
Morningstar's Active/Passive Barometer

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Morningstar Manager Research

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Executive Summary

The Morningstar Active/Passive Barometer is a semiannual report that measures the performance of U.S. active funds against passive peers in their respective Morningstar Categories.

The Active/Passive Barometer uses several unique ways to measure active managers' success.

- ▶ It evaluates active funds not versus a costless index, but against a composite of actual passive funds. In this way, the "benchmark" reflects the actual, net-of-fee performance of passive funds.
- ▶ It assesses active funds based on their beginning-of-period category classification, to better simulate the funds an investor would have had to choose from at the time.
- ▶ It considers how the average dollar invested in various types of active funds has fared versus the average dollar in the passive composite.
- ▶ It examines trends in active-fund success by fee level.

The Active/Passive Barometer is also comprehensive, spanning approximately 3,600 unique active and passive U.S. funds that account for approximately \$11.1 trillion in assets, or about 61% of the U.S. fund market.

All told, the Active/Passive Barometer is a useful measuring stick that can help investors better calibrate the odds of succeeding with active funds in different areas based on recent trends and longer-term history.

Key Takeaways

- ▶ U.S. stock-pickers' success rate increased sharply in 2017, as 43% of active managers categorized in one of the nine segments of the U.S. Morningstar Style Box both survived and outperformed their average passive peer. In 2016, just 26% of active managers achieved this feat.
- ▶ The turnaround was most pronounced among small-cap managers. In 2016, the combined success rate of active managers in the small blend, small growth, and small value categories was 29%. In 2017, 48% of small-cap managers outstripped their average index-tracking counterparts.
- ▶ When compared with 2016, active funds' success improved in 11 of the 12 categories we examined in 2017 (see Exhibit 2).
- ▶ The one-year success rate among active foreign equity funds spiked higher relative to year-end 2016. About 55% of active funds in the foreign large-blend and diversified emerging-markets categories beat their composite passive benchmarks in 2017, versus 36% in 2016.
- ▶ Value managers saw some of the most meaningful increases in their short-term success rates. Active stock-pickers in the large-, mid-, and small-cap value categories experienced year-over-year upticks in their trailing one-year success rates of 15.0, 20.2, and 34.2 percentage points, respectively.
- ▶ Active funds in the intermediate-term bond category were the only ones among the dozen categories featured here to experience a decline in their success rate in 2017. Still, 61.4% of active funds in the category survived and outperformed their average passive peers in 2017. Active managers in the category have been rewarded handsomely for assuming credit risk as both investment-grade and below-investment-grade credits have enjoyed a sustained rally. This is evident in their success rates over the trailing one-, three-, five-, and 10-year periods through the end of 2017.
- ▶ Though 2017 marked a clear near-term improvement in active managers' success rates, in general, actively managed funds have failed to survive and beat their benchmarks, especially over longer time horizons.
- ▶ The average dollar in passively managed funds typically outperforms the average dollar invested in actively managed funds.
- ▶ Investors would greatly improve their odds of success by favoring low-cost funds, which succeeded far more often than high-cost funds over the long term.

- ▶ Low-cost funds' above-average success rates are partly explained by their higher survivorship rates. The 20-year survivorship rate of active funds in the least-expensive fee quartile of the large-, mid-, and small-blend categories was 49% through 2017. Meanwhile, just 31% of the funds in the most-expensive quartile of the same categories survived.
- ▶ Long-term success rates were generally higher among U.S. small-cap, U.S. mid-cap, foreign-stock, and intermediate-term bond funds, and lowest among U.S. large-cap funds.
- ▶ Stylistic headwinds and tailwinds explain some of the short-term fluctuations in active-fund success. The ebb and flow of active managers' beat rates tends to be very noisy over short time horizons.

Exhibit 1 Active Funds' Success Rates by Category (%)

Category	1-Year	3-Year	5-Year	10-Year	15-Year	20-Year	10-Year (Lowest Cost)	10-Year (Highest Cost)
U.S. Large Blend	37.5	15.0	17.1	11.2	11.7	13.4	17.5	4.0
U.S. Large Value	35.2	14.1	21.1	10.1	20.8	—	13.8	8.5
U.S. Large Growth	43.5	30.5	13.6	7.5	7.5	—	16.7	3.3
U.S. Mid-Blend	27.0	19.5	15.3	12.7	7.7	11.0	17.5	7.9
U.S. Mid-Value	40.0	28.3	13.8	20.7	—	—	32.3	10.0
U.S. Mid-Growth	57.7	35.2	34.5	21.3	21.7	—	22.5	12.7
U.S. Small Blend	38.8	27.5	18.7	23.4	19.6	31.3	40.4	14.9
U.S. Small Value	49.2	37.1	35.2	21.1	23.4	—	17.6	13.8
U.S. Small Growth	57.7	30.8	33.0	14.0	11.2	—	13.6	9.1
Foreign Large Blend	50.8	41.2	39.9	26.4	28.1	28.6	30.4	17.4
Diversified Emerging Markets	59.1	50.5	57.9	34.8	—	—	43.5	13.6
Intermediate-Term Bond	61.4	61.2	59.5	45.7	33.6	20.5	63.5	30.1













Source: Morningstar. Data and calculations as of 12/31/17.

Exhibit 2 Year-Over-Year Change in Active Funds' 1-Year Success Rates by Category (%)

	2017	2016	Year-Over-Year Change
U.S. Large Blend	37.5	25.3	12.2
U.S. Large Value	35.2	20.3	15.0
U.S. Large Growth	43.5	29.8	13.7
U.S. Mid-Blend	27.0	24.8	2.3
U.S. Mid-Value	40.0	19.8	20.2
U.S. Mid-Growth	57.7	30.7	26.9
U.S. Small Blend	38.8	36.7	2.2
U.S. Small Value	49.2	15.0	34.2
U.S. Small Growth	57.7	28.4	29.3
Foreign Large Blend	50.8	33.5	17.3
Diversified Emerging Markets	59.1	37.1	22.0
Intermediate-Term Bond	61.4	74.8	-13.4

Source: Morningstar. Data and calculations as of 12/31/17.

Exhibit 3 Trends in Active Funds' 1-Year Success Rates by Category (%)

	2014		2015		2016		2017		Trend
	December	June	December	June	December	June	December		
U.S. Large Blend	31.2	43.0	27.7	20.6	25.3	48.8	37.5		
U.S. Large Value	16.2	49.1	36.5	14.1	20.3	58.2	35.2		
U.S. Large Growth	26.0	43.5	49.3	29.8	29.8	42.4	43.5		
U.S. Mid-Blend	33.0	40.2	42.1	23.5	24.8	39.7	27.0		
U.S. Mid-Value	25.7	63.9	53.5	8.1	19.8	56.1	40.0		
U.S. Mid-Growth	49.5	47.1	41.4	35.4	30.7	55.4	57.7		
U.S. Small Blend	40.2	36.2	50.2	46.2	36.7	31.5	38.8		
U.S. Small Value	23.6	44.0	66.7	27.7	15.0	55.9	49.2		
U.S. Small Growth	51.6	52.5	22.3	27.8	28.4	60.8	57.7		
Foreign Large Blend	46.1	58.0	63.6	36.3	33.5	53.8	50.8		
Diversified Emerging Markets	56.3	46.4	63.0	67.9	37.1	61.8	59.1		
Intermediate Term Bond	46.5	26.0	28.5	24.5	74.8	85.1	61.4		

Source: Morningstar. Data and calculations as of 12/31/17.

Results by Category

U.S. Large-Cap Funds

- ▶ Long-run success rates across actively managed U.S. large-cap funds have been generally lower than those among mid- and small-cap U.S. equity funds.
- ▶ The large-growth category has been particularly difficult for active managers. Nearly two thirds of the active funds that existed in this category 15 years ago survived the decade, and just 7.5% managed to both survive and outperform their average passively managed peers.
- ▶ Large-growth funds' struggles and large-value funds' relatively greater success ratios may be evidence of "Dunn's Law" in action. Over the 15-year period ended June 30, 2017, the Russell 1000 Value Index increased at an annualized rate of 9.6%. Meanwhile, the Russell 1000 Growth Index increased by 10.7% on an annualized basis. Thus, many active large-cap growth managers have been penalized for straying from their style, while large-cap value managers have been rewarded for out-of-style bets.
- ▶ Attrition rates are high among large-cap funds. Overall, just 37% of large-cap funds survived to the end of the 15-year period ended Dec. 31, 2017. The odds of survival improved to about 52% for the lowest-cost funds but sagged to 23% for the highest-cost funds over that same time frame.
- ▶ Value managers saw some of the most meaningful increases in their short-term success rates. Active stock-pickers in the large-, mid-, and small-cap value categories experienced year-over-year upticks in their trailing one-year success rates of 15.0, 20.2, and 34.2 percentage points, respectively. This is likely owed in some part to the recent sharp reversal in leadership between growth and value stocks. Over the year ended Dec. 31, 2016, the Russell 3000 Value Index outperformed the Russell 3000 Growth Index by more than 10 percentage points. During 2017, the growth index outstripped its value counterpart by about 16.4 percentage points. Thus, active value managers who had been getting punished for their out-of-style (that is, growth) bets in 2016 were rewarded for those same wagers during the past year.
- ▶ Passively managed large-blend funds had the lowest 20-year survivorship rate of any U.S. equity category. This was driven largely by the near-extinction of all of the costliest passive options in this category that were around two decades ago. Of the 21 index funds that occupied the most expensive half of the group two decades ago, just six survived through 2017.

Exhibit 4 U.S. Large Blend

	Active Funds		Passive Funds		Asset-Weighted Performance		Equal-Weighted Performance		Active Success Rate (%)
	# at Beginning of Period	Survivorship Rate (%)	# at Beginning of Period	Survivorship Rate (%)	Active (%)	Passive (%)	Active (%)	Passive (%)	
Trailing Total Return									
1-Year	368	85.1	148	90.5	20.6	21.5	19.7	20.9	37.5
3-Year	387	75.7	115	87.0	9.9	11.2	8.8	10.8	15.0
5-Year	404	72.5	112	77.7	14.1	15.6	13.3	15.2	17.1
10-Year	501	49.9	133	63.9	6.7	8.4	6.6	8.1	11.2
15-Year	419	36.3	106	48.1	9.2	9.9	8.8	9.6	11.7
20-Year	306	32.4	44	54.5	7.0	7.1	6.3	6.9	13.4
Performance by Fee Quartile (Trailing 10 Years)									
25th Percentile	126	51.6	39	71.8	7.3	8.5	7.0	8.4	17.5
50th Percentile	125	58.4	28	67.9	6.5	8.1	7.2	8.2	15.2
75th Percentile	125	48.8	36	63.9	6.7	6.9	6.8	8.2	8.0
100th Percentile	125	40.8	30	50.0	5.6	7.4	5.4	7.7	4.0

Source: Morningstar. Data and calculations as of 12/31/17.

Exhibit 5 U.S. Large Value

	Active Funds		Passive Funds		Asset-Weighted Performance		Equal-Weighted Performance		Active Success Rate (%)
	# at Beginning of Period	Survivorship Rate (%)	# at Beginning of Period	Survivorship Rate (%)	Active (%)	Passive (%)	Active (%)	Passive (%)	
Trailing Total Return									
1-Year	332	86.1	66	95.5	16.7	15.8	15.8	16.8	35.2
3-Year	341	78.0	51	96.1	9.2	10.0	8.4	10.2	14.1
5-Year	308	72.7	40	95.0	13.7	14.5	13.0	14.4	21.1
10-Year	375	52.5	26	88.5	6.9	7.5	6.5	8.0	10.1
15-Year	312	41.0	12	66.7	9.1	9.5	8.6	9.0	20.8
20-Year	276	37.0	42	57.1	6.6	7.1	6.3	6.8	16.7
Performance by Fee Quartile (Trailing 10 Years)									
25th Percentile	94	54.3	10	71.4	7.4	7.2	7.1	6.9	13.8
50th Percentile	94	53.2	7	100.0	6.8	8.3	6.6	8.5	13.8
75th Percentile	93	53.8	6	100.0	6.1	8.0	6.4	8.5	4.3
100th Percentile	94	48.9	6	85.7	6.1	8.4	5.8	8.1	8.5

Source: Morningstar. Data and calculations as of 12/31/17.

Exhibit 6 U.S. Large Growth

	Active Funds		Passive Funds		Asset-Weighted Performance		Equal-Weighted Performance		Active Success Rate (%)
	# at Beginning of Period	Survivorship Rate (%)	# at Beginning of Period	Survivorship Rate (%)	Active (%)	Passive (%)	Active (%)	Passive (%)	
Trailing Total Return									
1-Year	402	84.6	50	92.0	29.7	28.4	27.1	27.7	43.5
3-Year	442	76.2	46	89.1	12.4	12.6	10.8	11.8	30.5
5-Year	450	70.7	41	92.7	16.4	16.6	15.0	16.9	13.6
10-Year	478	47.5	30	76.7	8.4	9.7	7.8	10.1	7.5
15-Year	401	34.2	19	78.9	10.0	10.2	9.2	10.8	7.5
Performance by Fee Quartile									
(Trailing 10 Years)									
25th Percentile	120	57.5	10	87.5	8.8	9.6	8.5	9.7	16.7
50th Percentile	119	44.5	8	57.1	9.1	10.1	8.0	11.2	5.9
75th Percentile	119	42.9	7	100.0	7.4	10.2	7.7	10.1	4.2
100th Percentile	120	45.0	7	62.5	6.7	10.7	6.8	9.3	3.3

Source: Morningstar. Data and calculations as of 12/31/17.

U.S. Mid-Cap Funds

- ▶ Success rates for actively managed U.S. mid-cap funds have tended to be more widely dispersed and variable than those for U.S. large- or small-cap funds.
- ▶ These extremes are partly evidence of the “crossroads” status of the mid-cap category, which is populated with many funds that may have relatively “messy” portfolios (those that bleed into other market-cap segments and styles) or could otherwise be a passerby, as they migrate “south” from large-cap territory or “north” from the small-cap space, for example.

Exhibit 7 U.S. Mid-Blend

	Active Funds		Passive Funds		Asset-Weighted Performance		Equal-Weighted Performance		Active Success Rate (%)
	# at Beginning of Period	Survivorship Rate (%)	# at Beginning of Period	Survivorship Rate (%)	Active (%)	Passive (%)	Active (%)	Passive (%)	
Trailing Total Return									
1-Year	122	87.7	55	96.4	15.4	18.0	15.1	17.2	27.0
3-Year	113	77.9	47	89.4	8.2	9.9	7.5	9.9	19.5
5-Year	124	73.4	46	87.0	13.5	14.7	12.4	14.5	15.3
10-Year	157	61.8	40	80.0	7.6	9.2	7.0	9.0	12.7
15-Year	104	53.8	24	62.5	9.9	11.7	9.8	11.5	7.7
20-Year	118	42.4	6	83.3	7.3	8.6	7.6	9.0	11.0
Performance by Fee Quartile									
(Trailing 10 Years)									
25th Percentile	40	67.5	10	90.0	8.0	9.2	7.9	9.5	17.5
50th Percentile	39	61.5	11	90.9	7.7	9.6	7.9	9.7	20.5
75th Percentile	40	65.0	9	55.6	6.7	9.2	7.2	8.9	5.0
100th Percentile	38	52.6	10	80.0	5.7	5.9	4.9	7.9	7.9

Source: Morningstar. Data and calculations as of 12/31/17.

Exhibit 8 U.S. Mid-Value

	Active Funds		Passive Funds		Asset-Weighted Performance		Equal-Weighted Performance		Active Success Rate (%)
	# at Beginning of Period	Survivorship Rate (%)	# at Beginning of Period	Survivorship Rate (%)	Active (%)	Passive (%)	Active (%)	Passive (%)	
Trailing Total Return									
1-Year	105	87.6	24	95.8	15.3	14.6	13.1	13.7	40.0
3-Year	113	81.4	22	95.5	8.4	9.9	8.0	9.1	28.3
5-Year	109	76.1	19	94.7	13.2	14.9	12.8	15.0	13.8
10-Year	121	55.4	14	78.6	7.8	9.1	8.0	8.8	20.7
Performance by Fee Quartile (Trailing 10 Years)									
25th Percentile	31	58.1	5	80.0	8.0	9.2	8.5	9.2	32.3
50th Percentile	30	70.0	2	100.0	8.2	9.6	8.3	9.8	26.7
75th Percentile	30	60.0	3	100.0	7.7	7.1	7.7	8.4	13.3
100th Percentile	30	33.3	4	50.0	7.9	7.2	7.3	7.5	10.0

Source: Morningstar. Data and calculations as of 12/31/17.

Exhibit 9 U.S. Mid-Growth

	Active Funds		Passive Funds		Asset-Weighted Performance		Equal-Weighted Performance		Active Success Rate (%)
	# at Beginning of Period	Survivorship Rate (%)	# at Beginning of Period	Survivorship Rate (%)	Active (%)	Passive (%)	Active (%)	Passive (%)	
Trailing Total Return									
1-Year	189	87.8	29	86.2	25.0	21.8	24.1	22.3	57.7
3-Year	216	79.2	21	85.7	10.1	9.6	9.0	9.9	35.2
5-Year	220	75.9	22	77.3	14.1	14.3	13.3	13.9	34.5
10-Year	282	48.9	17	82.4	7.7	8.5	7.0	8.0	21.3
15-Year	267	39.0	5	100.0	10.4	11.3	10.0	10.6	18.0
Performance by Fee Quartile (Trailing 10 Years)									
25th Percentile	71	52.1	5	80.0	9.0	9.1	8.1	9.2	22.5
50th Percentile	70	50.0	4	100.0	6.9	7.1	7.0	8.1	22.9
75th Percentile	70	54.3	4	75.0	7.1	5.9	7.3	6.2	27.1
100th Percentile	71	39.4	4	75.0	5.6	6.7	5.7	8.2	12.7

Source: Morningstar. Data and calculations as of 12/31/17.

U.S. Small Cap Funds

- ▶ Small-cap managers' success rates increased significantly in 2017. Stock-pickers in the small blend, small growth, and small value categories saw their beat rate increase to 48% in 2017 from 29% in 2016. This was the most significant year-over-year gain across the three size strata of the Morningstar Style Box.
- ▶ Long-run success rates among actively managed U.S. small-cap funds were generally higher than those seen among large-cap funds—though not materially so.
- ▶ As was the case with mid-caps, the small-cap growth category had the lowest 10-year survivorship rate among its size cohort. Just 47% of the funds that were in the category at the end of 2007 lived through 2017.

Exhibit 10 U.S. Small Blend

	Active Funds		Passive Funds		Asset-Weighted Performance		Equal-Weighted Performance		Active Success Rate (%)
	# at Beginning of Period	Survivorship Rate (%)	# at Beginning of Period	Survivorship Rate (%)	Active (%)	Passive (%)	Active (%)	Passive (%)	
Trailing Total Return									
1-Year	224	85.3	50	98.0	12.5	14.8	12.2	13.1	38.8
3-Year	211	78.2	50	86.0	9.1	10.2	8.7	9.7	27.5
5-Year	187	76.5	42	92.9	12.9	14.5	12.9	14.4	18.7
10-Year	188	58.5	43	74.4	8.1	9.4	7.8	8.8	23.4
15-Year	120	55.8	25	60.0	10.8	11.6	10.2	11.2	20.8
20-Year	80	51.3	9	66.7	7.9	8.6	8.2	8.5	26.3
Performance by Fee Quartile									
(Trailing 10 Years)									
25th Percentile	47	70.2	11	72.7	8.8	9.4	8.7	9.4	40.4
50th Percentile	47	55.3	11	90.9	8.3	9.4	8.0	9.6	21.3
75th Percentile	47	53.2	10	80.0	6.1	8.2	7.2	7.8	17.0
100th Percentile	47	55.3	11	54.5	7.2	8.8	7.1	8.2	14.9

Source: Morningstar. Data and calculations as of 12/31/17.

Exhibit 11 U.S. Small Value

	Active Funds		Passive Funds		Asset-Weighted Performance		Equal-Weighted Performance		Active Success Rate (%)
	# at Beginning of Period	Survivorship Rate (%)	# at Beginning of Period	Survivorship Rate (%)	Active (%)	Passive (%)	Active (%)	Passive (%)	
Trailing Total Return									
1-Year	118	86.4	21	100.0	9.9	10.5	9.0	8.2	49.2
3-Year	116	79.3	18	100.0	9.0	9.9	8.3	8.9	37.1
5-Year	105	84.8	17	100.0	12.8	14.4	12.2	13.5	35.2
10-Year	133	60.2	11	81.8	8.4	9.1	8.2	8.9	21.1
15-Year	107	57.0	6	83.3	10.7	11.0	10.6	11.0	23.4
Performance by Fee Quartile (Trailing 10 Years)									
25th Percentile	34	58.8	5	80.0	8.9	9.1	8.6	9.5	17.6
50th Percentile	33	57.6	1	100.0	8.1	10.0	8.2	10.0	27.3
75th Percentile	37	73.0	2	100.0	8.5	7.9	8.3	9.1	24.3
100th Percentile	29	48.3	3	66.7	8.2	8.2	7.5	6.8	13.8

Source: Morningstar. Data and calculations as of 12/31/17.

Exhibit 12 U.S. Small Growth

	Active Funds		Passive Funds		Asset-Weighted Performance		Equal-Weighted Performance		Active Success Rate (%)
	# at Beginning of Period	Survivorship Rate (%)	# at Beginning of Period	Survivorship Rate (%)	Active (%)	Passive (%)	Active (%)	Passive (%)	
Trailing Total Return									
1-Year	208	90.4	14	100.0	22.8	20.7	21.4	18.9	57.7
3-Year	221	81.0	13	100.0	10.2	10.2	9.8	10.5	30.8
5-Year	215	74.0	13	100.0	14.2	14.4	13.8	14.5	33.0
10-Year	264	46.6	12	83.3	8.6	9.5	7.7	9.2	14.0
15-Year	250	44.8	5	100.0	11.0	11.9	10.4	11.9	11.2
Performance by Fee Quartile (Trailing 10 Years)									
25th Percentile	66	48.5	5	80.0	9.4	9.6	8.0	10.1	13.6
50th Percentile	66	62.1	1	100.0	8.3	8.8	8.3	8.8	18.2
75th Percentile	66	43.9	3	100.0	7.4	7.9	7.6	8.2	15.2
100th Percentile	66	31.8	3	66.7	7.3	8.9	6.7	8.9	9.1

Source: Morningstar. Data and calculations as of 12/31/17.

Foreign Large Blend

- ▶ Investors in the lowest-cost quartile of actively managed foreign large-blend funds had the highest success rate of any group examined over the trailing 20 years, as 57% of the cheapest funds in the foreign large-blend category both survived and outperformed their passive peers over the past two decades.
- ▶ Investors have consistently chosen above-average funds in this category. This is evidenced by the fact that active funds' asset-weighted performance exceeded their equal-weighted performance during the trailing five-, 10-, 15-, and 20-year periods we examined.

Exhibit 13 Foreign Large Blend

	Active Funds		Passive Funds		Asset-Weighted Performance		Equal-Weighted Performance		Active Success Rate (%)
	# at Beginning of Period	Survivorship Rate (%)	# at Beginning of Period	Survivorship Rate (%)	Active (%)	Passive (%)	Active (%)	Passive (%)	
Trailing Total Return									
1-Year	181	86.7	76	97.4	25.3	26.4	25.6	24.8	50.8
3-Year	177	81.4	51	90.2	7.7	8.3	7.8	7.8	41.2
5-Year	183	77.6	41	87.8	8.0	7.5	7.3	7.5	39.9
10-Year	182	54.4	33	78.8	2.4	1.9	1.5	1.8	26.4
15-Year	160	45.0	20	55.0	8.5	8.1	7.6	7.7	28.1
20-Year	119	40.3	9	55.6	5.9	5.2	4.9	4.6	28.6
Performance by Fee Quartile									
(Trailing 10 Years)									
25th Percentile	46	63.0	9	77.8	3.2	2.0	2.1	2.1	30.4
50th Percentile	45	64.4	8	75.0	1.1	1.8	1.6	1.7	35.6
75th Percentile	45	44.4	8	75.0	1.5	1.4	1.5	1.3	22.2
100th Percentile	46	45.7	8	87.5	1.8	0.2	0.8	1.4	17.4

Source: Morningstar. Data and calculations as of 12/31/17.

Diversified Emerging Markets

- ▶ Active managers' success rate jumped in the diversified emerging-markets category to 59% in 2017 from 37% in 2016.
- ▶ At 61.8%, actively managed diversified emerging-markets funds tied mid-blend funds for the highest 10-year survivorship rate of any category we studied.
- ▶ While generally thought of as an "inefficient" area that's more hospitable to active funds, the data indicates that cost matters even in emerging markets: The lowest-cost funds in this category had a success rate that was 29.8 percentage points higher than the success rate for the category as a whole during the decade ended December 2017.

Exhibit 14 Diversified Emerging Markets

	Active Funds		Passive Funds		Asset-Weighted Performance		Equal-Weighted Performance		Active Success Rate (%)
	# at Beginning of Period	Survivorship Rate (%)	# at Beginning of Period	Survivorship Rate (%)	Active (%)	Passive (%)	Active (%)	Passive (%)	
Trailing Total Return									
1-Year	230	82.6	67	92.5	35.5	33.4	34.9	31.5	59.1
3-Year	208	75.0	57	73.7	8.7	7.9	8.0	7.4	50.5
5-Year	159	73.0	50	76.0	4.6	3.4	4.3	2.9	57.9
10-Year	89	61.8	9	77.8	1.8	1.0	1.2	1.3	34.8
Performance by Fee Quartile									
(Trailing 10 Years)									
25th Percentile	23	65.2	3	33.3	1.8	1.3	1.6	1.4	43.5
50th Percentile	22	72.7	2	100.0	2.7	-0.1	1.8	0.6	50.0
75th Percentile	22	72.7	2	100.0	1.2	-4.1	1.1	-0.5	31.8
100th Percentile	22	36.4	2	100.0	0.9	1.3	0.0	1.2	13.6

Source: Morningstar. Data and calculations as of 12/31/17.

Intermediate-Term Bond

- ▶ The intermediate-term bond category was the only one among the dozen we examined that experienced a year-over-year decline in active managers' one-year success rate.
- ▶ Actively managed intermediate-term bond funds had the highest 10- and 15-year success rates among the categories we examined.

Exhibit 15 Intermediate-Term Bond

	Active Funds		Passive Funds		Asset-Weighted Performance		Equal-Weighted Performance		Active Success Rate (%)
	# at Beginning of Period	Survivorship Rate (%)	# at Beginning of Period	Survivorship Rate (%)	Active (%)	Passive (%)	Active (%)	Passive (%)	
Trailing Total Return									
1-Year	277	88.4	32	87.5	4.3	3.5	3.9	3.3	61.4
3-Year	258	83.3	31	83.9	2.6	2.1	2.4	2.0	61.2
5-Year	264	78.8	29	82.8	2.3	2.0	2.2	1.8	59.5
10-Year	293	56.3	21	71.4	4.4	3.9	3.9	3.6	45.7
15-Year	262	43.5	20	45.0	4.4	4.0	3.8	3.7	33.6
20-Year	215	31.6	11	54.5	5.1	4.8	4.6	4.6	20.5
Performance by Fee Quartile									
(Trailing 10 Years)									
25th Percentile	74	66.2	8	87.5	4.4	4.0	4.3	4.0	63.5
50th Percentile	73	56.2	3	100.0	4.7	3.7	4.0	3.7	46.6
75th Percentile	73	56.2	5	60.0	3.3	3.7	3.1	3.7	42.5
100th Percentile	73	46.6	5	40.0	4.4	1.9	3.8	2.6	30.1

Source: Morningstar. Data and calculations as of 12/31/17.

Appendix— Summary of Results for the Periods Ended June 30, 2017 and Dec. 31, 2016**Exhibit 16** Summary results for the period ended June 30, 2017

Category	Active Funds' Success Rates by Category (%)					
	1-Year	3-Year	5-Year	10-Year	15-Year	20-Year
U.S. Large Blend	48.8	18.7	20.4	13.8	14.6	16.7
U.S. Large Value	58.2	10.4	24.1	18.3	21.4	—
U.S. Large Growth	42.4	25.7	16.5	11.7	7.1	—
U.S. Mid-Blend	39.7	24.3	20.0	12.5	9.1	10.5
U.S. Mid-Value	56.1	24.3	13.3	21.4	—	—
U.S. Mid-Growth	55.4	41.0	27.8	27.6	21.7	—
U.S. Small Blend	31.5	25.0	28.0	26.1	19.6	31.3
U.S. Small Value	55.9	40.7	42.5	30.2	38.3	—
U.S. Small Growth	60.8	37.5	32.1	18.0	8.6	—
Foreign Large Blend	53.8	46.0	39.4	31.8	36.2	39.3
Diversified Emerging Markets	61.8	67.4	70.0	33.7	—	—
Intermediate-Term Bond	85.1	54.1	66.1	44.4	38.7	22.2

Source: Morningstar. Calculations as of 6/30/17.

Exhibit 17 Summary results for the period ended December 31, 2016

Category	Active Funds' Success Rates by Category (%)			
	1-Year	3-Year	5-Year	10-Year
U.S. Large Blend	25.3	19.6	19.8	14.0
U.S. Large Value	20.3	7.0	24.9	20.0
U.S. Large Growth	29.8	10.1	14.4	5.9
U.S. Mid-Blend	24.8	20.3	20.0	10.6
U.S. Mid-Value	19.8	12.2	16.8	21.7
U.S. Mid-Growth	30.7	32.6	24.9	23.2
U.S. Small Blend	36.7	35.7	29.6	28.9
U.S. Small Value	15.0	34.6	27.6	29.3
U.S. Small Growth	28.4	20.1	18.8	15.6
Foreign Large Blend	33.5	43.1	39.8	32.2
Diversified Emerging Markets	37.1	61.4	59.1	29.3
Intermediate-Term Bond	74.8	53.8	68.4	44.4

Source: Morningstar. Calculations as of 6/30/2016.

Appendix—Methodology

Data Source

Morningstar's U.S. open-end and exchange-traded funds database.

Universe

All ETFs and open-end mutual funds (excluding funds of funds and money market funds) in each Morningstar Category that existed at the beginning of the relevant period (including funds that did not survive to the end of the period) defined the eligible universe. To be included, the fund's inception date must precede the start of the period and the obsolete date cannot predate the start of the period. In addition, each must have asset data for at least one share class in the month prior to the start of the sample period (the beginning of the trailing one-, three-, five-, 10-, 15-, or 20-year period) to facilitate asset-weighting.

Survivorship

To calculate survivorship, we divide the number of distinct funds (based on unique fund ID at the beginning of the period) that started and ended the period in question by the total number of funds that existed at the onset of the period in question (the beginning of the trailing one-, three-, five-, 10-, 15-, or 20-year period).

Asset-Weighted Returns

We calculate the asset-weighted returns for each cohort using each share class' monthly assets and returns. When a fund becomes obsolete, its historical data remains in the sample. Funds that incept or migrate into the category after the start of the period are not included.

Equal-Weighted Returns

To come up with a single return figure for funds with multiple share classes, we first calculate the asset-weighted average of all the fund's share classes. We then take the simple equal-weighted average of the monthly returns for each fund in the group and compound those returns over the sample period. As before, when a fund becomes obsolete, its historical data remains in the sample. Funds that incept or are moved into the category after the start of the period are not included.

Success Rate

The success rate indicates what percentage of funds that started the sample period went on to survive and generate a return in excess of the equal-weighted average passive fund return over the period. This approach differs from the convention of using a single representative index to gauge success. We do not consider magnitude of outperformance in defining success—a fund that just barely beat the passive alternative counts as much as a fund that significantly outperformed.

As in the equal-weighted return calculation, we calculate the asset-weighted average of all the fund's share classes to come up with a single return figure for funds with multiple share classes. We then rank the funds by their composite returns, count the number that rank higher than the equal-weighted average return for the passive funds in the category, and divide that number by the number of funds at the beginning of the period (using the same number from the denominator of the survivorship calculations).

Fees

We rank each fund by its annual report expense ratio from the year prior to the start of the sample period and group them into quartiles. We then apply the same steps described above to calculate the success rates for funds in each quartile. To be counted in the starting number of funds used for purposes of calculating the survivorship and success rates, each fund must have an annual report expense ratio at the beginning of the sample period.

Appendix—How Our Approach Compares With Others'

How is our approach different from others'?

- ▶ Our "benchmark" for measuring success is different than others'. We measure active managers' success relative to investable passive alternatives in the same Morningstar Category. For example, an active manager in the U.S. large-blend category is measured against a composite of the performance of its index mutual fund and ETF peers (for example, Vanguard Total Stock Market Index VTSMX, SPDR S&P 500 ETF SPY, and so on). Specifically, we calculate the equal- and asset-weighted performance of the cohort of index-tracking (that is, "passive") options in each category that we examine and use that figure as the hurdle that defines success or failure for the active funds in the same category. The magnitude of outperformance or underperformance does not influence the success rate. However, this data is reflected in the average return figures for the funds in each group, which we report separately.
- ▶ We believe that this is a better benchmark because it reflects the performance of actual investable options and not an index. Indexes are not directly investable. Their performance does not account for the real costs associated with replicating their performance and packaging and distributing them in an investable format. Also, the success rate for active managers can vary depending on one's choice of benchmark. For example, the rate of success among U.S. large-blend fund managers may vary depending on whether one uses the S&P 500 or the Russell 1000 Index as their basis for comparison. By using a composite of investable alternatives within funds' relevant categories as our benchmark, we account for the frictions involved in index investing (fees, and others) and we mitigate the effects that might stem from cherry-picking a single index as a benchmark. The net result is a far more fair comparison of how investors in actively managed funds have fared relative to those who have opted for a passive approach.
- ▶ We measure each fund's performance based on the asset-weighted average performance of all of its share classes in calculating success rates. This approach reflects the experience of the average dollar invested in each fund. We then rank these composite fund returns from highest to lowest and count the number of funds whose returns exceed the equal-weighted average of the passive funds in the category. The success rates are defined as the ratio of these figures to the number of funds that existed at the beginning of the period. Given this unique approach, our field of study is narrower than others, as the universe of categories that contained a sufficient set of investable index-tracking funds was narrow at the end of 2004. We expect that the number of categories we include in this study will expand over time.
- ▶ We cut along the lines of cost. Cost matters. Fees are the one of the best predictors of future fund performance. We have sliced our universe into fee quartiles to highlight this relationship. ■■