5	7	10	14
US Fund Muni Single State Interm	14	11	13	14	15	17
US Fund Muni Single State Long	16	14	15	16	17	19
US Fund Natural Resources	57	19	33	41	67	116
US Fund Nontraditional Bond	19	8	12	15	23	45
US Fund Options Trading	13	5	6	9	17	32
US Fund Prime Money Market	0	0	0	0	0	0
US Fund Real Estate	46	40	44	46	48	52

Source: Morningstar. Continued on next page.

Exhibit 2 United States | Alignment Score by Category

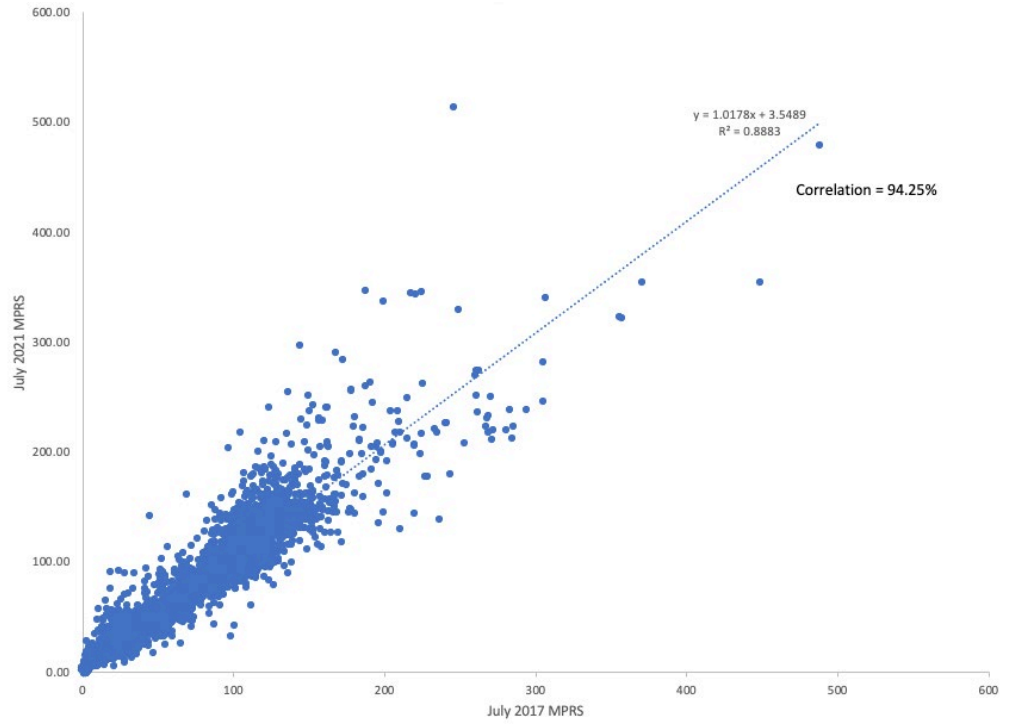
Category	Alignment Score Percentile					
	Avg	5%	25%	50%	75%	95%
US Fund Short Government	6	2	4	6	8	12
US Fund Short-Term Bond	8	3	5	7	9	19
US Fund Small Blend	28	17	23	26	31	47
US Fund Small Growth	38	19	26	32	43	75
US Fund Small Value	41	27	32	38	46	65
US Fund Systematic Trend	61	25	34	63	71	107
US Fund Tactical Allocation	19	4	10	14	24	42
US Fund Target-Date 2000-2010	2	0	1	2	2	3
US Fund Target-Date 2015	2	0	1	2	2	3
US Fund Target-Date 2020	2	1	1	2	3	4
US Fund Target-Date 2025	2	1	1	2	2	4
US Fund Target-Date 2030	2	1	1	1	2	3
US Fund Target-Date 2035	1	0	1	1	2	3
US Fund Target-Date 2040	1	1	1	1	2	3
US Fund Target-Date 2045	2	1	1	1	2	3
US Fund Target-Date 2050	2	1	1	1	2	3
US Fund Target-Date 2055	2	1	1	1	2	3
US Fund Target-Date 2060	2	1	1	2	2	3
US Fund Target-Date Retirement	2	0	1	2	3	3
US Fund Technology	39	17	23	28	46	81
US Fund Trading--Inverse Equity	199	102	159	192	239	332
US Fund Trading--Leveraged Equity	93	27	48	75	112	233
US Fund Ultrashort Bond	4	0	1	3	6	10
US Fund World Allocation	11	3	4	8	16	25
US Fund World Bond	19	8	14	17	25	34
US Fund World Bond-USD Hedged	12	4	9	10	15	19
US Fund World Large-Stock Blend	7	1	4	5	8	20
US Fund World Large-Stock Growth	13	3	7	9	14	36
US Fund World Large-Stock Value	17	7	10	15	20	37
US Fund World Small/Mid Stock	27	10	16	19	36	59

Source: Morningstar.

United States – Section 1c | Out-of-Sample Risk Score Analysis

Exhibit 3 compares the MPRS as of July 2017 with the MPRS as of July 2021.

Exhibit 3 United States | Four-Year Out-of-Sample Analysis



Source: Morningstar.

Canada – Section 2a | Morningstar Portfolio Risk Score by Category

For each of the Categories as determined by the Canadian Investment Funds Standards Committee, or CIFSC, at least 20 funds in our sample in Exhibit 4 present the average Morningstar Portfolio Risk Score as well as the fifth, 25th, 50th, 75th, and 95th percentiles of the Morningstar Portfolio Risk Score within each category.

Exhibit 4 Canada | Morningstar Portfolio Risk Score by Category

Category	#Funds	Morningstar Portfolio Risk Score Percentile					
		Avg	5%	25%	50%	75%	95%
Canada Fund Canadian Fixed Income Balanced	92	35	19	26	34	40	55
Canada Fund Canadian Neutral Balanced	81	61	50	55	60	66	78
Canada Fund Canadian Equity Balanced	60	79	62	69	77	88	105
Canada Fund Global Fixed Income Balanced	88	39	25	32	37	44	51
Canada Fund Global Neutral Balanced	193	59	43	52	59	64	78
Canada Fund Global Equity Balanced	186	77	57	69	78	84	99
Canada Fund Alternative Equity Focused	23	129	65	95	115	149	231
Canada Fund Canadian Dividend & Income Equity	83	104	82	98	106	113	123
Canada Fund Canadian Equity	129	112	92	102	109	116	142
Canada Fund Canadian Fixed Income	114	23	16	21	23	24	29
Canada Fund Canadian Focused Equity	94	106	88	97	102	112	136
Canada Fund Canadian Money Market	61	0	0	0	0	0	1
Canada Fund Canadian Short Term Fixed Income	56	10	2	7	8	10	20
Canada Fund Canadian Small/Mid Cap Equity	54	149	123	138	145	154	170
Canada Fund Emerging Markets Equity	49	144	123	140	143	150	162
Canada Fund European Equity	30	113	85	101	114	117	140
Canada Fund Global Corporate Fixed Income	21	39	18	35	39	47	52
Canada Fund Global Equity	258	103	76	93	100	110	134
Canada Fund Global Fixed Income	76	28	13	20	26	37	50
Canada Fund Global Infrastructure Equity	16	88	76	85	88	90	102
Canada Fund Global Small/Mid Cap Equity	35	127	96	119	125	130	168
Canada Fund High Yield Fixed Income	70	56	27	44	54	69	79
Canada Fund International Equity	102	106	85	93	106	115	131
Canada Fund Miscellaneous - Income and Real Property	23	62	22	42	65	84	98
Canada Fund Natural Resources Equity	25	204	138	160	191	232	316
Canada Fund North American Equity	21	104	84	93	101	110	126
Canada Fund Real Estate Equity	22	98	88	91	96	104	112
Canada Fund Sector Equity	21	117	83	92	120	127	166
Canada Fund Tactical Balanced	65	57	31	45	59	68	83
Canada Fund US Equity	221	109	87	99	105	117	137
Canada Fund US Small/Mid Cap Equity	33	135	112	123	134	146	163

Source: Morningstar.

Canada – Section 2b | Alignment Score by Category

For each of the Categories as determined by the Canadian Investment Funds Standards Committee, or CIFSC, with more than at least 20 funds, Exhibit 5 presents the average Alignment Score as well as the fifth, 25th, 50th, 75th, and 95th percentiles of the Alignment Score.

Exhibit 5 Canada | Alignment Score by Category

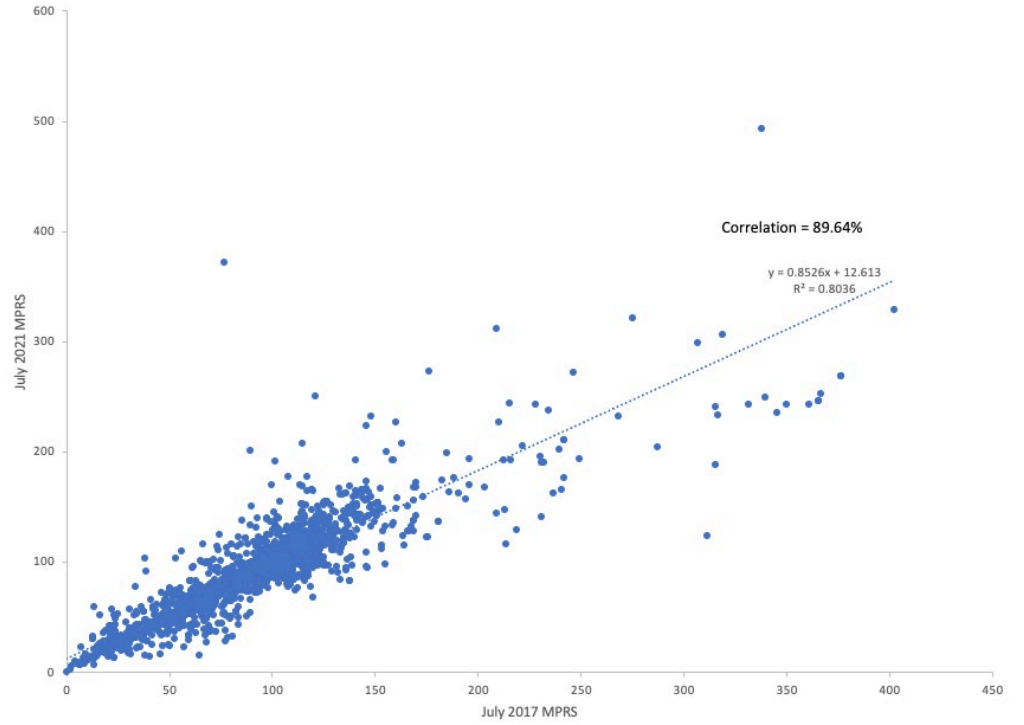
Category	Alignment Score Percentile					
	Avg	5%	25%	50%	75%	95%
Canada Fund Canadian Fixed Income Balanced	5	2	3	3	5	10
Canada Fund Canadian Neutral Balanced	6	3	4	5	8	11
Canada Fund Canadian Equity Balanced	10	4	6	8	11	27
Canada Fund Global Fixed Income Balanced	7	3	4	5	6	13
Canada Fund Global Neutral Balanced	9	4	5	6	10	21
Canada Fund Global Equity Balanced	11	5	6	7	11	33
Canada Fund Alternative Equity Focused	54	23	26	39	67	148
Canada Fund Canadian Dividend & Income Equity	17	10	12	15	18	27
Canada Fund Canadian Equity	17	7	9	11	16	34
Canada Fund Canadian Fixed Income	9	5	8	10	11	13
Canada Fund Canadian Focused Equity	17	6	8	15	21	41
Canada Fund Canadian Money Market	0	0	0	0	0	0
Canada Fund Canadian Short Term Fixed Income	5	1	3	4	5	11
Canada Fund Canadian Small/Mid Cap Equity	44	27	31	41	48	65
Canada Fund Emerging Markets Equity	66	54	62	65	68	77
Canada Fund European Equity	32	20	22	30	33	50
Canada Fund Global Corporate Fixed Income	19	7	11	15	22	36
Canada Fund Global Equity	23	7	14	20	26	51
Canada Fund Global Fixed Income	18	6	8	13	23	42
Canada Fund Global Infrastructure Equity	37	27	32	39	41	45
Canada Fund Global Small/Mid Cap Equity	31	16	19	23	37	59
Canada Fund High Yield Fixed Income	22	12	17	22	26	36
Canada Fund International Equity	24	16	20	22	26	42
Canada Fund Miscellaneous - Income and Real Property	25	6	13	23	27	68
Canada Fund Natural Resources Equity	94	30	55	68	111	244
Canada Fund North American Equity	29	14	17	22	37	73
Canada Fund Real Estate Equity	39	31	36	37	40	50
Canada Fund Sector Equity	59	29	36	54	69	94
Canada Fund Tactical Balanced	13	5	8	12	16	29
Canada Fund US Equity	31	18	22	27	35	52
Canada Fund US Small/Mid Cap Equity	38	27	31	37	40	52

Source: Morningstar.

Canada – Section 2c | Out-of-Sample Risk Score Analysis

Exhibit 6 compares the MPRS as of July 2017 with the MPRS as of July 2021.

Exhibit 6 Canada | Four-Year Out-of-Sample MPRS Analysis



Source: Morningstar.

United Kingdom – Section 3a | Morningstar Portfolio Risk Score by Category

For each of the Morningstar Categories with more than 20 funds, Exhibit 7 presents the average Morningstar Portfolio Risk Score as well as the fifth, 25th, 50th, 75th, and 95th percentiles of the Morningstar Portfolio Risk Score within each category.

Exhibit 7 United Kingdom | Morningstar Portfolio Risk Score by Category

Category	# Funds	Morningstar Portfolio Risk Score Percentile					
		Avg	5%	25%	50%	75%	95%
EAA Fund GBP Cautious Allocation	27	35	13	29	34	40	62
EAA Fund GBP Moderately Cautious Allocation	133	44	22	34	44	53	63
EAA Fund GBP Moderate Allocation	258	65	44	57	65	73	87
EAA Fund GBP Moderately Adventurous Allocation	242	81	64	74	80	88	100
EAA Fund GBP Adventurous Allocation	152	98	73	88	98	106	120
EAA Fund GBP Flexible Allocation	103	69	37	51	67	85	108
EAA Fund Asia Bond	22	59	52	55	58	61	69
EAA Fund Asia ex-Japan Equity	75	141	123	134	142	149	158
EAA Fund Asia-Pacific ex-Japan Equity	63	132	102	127	133	141	153
EAA Fund Asia-Pacific ex-Japan Equity Income	24	121	108	116	122	126	132
EAA Fund China Equity	51	155	133	149	154	160	175
EAA Fund EUR Cautious Allocation - Global	33	50	35	41	51	54	72
EAA Fund EUR Corporate Bond	70	48	40	46	48	51	55
EAA Fund EUR Diversified Bond	41	44	39	41	43	46	49
EAA Fund EUR Diversified Bond - Short Term	20	37	37	37	37	37	37
EAA Fund EUR Flexible Allocation - Global	45	62	35	52	63	75	83
EAA Fund EUR Flexible Bond	20	51	34	45	48	56	67
EAA Fund EUR Government Bond	29	46	44	45	46	46	48
EAA Fund EUR High Yield Bond	48	70	50	64	70	76	89
EAA Fund EUR Moderate Allocation - Global	38	68	45	58	65	74	95
EAA Fund Europe ex-UK Equity	109	128	108	121	127	134	152
EAA Fund Europe ex-UK Small/Mid-Cap Equity	20	146	122	129	148	156	168
EAA Fund Europe Flex-Cap Equity	33	124	100	116	124	133	150
EAA Fund Europe Large-Cap Blend Equity	83	116	96	110	117	122	136
EAA Fund Europe Large-Cap Growth Equity	30	109	92	100	110	117	124
EAA Fund Europe Small-Cap Equity	36	141	117	135	141	150	162
EAA Fund Eurozone Large-Cap Equity	41	143	122	137	141	148	166
EAA Fund GBP Corporate Bond	100	43	24	37	42	47	70
EAA Fund GBP Diversified Bond	35	34	19	26	36	38	56
EAA Fund GBP Government Bond	44	46	4	42	43	46	79
EAA Fund GBP Inflation-Linked Bond	21	67	11	70	76	82	84
EAA Fund GBP Money Market - Short Term	29	1	0	0	1	1	2
EAA Fund Global Bond	64	51	39	47	52	55	60
EAA Fund Global Bond - EUR Hedged	23	45	35	42	46	48	50
EAA Fund Global Bond - USD Hedged	30	57	50	54	57	60	62
EAA Fund Global Corporate Bond - USD Hedged	22	60	47	59	61	62	65
EAA Fund Global Emerging Markets Bond	97	87	58	77	87	97	111
EAA Fund Global Emerging Markets Bond - Local Currency	60	87	69	84	88	93	100
EAA Fund Global Emerging Markets Corporate Bond	44	78	59	68	75	85	102
EAA Fund Global Emerging Markets Equity	225	144	122	138	145	153	164
EAA Fund Global Equity Income	81	97	78	87	96	106	120
EAA Fund Global Flex-Cap Equity	63	117	89	103	112	127	168
EAA Fund Global Flexible Bond	48	55	28	48	58	65	76
EAA Fund Global Flexible Bond - EUR Hedged	26	52	31	44	49	63	77
EAA Fund Global Flexible Bond - GBP Hedged	56	39	11	26	36	52	63
EAA Fund Global Flexible Bond - USD Hedged	37	55	45	51	55	58	66
EAA Fund Global High Yield Bond	52	66	55	59	65	72	83

Source: Morningstar. Continued on next page.

Exhibit 7 United Kingdom | Morningstar Portfolio Risk Score by Category

Category	#Funds	Morningstar Portfolio Risk Score					
		Avg	5%	25%	50%	75%	95%
EAA Fund Global Large-Cap Blend Equity	294	101	83	96	100	107	120
EAA Fund Global Large-Cap Growth Equity	134	105	87	94	102	113	136
EAA Fund Global Large-Cap Value Equity	43	112	92	100	111	121	143
EAA Fund Global Small/Mid-Cap Equity	32	134	113	125	131	142	168
EAA Fund India Equity	44	172	144	167	174	180	189
EAA Fund Japan Large-Cap Equity	107	100	86	92	99	106	118
EAA Fund Japan Small/Mid-Cap Equity	23	127	106	112	125	141	153
EAA Fund Latin America Equity	26	231	217	228	232	240	246
EAA Fund Long/Short Equity - Other	20	82	42	77	82	90	117
EAA Fund Multistrategy USD	24	58	46	50	55	66	75
EAA Fund Other Allocation	134	79	40	67	80	94	118
EAA Fund Other Bond	113	69	39	54	68	75	125
EAA Fund Other Equity	55	123	87	101	111	147	185
EAA Fund Property - Direct UK	43	37	37	37	37	37	37
EAA Fund Property - Indirect Global	54	104	91	99	104	110	118
EAA Fund Sector Equity Ecology	20	116	104	110	114	118	130
EAA Fund Sector Equity Healthcare	24	108	90	97	103	112	153
EAA Fund Sector Equity Infrastructure	27	99	76	89	95	105	141
EAA Fund Sector Equity Natural Resources	21	151	126	132	141	154	212
EAA Fund Sector Equity Precious Metals	20	253	234	240	250	263	276
EAA Fund Sector Equity Technology	37	134	111	120	130	144	159
EAA Fund UK Equity Income	95	114	86	104	112	124	141
EAA Fund UK Flex-Cap Equity	87	125	93	111	124	138	164
EAA Fund UK Large-Cap Equity	140	106	94	100	104	111	128
EAA Fund UK Small-Cap Equity	64	140	111	131	140	150	165
EAA Fund US Flex-Cap Equity	26	132	99	112	127	135	182
EAA Fund US Large-Cap Blend Equity	120	108	94	103	106	110	133
EAA Fund US Large-Cap Growth Equity	66	116	97	105	111	120	140
EAA Fund US Large-Cap Value Equity	45	111	93	104	110	116	133
EAA Fund US Mid-Cap Equity	24	132	117	127	130	139	149
EAA Fund US Small-Cap Equity	35	149	131	138	145	161	182
EAA Fund USD Aggressive Allocation	28	79	62	74	80	85	95
EAA Fund USD Cautious Allocation	26	53	41	47	50	57	67
EAA Fund USD Corporate Bond	25	62	54	61	63	65	68
EAA Fund USD Diversified Bond	21	60	57	58	60	61	64
EAA Fund USD Diversified Bond - Short Term	24	47	45	45	45	48	53
EAA Fund USD Flexible Allocation	34	70	49	57	65	82	95
EAA Fund USD High Yield Bond	53	60	44	57	61	64	76
EAA Fund USD Moderate Allocation	57	65	51	58	63	69	83

Source: Morningstar.

United Kingdom – Section 3b | Alignment Score by Category

For each Morningstar Category with more than 20 funds in our sample, Exhibit 8 presents the average Alignment Score as well as the fifth, 25th, 50th, 75th, and 95th percentiles of the Alignment Score.

Exhibit 8 United Kingdom | Alignment Score by Category

Category	#Funds	Alignment Score					
		Avg	5%	25%	50%	75%	95%
EAA Fund GBP Cautious Allocation	27	6	2	3	5	7	15
EAA Fund GBP Moderately Cautious Allocation	133	7	2	4	6	8	14
EAA Fund GBP Moderate Allocation	258	9	3	5	7	11	21
EAA Fund GBP Moderately Adventurous Allocation	242	9	3	5	7	11	22
EAA Fund GBP Adventurous Allocation	152	11	3	6	9	13	22
EAA Fund GBP Flexible Allocation	103	13	5	8	12	17	25
EAA Fund Asia Bond	22	47	41	44	46	51	55
EAA Fund Asia ex-Japan Equity	75	54	44	48	51	56	70
EAA Fund Asia-Pacific ex-Japan Equity	63	39	23	35	39	44	50
EAA Fund Asia-Pacific ex-Japan Equity Income	24	29	20	23	27	34	42
EAA Fund China Equity	51	81	68	74	80	86	106
EAA Fund EUR Cautious Allocation - Global	33	21	14	17	20	24	32
EAA Fund EUR Corporate Bond	70	28	25	27	28	29	30
EAA Fund EUR Diversified Bond	41	35	29	34	35	37	40
EAA Fund EUR Diversified Bond - Short Term	20	24	24	24	24	24	24
EAA Fund EUR Flexible Allocation - Global	45	23	11	15	21	26	40
EAA Fund EUR Flexible Bond	20	29	22	25	26	31	37
EAA Fund EUR Government Bond	29	47	41	46	47	48	52
EAA Fund EUR High Yield Bond	48	25	22	23	25	27	29
EAA Fund EUR Moderate Allocation - Global	38	15	8	9	13	18	29
EAA Fund Europe ex-UK Equity	109	23	15	19	21	25	35
EAA Fund Europe ex-UK Small/Mid-Cap Equity	20	34	23	26	34	41	50
EAA Fund Europe Flex-Cap Equity	33	24	14	18	24	28	35
EAA Fund Europe Large-Cap Blend Equity	83	18	12	14	16	19	31
EAA Fund Europe Large-Cap Growth Equity	30	21	15	18	20	22	36
EAA Fund Europe Small-Cap Equity	36	32	24	27	31	35	47
EAA Fund Eurozone Large-Cap Equity	41	29	20	24	26	30	41
EAA Fund GBP Corporate Bond	100	21	7	14	16	20	51
EAA Fund GBP Diversified Bond	35	25	6	10	17	30	53
EAA Fund GBP Government Bond	44	74	2	60	63	69	145
EAA Fund GBP Inflation-Linked Bond	21	103	7	110	122	132	137
EAA Fund GBP Money Market - Short Term	29	0	0	0	0	0	1
EAA Fund Global Bond	64	49	17	42	49	59	69
EAA Fund Global Bond - EUR Hedged	23	37	26	34	38	42	50
EAA Fund Global Bond - USD Hedged	30	56	41	49	56	63	68
EAA Fund Global Corporate Bond - USD Hedged	22	52	41	52	53	54	58
EAA Fund Global Emerging Markets Bond	97	47	38	43	45	49	58
EAA Fund Global Emerging Markets Bond - Local Currency	60	49	41	47	49	51	57
EAA Fund Global Emerging Markets Corporate Bond	44	48	44	45	47	49	55
EAA Fund Global Emerging Markets Equity	225	45	32	40	45	51	59
EAA Fund Global Equity Income	81	14	6	10	12	17	25
EAA Fund Global Flex-Cap Equity	63	26	8	13	20	32	69
EAA Fund Global Flexible Bond	48	38	10	32	41	44	48
EAA Fund Global Flexible Bond - EUR Hedged	26	28	23	26	28	29	34
EAA Fund Global Flexible Bond - GBP Hedged	56	15	7	10	14	19	25
EAA Fund Global Flexible Bond - USD Hedged	37	42	37	39	42	44	50
EAA Fund Global High Yield Bond	52	36	28	34	35	39	41

Source: Morningstar. Continued on next page.

Exhibit 8 United Kingdom | Alignment Score by Category

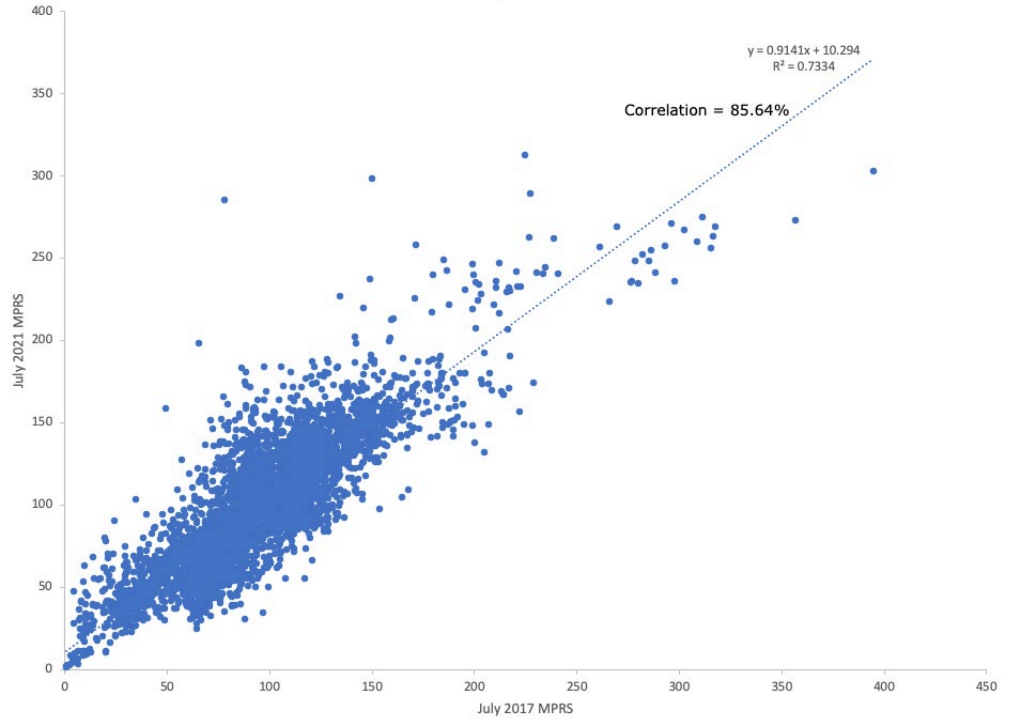
Category	#Funds	Alignment Score Percentile					
		Avg	5%	25%	50%	75%	95%
EAA Fund Global Large-Cap Blend Equity	294	11	3	7	9	14	25
EAA Fund Global Large-Cap Growth Equity	134	22	9	13	19	26	49
EAA Fund Global Large-Cap Value Equity	43	16	5	10	14	19	32
EAA Fund Global Small/Mid-Cap Equity	32	27	13	15	17	25	70
EAA Fund India Equity	44	95	75	90	94	102	110
EAA Fund Japan Large-Cap Equity	107	41	29	34	37	47	62
EAA Fund Japan Small/Mid-Cap Equity	23	64	49	57	63	68	81
EAA Fund Latin America Equity	26	113	102	109	114	118	127
EAA Fund Long/Short Equity - Other	20	63	23	42	47	67	138
EAA Fund Multistrategy USD	24	47	32	38	44	57	66
EAA Fund Other Allocation	134	13	3	6	10	15	35
EAA Fund Other Bond	113	44	22	31	40	52	74
EAA Fund Other Equity	55	35	8	22	29	45	75
EAA Fund Property - Direct UK	43	16	16	16	16	16	16
EAA Fund Property - Indirect Global	54	37	30	34	36	39	46
EAA Fund Sector Equity Ecology	20	20	13	14	18	24	32
EAA Fund Sector Equity Healthcare	24	52	39	43	46	56	93
EAA Fund Sector Equity Infrastructure	27	35	24	29	33	37	49
EAA Fund Sector Equity Natural Resources	21	47	20	31	38	54	92
EAA Fund Sector Equity Precious Metals	20	185	169	176	188	193	205
EAA Fund Sector Equity Technology	37	44	22	31	38	55	77
EAA Fund UK Equity Income	95	28	15	20	25	36	47
EAA Fund UK Flex-Cap Equity	87	32	17	22	30	40	52
EAA Fund UK Large-Cap Equity	140	20	13	15	17	24	34
EAA Fund UK Small-Cap Equity	64	49	36	43	48	52	67
EAA Fund US Flex-Cap Equity	26	36	12	23	29	46	84
EAA Fund US Large-Cap Blend Equity	120	17	9	13	17	20	24
EAA Fund US Large-Cap Growth Equity	66	31	14	20	25	35	63
EAA Fund US Large-Cap Value Equity	45	19	11	15	18	21	30
EAA Fund US Mid-Cap Equity	24	30	20	24	29	34	41
EAA Fund US Small-Cap Equity	35	43	27	30	37	52	83
EAA Fund USD Aggressive Allocation	28	12	5	8	10	14	23
EAA Fund USD Cautious Allocation	26	28	20	24	29	33	35
EAA Fund USD Corporate Bond	25	55	46	50	56	60	61
EAA Fund USD Diversified Bond	21	63	56	59	62	66	73
EAA Fund USD Diversified Bond - Short Term	24	42	39	40	41	43	46
EAA Fund USD Flexible Allocation	34	25	10	18	25	30	42
EAA Fund USD High Yield Bond	53	36	32	34	35	36	42
EAA Fund USD Moderate Allocation	57	20	9	13	16	25	35

Source: Morningstar.

United Kingdom – Section 3c | Out-of-Sample Risk Score Analysis

Exhibit 9 compares the MPRS as of July 2017 with the MPRS as of July 2021.

Exhibit 9 United Kingdom | Four-Year Out-of-Sample MPRS Analysis



Source: Morningstar.

Eurozone – Section 4a | Morningstar Portfolio Risk Score by Category

For each of the Morningstar Categories with more than 20 funds, we present the average Morningstar Portfolio Risk Score as well as the fifth, 25th, 50th, 75th, and 95th percentiles of the Morningstar Portfolio Risk Score within each category.

Exhibit 10 Eurozone | Morningstar Portfolio Risk Score by Category

Category	#Funds	Morningstar Portfolio Risk Score Percentile					
		Avg	5%	25%	50%	75%	95%
EAA Fund EUR Cautious Allocation	467	34	9	24	33	44	61
EAA Fund EUR Moderate Allocation	303	62	35	51	60	71	96
EAA Fund EUR Aggressive Allocation	194	88	59	75	86	100	122
EAA Fund EUR Cautious Allocation - Global	758	36	10	26	34	43	62
EAA Fund EUR Moderate Allocation - Global	809	58	33	49	57	66	87
EAA Fund EUR Aggressive Allocation - Global	476	85	58	73	83	94	114
EAA Fund EUR Flexible Allocation	327	73	32	54	69	89	125
EAA Fund EUR Flexible Allocation - Global	1210	68	29	50	64	81	118
EAA Fund Global Emerging Markets Allocation	30	95	63	78	98	108	126
EAA Fund Other Allocation	2502	63	24	42	56	76	117
EAA Fund Alternative Other	55	95	4	52	80	112	215
EAA Fund Asia ex-Japan Equity	36	127	107	121	127	133	142
EAA Fund Asia-Pacific Equity	52	104	90	95	102	109	129
EAA Fund Capital Protected	212	39	9	19	35	50	93
EAA Fund Commodities - Broad Basket	29	111	70	97	113	123	157
EAA Fund Convertible Bond - Europe	76	44	35	39	43	46	59
EAA Fund Convertible Bond - Global, EUR Hedged	66	61	41	49	61	68	83
EAA Fund Emerging Europe Equity	37	156	140	146	155	165	176
EAA Fund Equity Market Neutral EUR	44	70	12	17	37	57	227
EAA Fund EUR Bond - Long Term	26	78	38	54	63	98	149
EAA Fund EUR Corporate Bond	283	29	10	25	30	34	43
EAA Fund EUR Corporate Bond - Short Term	71	13	4	7	10	15	33
EAA Fund EUR Diversified Bond	469	19	6	10	18	24	39
EAA Fund EUR Diversified Bond - Short Term	228	8	2	4	6	9	24
EAA Fund EUR Flexible Bond	187	32	7	19	30	45	60
EAA Fund EUR Government Bond	196	20	6	12	22	24	32
EAA Fund EUR Government Bond - Short Term	33	11	2	2	3	6	50
EAA Fund EUR High Yield Bond	125	56	33	51	56	63	76
EAA Fund EUR Inflation-Linked Bond	45	24	10	13	30	31	40
EAA Fund EUR Money Market	176	1	0	0	1	1	6
EAA Fund EUR Money Market - Short Term	81	1	0	0	0	0	4
EAA Fund EUR Subordinated Bond	58	60	40	48	58	69	83
EAA Fund EUR Ultra Short-Term Bond	166	4	0	2	3	5	8
EAA Fund Europe Equity Income	67	112	95	100	110	119	142
EAA Fund Europe ex-UK Equity	24	104	88	99	104	112	123
EAA Fund Europe Flex-Cap Equity	134	120	91	104	118	133	156
EAA Fund Europe Large-Cap Blend Equity	405	105	83	98	104	112	132
EAA Fund Europe Large-Cap Growth Equity	76	94	78	88	91	99	109
EAA Fund Europe Large-Cap Value Equity	63	125	97	109	126	134	160
EAA Fund Europe Mid-Cap Equity	56	120	91	113	118	129	146
EAA Fund Europe Small-Cap Equity	102	135	107	124	134	143	165
EAA Fund Eurozone Flex-Cap Equity	57	121	91	104	116	133	173
EAA Fund Eurozone Large-Cap Equity	367	114	89	107	116	122	140
EAA Fund Eurozone Mid-Cap Equity	41	123	109	116	122	130	143
EAA Fund Eurozone Small-Cap Equity	43	132	103	121	133	142	154
EAA Fund Event Driven	21	57	8	21	38	72	142
EAA Fund Finland Equity	25	123	113	116	122	125	138
EAA Fund Fixed Term Bond	182	36	5	12	31	53	89
EAA Fund France Equity	113	123	104	116	124	129	140
EAA Fund France Small/Mid-Cap Equity	86	135	110	123	134	145	166
EAA Fund Germany Equity	51	132	104	124	131	139	154
EAA Fund Germany Small/Mid-Cap Equity	26	125	73	115	128	142	162
EAA Fund Global Bond	93	26	9	18	26	31	41
EAA Fund Global Bond - EUR Biased	74	20	6	11	18	26	49
EAA Fund Global Bond - EUR Hedged	63	20	5	14	18	24	41

Source: Morningstar. Continued on next page.

Exhibit 10 Eurozone | Morningstar Portfolio Risk Score by Category

Category	#Funds	Morningstar Portfolio Risk Score					
		Avg	5%	25%	50%	75%	95%
EAA Fund Global Corporate Bond - EUR Hedged	26	36	14	30	36	40	48
EAA Fund Global Emerging Markets Bond	25	64	25	55	60	76	87
EAA Fund Global Emerging Markets Bond - EUR Biased	68	67	34	57	70	77	90
EAA Fund Global Emerging Markets Bond - Local Currency	34	65	41	58	67	76	85
EAA Fund Global Emerging Markets Corporate Bond - EUR	23	57	33	42	53	60	104
EAA Fund Global Emerging Markets Equity	179	132	116	127	132	137	152
EAA Fund Global Equity Income	54	96	71	85	97	106	118
EAA Fund Global Flex-Cap Equity	120	119	86	102	114	129	169
EAA Fund Global Flexible Bond	37	33	8	18	33	48	58
EAA Fund Global Flexible Bond - EUR Hedged	90	37	9	21	36	47	77
EAA Fund Global High Yield Bond - EUR Hedged	64	58	37	52	59	65	80
EAA Fund Global Inflation-Linked Bond - EUR Hedged	28	24	6	10	31	33	35
EAA Fund Global Large-Cap Blend Equity	541	99	77	92	99	106	118
EAA Fund Global Large-Cap Growth Equity	120	101	78	91	100	108	122
EAA Fund Global Large-Cap Value Equity	41	115	82	104	113	120	146
EAA Fund Global Small/Mid-Cap Equity	36	139	104	116	126	154	190
EAA Fund Greece Equity	20	174	139	164	180	186	192
EAA Fund Guaranteed Funds	252	26	6	9	18	35	73
EAA Fund Italy Equity	46	135	117	130	135	143	150
EAA Fund Japan Large-Cap Equity	58	98	85	90	94	106	116
EAA Fund Long/Short Equity - Europe	47	68	16	49	65	86	122
EAA Fund Long/Short Equity - Global	28	69	31	45	67	91	109
EAA Fund Long/Short Equity - Other	29	102	43	59	75	104	151
EAA Fund Macro Trading EUR	76	60	8	26	37	50	164
EAA Fund Multistrategy EUR	102	40	9	23	35	47	103
EAA Fund Options Trading	31	94	18	44	62	81	275
EAA Fund Other	160	54	4	19	43	74	132
EAA Fund Other Bond	184	51	6	18	43	64	125
EAA Fund Other Equity	145	112	69	94	112	128	167
EAA Fund Property - Direct Europe	47	76	2	6	92	119	178
EAA Fund Property - Indirect Europe	37	116	96	106	116	124	142
EAA Fund Property - Indirect Eurozone	21	109	85	96	110	119	129
EAA Fund Property - Indirect Global	28	112	96	106	114	117	132
EAA Fund Sector Equity Consumer Goods & Services	30	106	80	91	106	118	138
EAA Fund Sector Equity Ecology	65	111	89	98	104	117	152
EAA Fund Sector Equity Financial Services	20	158	126	136	147	178	198
EAA Fund Sector Equity Healthcare	43	100	77	86	95	109	136
EAA Fund Sector Equity Natural Resources	36	163	117	138	153	178	235
EAA Fund Sector Equity Precious Metals	32	231	193	223	228	240	270
EAA Fund Sector Equity Technology	51	119	99	110	117	127	146
EAA Fund Spain Equity	77	139	112	128	137	143	174
EAA Fund Systematic Trend EUR	32	81	17	44	60	85	186
EAA Fund Target Date 2021 - 2025	38	33	7	24	31	39	71
EAA Fund Target Date 2026 - 2030	27	59	35	45	61	68	88
EAA Fund Target Date 2031 - 2035	24	76	48	69	76	91	101
EAA Fund US Large-Cap Blend Equity	115	105	94	102	104	109	119
EAA Fund US Large-Cap Growth Equity	20	115	98	105	112	118	131
EAA Fund US Large-Cap Value Equity	22	115	96	103	110	121	162

Source: Morningstar.

Eurozone – Section 4b | Alignment Score by Category

For each Morningstar Category with at least 20 funds in our sample, Exhibit 11 presents the average Alignment Score as well as the fifth, 25th, 50th, 75th, and 95th percentiles of the Alignment Scores.

Exhibit 11 Eurozone | Alignment Score by Category

Category	#Funds	Alignment Score					
		Avg	5%	25%	50%	75%	95%
EAA Fund EUR Cautious Allocation	467	7	2	4	6	9	17
EAA Fund EUR Moderate Allocation	303	8	2	4	6	10	23
EAA Fund EUR Aggressive Allocation	194	11	2	4	7	12	32
EAA Fund EUR Cautious Allocation - Global	758	8	2	4	6	9	18
EAA Fund EUR Moderate Allocation - Global	809	9	2	4	7	11	21
EAA Fund EUR Aggressive Allocation - Global	476	11	2	4	8	13	29
EAA Fund EUR Flexible Allocation	327	15	3	7	12	18	39
EAA Fund EUR Flexible Allocation - Global	1210	17	3	7	12	20	46
EAA Fund Global Emerging Markets Allocation	30	36	17	31	37	40	51
EAA Fund Other Allocation	2502	13	3	5	8	12	34
EAA Fund Alternative Other	55	52	2	16	28	56	135
EAA Fund Asia ex-Japan Equity	36	57	44	49	57	60	79
EAA Fund Asia-Pacific Equity	52	26	13	17	24	32	46
EAA Fund Capital Protected	212	14	5	10	13	17	27
EAA Fund Commodities - Broad Basket	29	63	28	50	60	74	88
EAA Fund Convertible Bond - Europe	76	10	7	8	9	11	17
EAA Fund Convertible Bond - Global, EUR Hedged	66	20	11	14	19	23	32
EAA Fund Emerging Europe Equity	37	48	36	44	47	53	60
EAA Fund Equity Market Neutral EUR	44	63	10	11	30	38	234
EAA Fund EUR Bond - Long Term	26	134	57	97	115	179	245
EAA Fund EUR Corporate Bond	283	11	4	9	11	13	16
EAA Fund EUR Corporate Bond - Short Term	71	6	2	4	5	7	14
EAA Fund EUR Diversified Bond	469	10	2	4	8	15	25
EAA Fund EUR Diversified Bond - Short Term	228	4	1	2	3	5	9
EAA Fund EUR Flexible Bond	187	12	4	7	11	16	23
EAA Fund EUR Government Bond	196	19	3	7	22	26	37
EAA Fund EUR Government Bond - Short Term	33	15	0	1	2	3	87
EAA Fund EUR High Yield Bond	125	17	10	14	16	20	24
EAA Fund EUR Inflation-Linked Bond	45	15	4	6	16	19	23
EAA Fund EUR Money Market	176	1	0	0	0	0	4
EAA Fund EUR Money Market - Short Term	81	1	0	0	0	0	4
EAA Fund EUR Subordinated Bond	58	19	12	15	19	23	29
EAA Fund EUR Ultra Short-Term Bond	166	2	0	1	2	3	4
EAA Fund Europe Equity Income	67	10	4	6	8	11	20
EAA Fund Europe ex-UK Equity	24	8	3	4	7	12	16
EAA Fund Europe Flex-Cap Equity	134	18	5	10	15	23	38
EAA Fund Europe Large-Cap Blend Equity	405	8	2	4	6	9	21
EAA Fund Europe Large-Cap Growth Equity	76	13	5	8	12	16	24
EAA Fund Europe Large-Cap Value Equity	63	12	3	7	11	14	28
EAA Fund Europe Mid-Cap Equity	56	19	9	12	17	24	33
EAA Fund Europe Small-Cap Equity	102	30	14	22	27	35	51
EAA Fund Eurozone Flex-Cap Equity	57	18	6	9	14	24	47
EAA Fund Eurozone Large-Cap Equity	367	10	4	7	8	11	23
EAA Fund Eurozone Mid-Cap Equity	41	19	11	13	17	20	40
EAA Fund Eurozone Small-Cap Equity	43	27	12	19	28	33	42
EAA Fund Event Driven	21	29	8	12	19	34	66
EAA Fund Finland Equity	25	30	23	26	28	31	40
EAA Fund Fixed Term Bond	182	27	3	7	12	21	141
EAA Fund France Equity	113	12	7	10	11	13	21
EAA Fund France Small/Mid-Cap Equity	86	30	15	18	30	38	47
EAA Fund Germany Equity	51	20	10	13	18	23	37
EAA Fund Germany Small/Mid-Cap Equity	26	31	18	23	30	36	50
EAA Fund Global Bond	93	18	4	12	16	25	33
EAA Fund Global Bond - EUR Biased	74	9	2	4	7	12	22
EAA Fund Global Bond - EUR Hedged	63	11	3	6	9	15	26

Source: Morningstar. Continued on next page.

Exhibit 11 Eurozone | Alignment Score by Category

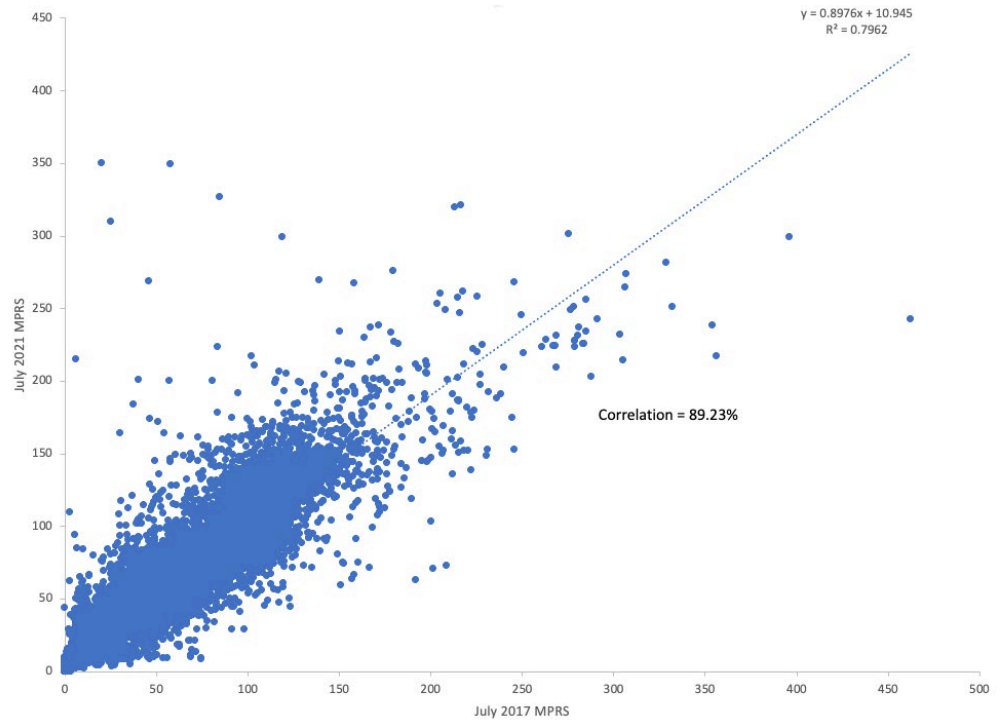
Category	#Funds	Alignment Score Percentile					
		Avg	5%	25%	50%	75%	95%
EAA Fund Global Corporate Bond - EUR Hedged	26	15	6	12	14	17	22
EAA Fund Global Emerging Markets Bond	25	33	15	27	33	36	42
EAA Fund Global Emerging Markets Bond - EUR Biased	68	33	16	29	33	36	45
EAA Fund Global Emerging Markets Bond - Local Currency	34	37	26	32	39	42	48
EAA Fund Global Emerging Markets Corporate Bond - EUR	23	25	15	19	23	27	45
EAA Fund Global Emerging Markets Equity	179	53	37	51	53	56	63
EAA Fund Global Equity Income	54	11	4	7	10	14	20
EAA Fund Global Flex-Cap Equity	120	24	6	10	19	30	63
EAA Fund Global Flexible Bond	37	14	5	7	14	19	31
EAA Fund Global Flexible Bond - EUR Hedged	90	16	5	9	14	18	32
EAA Fund Global High Yield Bond - EUR Hedged	64	19	11	15	18	22	28
EAA Fund Global Inflation-Linked Bond - EUR Hedged	28	24	3	5	20	39	44
EAA Fund Global Large-Cap Blend Equity	541	10	2	5	8	13	24
EAA Fund Global Large-Cap Growth Equity	120	20	8	12	16	22	43
EAA Fund Global Large-Cap Value Equity	41	17	5	10	12	19	43
EAA Fund Global Small/Mid-Cap Equity	36	35	14	21	26	42	76
EAA Fund Greece Equity	20	71	49	68	73	76	86
EAA Fund Guaranteed Funds	252	13	3	6	10	14	30
EAA Fund Italy Equity	46	26	18	22	25	28	37
EAA Fund Japan Large-Cap Equity	58	37	28	31	34	38	55
EAA Fund Long/Short Equity - Europe	47	29	15	17	28	37	51
EAA Fund Long/Short Equity - Global	28	27	11	18	23	32	53
EAA Fund Long/Short Equity - Other	29	59	14	20	29	49	109
EAA Fund Macro Trading EUR	76	38	6	10	15	23	69
EAA Fund Multistrategy EUR	102	18	6	10	14	20	47
EAA Fund Options Trading	31	62	7	10	17	42	268
EAA Fund Other	160	18	3	6	11	15	52
EAA Fund Other Bond	184	33	3	10	18	29	117
EAA Fund Other Equity	145	28	6	13	21	36	76
EAA Fund Property - Direct Europe	47	120	1	4	104	224	269
EAA Fund Property - Indirect Europe	37	41	35	39	41	44	50
EAA Fund Property - Indirect Eurozone	21	41	23	40	44	44	48
EAA Fund Property - Indirect Global	28	38	27	35	38	42	46
EAA Fund Sector Equity Consumer Goods & Services	30	25	10	16	21	31	53
EAA Fund Sector Equity Ecology	65	22	8	11	14	22	47
EAA Fund Sector Equity Financial Services	20	42	19	23	35	56	75
EAA Fund Sector Equity Healthcare	43	48	28	35	46	55	82
EAA Fund Sector Equity Natural Resources	36	62	20	27	55	77	150
EAA Fund Sector Equity Precious Metals	32	189	143	179	194	201	225
EAA Fund Sector Equity Technology	51	35	16	24	29	41	65
EAA Fund Spain Equity	77	31	16	23	29	33	50
EAA Fund Systematic Trend EUR	32	65	8	25	54	75	164
EAA Fund Target Date 2021 - 2025	38	7	2	5	6	8	14
EAA Fund Target Date 2026 - 2030	27	5	2	3	4	6	12
EAA Fund Target Date 2031 - 2035	24	7	2	2	4	7	28
EAA Fund US Large-Cap Blend Equity	115	15	9	10	12	16	35
EAA Fund US Large-Cap Growth Equity	20	28	12	14	25	33	47
EAA Fund US Large-Cap Value Equity	22	19	10	11	17	23	38

Source: Morningstar.

Eurozone – Section 4c | Out-of-Sample Risk Score Analysis

Exhibit 12 compares the MPRS as of July 2017 with the MPRS as of July 2021.¹

Exhibit 12 Eurozone | Four-Year Out-of-Sample MPRS Analysis



Source: Morningstar.

¹ Four of the 11,189 funds are not visible due to the axis settings.

Australia – Section 5a | Morningstar Portfolio Risk Score by Category

For each of the Morningstar Categories with at least 20 funds, in our sample we present the average Morningstar Portfolio Risk Score as well as the fifth, 25th, 50th, 75th, and 95th percentiles of the Morningstar Portfolio Risk Score within each category.

Exhibit 13 Australia | Morningstar Portfolio Risk Score by Category

Category	#Funds	Avg	Morningstar Portfolio Risk Score Percentile				
			5%	25%	50%	75%	95%
Australia Fund Multisector Conservative	16	19	8	11	16	28	33
Australia Fund Multisector Balanced	85	57	43	51	56	61	76
Australia Fund Multisector Growth	119	72	60	67	72	77	92
Australia Fund Multisector Aggressive	90	92	80	84	91	99	111
Australia Fund Multisector Flexible	36	47	17	29	53	59	78
Australia Fund Alternative Strategies	32	104	7	60	92	130	226
Australia Fund Australian Cash	33	0	0	0	0	1	2
Australia Fund Australian Short Term Fixed Interest	27	3	0	0	1	3	9
Australia Fund Bonds - Australia	64	22	8	21	23	24	30
Australia Fund Bonds - Global	37	27	16	22	23	30	49
Australia Fund Bonds - Global / Australia	33	16	6	16	17	20	21
Australia Fund Diversified Credit	44	16	5	9	11	25	36
Australia Fund Equity Australia Large Blend	171	124	104	119	122	128	143
Australia Fund Equity Australia Large Growth	37	133	114	122	131	137	153
Australia Fund Equity Australia Large Value	60	130	109	121	127	139	153
Australia Fund Equity Australia Mid/Small Blend	59	151	120	137	150	167	184
Australia Fund Equity Australia Mid/Small Growth	25	152	137	141	150	159	187
Australia Fund Equity Australia Real Estate	68	159	145	150	158	162	183
Australia Fund Equity Emerging Markets	35	98	82	88	95	102	118
Australia Fund Equity Global Infrastructure - Currency Hedged	29	122	102	109	111	117	132
Australia Fund Equity Global Real Estate	39	136	120	132	136	140	146
Australia Fund Equity World - Currency Hedged	54	124	97	118	125	130	151
Australia Fund Equity World Large Blend	139	99	81	90	99	105	127
Australia Fund Equity World Large Growth	42	97	81	86	96	103	126
Australia Fund Equity World Large Value	31	110	84	96	103	109	143
Australia Fund Multisector Moderate	73	33	23	29	31	38	45
Australia Fund Multi-Strategy Income	40	28	5	7	22	44	57

Source: Morningstar.

Australia – Section 5b | Alignment Score by Category

For each Morningstar Category with at least 20 funds in our sample, Exhibit 14 presents the average Alignment Score as well as at the fifth, 25th, 50th, 75th, and 95th percentiles of the Alignment Score.

Exhibit 14 Australia | Alignment Score by Category

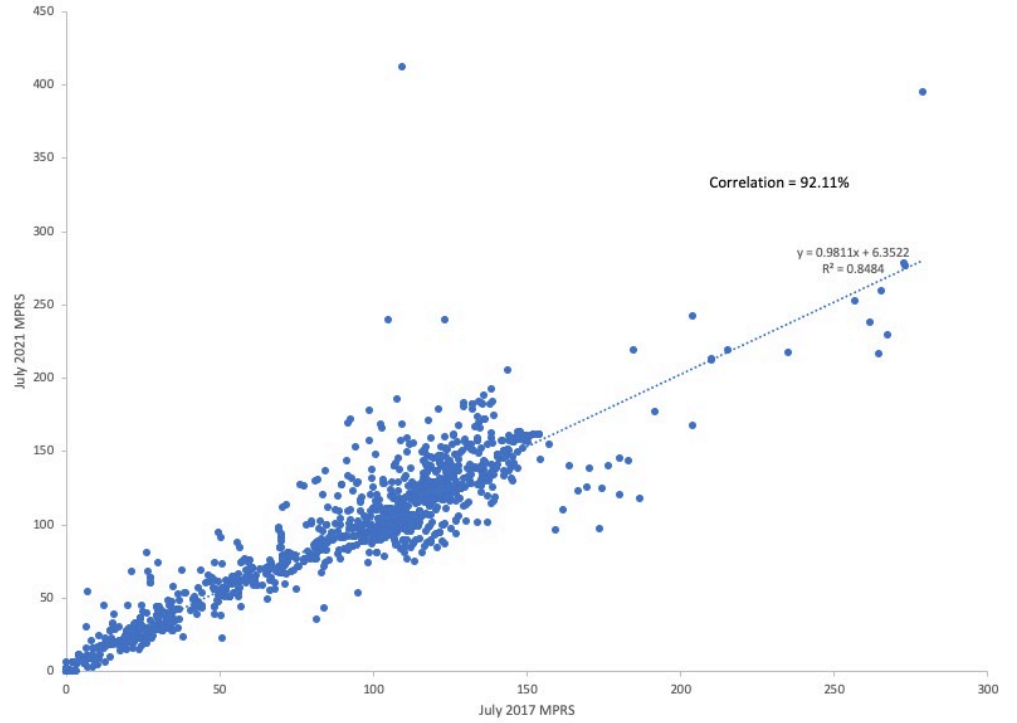
Category	# Funds	Avg	Alignment Score Percentile				
			5%	25%	50%	75%	95%
Australia Fund Multisector Conservative	16	4	2	3	4	4	9
Australia Fund Multisector Balanced	85	6	1	2	4	6	18
Australia Fund Multisector Growth	119	5	1	2	3	5	18
Australia Fund Multisector Aggressive	90	5	1	1	2	5	21
Australia Fund Multisector Flexible	36	12	3	8	10	15	22
Australia Fund Alternative Strategies	32	62	5	19	45	71	144
Australia Fund Australian Cash	33	0	0	0	0	0	0
Australia Fund Australian Short Term Fixed Interest	27	2	0	0	0	2	8
Australia Fund Bonds - Australia	64	22	3	16	23	26	39
Australia Fund Bonds - Global	37	21	10	15	18	22	34
Australia Fund Bonds - Global / Australia	33	8	3	5	7	10	16
Australia Fund Diversified Credit	44	10	4	6	10	14	20
Australia Fund Equity Australia Large Blend	171	22	13	16	18	24	44
Australia Fund Equity Australia Large Growth	37	33	15	19	26	33	60
Australia Fund Equity Australia Large Value	60	25	15	20	24	26	35
Australia Fund Equity Australia Mid/Small Blend	59	51	30	38	44	60	78
Australia Fund Equity Australia Mid/Small Growth	25	50	35	41	45	51	92
Australia Fund Equity Australia Real Estate	68	69	59	61	67	71	89
Australia Fund Equity Emerging Markets	35	58	43	51	56	66	73
Australia Fund Equity Global Infrastructure - Currency Hedged	29	57	32	38	43	46	80
Australia Fund Equity Global Real Estate	39	47	35	40	42	47	81
Australia Fund Equity World - Currency Hedged	54	31	24	26	27	34	43
Australia Fund Equity World Large Blend	139	36	22	30	33	40	55
Australia Fund Equity World Large Growth	42	42	24	33	37	44	71
Australia Fund Equity World Large Value	31	40	25	32	35	39	53
Australia Fund Multisector Moderate	73	6	1	2	3	6	14
Australia Fund Multi-Strategy Income	40	15	3	5	15	23	26

Source: Morningstar.

Australia – Section 5c | Out-of-Sample Risk Score Analysis

Exhibit 15 compares the MPRS as of July 2017 with the MPRS as of July 2021.

Exhibit 15 Australia | Four-Year Out-of-Sample MPRS Analysis



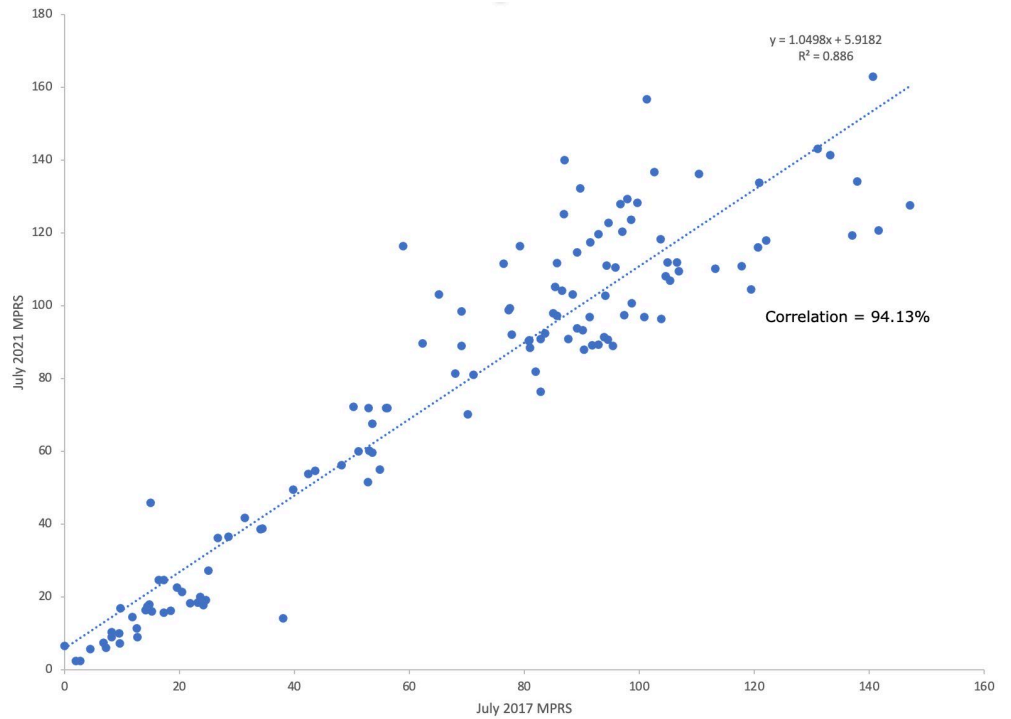
Source: Morningstar.

New Zealand – Section 6c | Out-of-Sample Risk Score Analysis

New Zealand has a very small fund universe with 218 funds in our sample and only two categories in our sample with 20 funds. As such, we are not displaying the results for the distribution of MPRS and Alignment Scores by Category (sections 6a and 6b).

Exhibit 16 compares the MPRS as of July 2017 with the MPRS as of July 2021.

Exhibit 16 New Zealand | Four-Year Out-of-Sample MPRS Analysis



Source: Morningstar.



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