
Morningstar's Active/Passive Barometer

Year-end 2016

Morningstar Manager Research

March 2017

Ben Johnson, CFA
Director of Global ETF Research
+1 312 384-4077
ben.johnson@morningstar.com

Alex Bryan
Director of Passive Strategies Research,
North America
+1 312 244-7042
alex.bryan@morningstar.com

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 more than 3,500 unique active and passive U.S. funds which account for approximately \$9.2 trillion in assets, or about 60% 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

- ▶ 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.
- ▶ 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.

With respect to recent trends in active-fund success:

- ▶ When compared to 2015, active funds' success rates fell in 10 of the 12 categories we examined in the year ended Dec. 31, 2016 (see Exhibit 2).
- ▶ Active U.S. equity funds succeeded less often in 2016 than in the year prior: About 26% of active U.S. stock funds beat their composite passive benchmark, versus 41% in 2015.
- ▶ After falling sharply earlier in 2016, active U.S. large-cap fund success rates stabilized, but remain low at around 25%. Conversely, active mid- and small-cap fund success rates deteriorated, with only 28% beating their benchmark in the year ended Dec. 31, 2016.
- ▶ Among active U.S. stock funds, the success rates of value funds slid the most last year: Only 19% of active value funds beat their benchmark in 2016, versus 46% in 2015. Active growth funds fared slightly better, with about 30% beating their composite index in 2016.
- ▶ Nearly three fourths of active funds in the intermediate-term bond category survived and outperformed their composite index in 2016, which marks a big turnaround from 2015 when only about 25% of active funds did so.
- ▶ Stylistic headwinds and tailwinds tend to explain short-term fluctuations in active-fund success.

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

Category	1-Year	3-Year	5-Year	10-Year	10-Year (Lowest Cost)	10-Year (Highest Cost)
U.S. Large Blend	25.3	19.6	19.8	14.0	22.8	4.8
U.S. Large Value	20.3	7.0	24.9	20.0	24.5	13.8
U.S. Large Growth	29.8	10.1	14.4	5.9	9.2	5.9
U.S. Mid Blend	24.8	20.3	20.0	10.6	7.9	5.4
U.S. Mid Value	19.8	12.2	16.8	21.7	33.3	6.9
U.S. Mid Growth	30.7	32.6	24.9	23.2	29.3	14.9
U.S. Small Blend	36.7	35.7	29.6	28.9	46.0	18.4
U.S. Small Value	15.0	34.6	27.6	29.3	20.0	22.9
U.S. Small Growth	28.4	20.1	18.8	15.6	23.2	7.4
Foreign Large Blend	33.5	43.1	39.8	32.2	44.4	20.5
Diversified Emerging Markets	37.1	61.4	59.1	29.3	42.9	15.0
Intermediate-Term Bond	74.8	53.8	68.4	44.4	56.6	32.9

Source: Morningstar. Data and calculations as of 12/31/16.

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

	2016	2015	Year-Over-Year Change
U.S. Large Blend	25.3	27.7	-2.3
U.S. Large Value	20.3	36.5	-16.2
U.S. Large Growth	29.8	49.3	-19.6
U.S. Mid Blend	24.8	42.1	-17.3
U.S. Mid Value	19.8	53.5	-33.7
U.S. Mid Growth	30.7	41.4	-10.6
U.S. Small Blend	36.7	50.2	-13.6
U.S. Small Value	15.0	66.7	-51.7
U.S. Small Growth	28.4	22.3	6.1
Foreign Large Blend	33.5	63.6	-30.1
Diversified Emerging Markets	37.1	63.0	-25.9
Intermediate-Term Bond	74.8	28.5	46.4

Source: Morningstar. Data and Calculations as of 12/31/16.

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

	Dec. 2014	Jun. 2015	Dec. 2015	Jun. 2016	Dec. 2016	Trend
U.S. Large Blend	31.2	43.0	27.7	20.6	25.3	
U.S. Large Value	16.2	49.1	36.5	14.1	20.3	
U.S. Large Growth	26.0	43.5	49.3	29.8	29.8	
U.S. Mid Blend	33.0	40.2	42.1	23.5	24.8	
U.S. Mid Value	25.7	63.9	53.5	8.1	19.8	
U.S. Mid Growth	49.5	47.1	41.4	35.4	30.7	
U.S. Small Blend	40.2	36.2	50.2	46.2	36.7	
U.S. Small Value	23.6	44.0	66.7	27.7	15.0	
U.S. Small Growth	51.6	52.5	22.3	27.8	28.4	
Foreign Large Blend	46.1	58.0	63.6	36.3	33.5	
Diversified Emerging Markets	56.3	46.4	63.0	67.9	37.1	
Intermediate Term Bond	46.5	26.0	28.5	24.5	74.8	

Source: Morningstar. Data and Calculations as of 12/31/16.

Results by Category

U.S. Large Caps

- ▶ 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. Roughly half the active funds that existed in this category 10 years ago survived the decade and just 5.9% managed to both survive and outperform their average passively managed peer.
- ▶ Large-growth funds' struggles and large-value funds' relatively greater success ratios may be evidence of "Dunn's Law" in action. Over the decade ending Dec. 31, 2016, The Russell 1000 Value Index increased at an annualized rate of 4.92%. Meanwhile, the Russell 1000 Growth Index increased by 7.83% 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 54% of large-cap funds survived to the end of the 10-year period ended Dec. 31, 2016. The odds of survival improved to about 60% for the lowest-cost funds, but sagged to 45% for the highest-cost funds.
- ▶ Value managers saw some of the most meaningful declines in their short-term success rates. Active stock-pickers in the large-, mid-, and small-cap value categories experienced year-over-year declines in their trailing one-year success rates of 16.2%, 33.7%, and 51.7%, respectively. This is likely owed in some part to the change in leadership between growth and value stocks. During the 12 months ending Dec. 31, 2015, the Russell 3000 Growth Index increased 4.63% while the Russell 3000 Value Index fell 4.82%. Over the year ending Dec. 31, 2016, the value index outperformed the growth index by more than 10 percentage points. Thus, active value managers, who had been getting rewarded for their out-of-style (that is, growth) bets, are now being penalized for those same wagers.
- ▶ Despite their recent struggles, value-oriented funds generally had higher odds of long-term success than other types of active U.S. stock funds.

Exhibit 4 U.S. Large Blend

	Active Funds		Passive Funds		Asset-Weighted Performance		Equal-Weighted Performance		
	# at Beginning of Period	Survivorship Rate (%)	# at Beginning of Period	Survivorship Rate (%)	Active (%)	Passive (%)	Active (%)	Passive (%)	Active Success Rate (%)
Total Return									
1-Year Trailing	387	93.3	129	94.6	11.2	12.2	10.0	12.0	25.3
3-Year Trailing	387	88.1	119	92.4	6.9	8.6	6.2	8.0	19.6
5-Year Trailing	420	77.6	118	80.5	13.3	14.5	12.5	14.2	19.8
10-Year Trailing	507	55.0	113	67.3	5.7	6.9	5.4	6.7	14.0
Performance by Fee Quartile									
(Trailing 10 Years)									
25th Percentile	127	61.4	29	72.4	6.4	7.0	5.9	6.8	22.8
50th Percentile	127	60.6	28	64.3	5.5	6.8	5.9	6.7	17.3
75th Percentile	127	55.1	28	78.6	5.0	6.7	5.5	6.6	11.0
100th Percentile	126	42.9	28	53.6	4.7	6.1	4.4	6.5	4.8

Source: Morningstar. Data and calculations as of 12/31/16.

Exhibit 5 U.S. Large Value

	Active Funds		Passive Funds		Asset-Weighted Performance		Equal-Weighted Performance		
	# at Beginning of Period	Survivorship Rate (%)	# at Beginning of Period	Survivorship Rate (%)	Active (%)	Passive (%)	Active (%)	Passive (%)	Active Success Rate (%)
Total Return									
1-Year Trailing	350	94.0	59	98.3	15.1	16.9	14.8	17.6	20.3
3-Year Trailing	313	91.1	44	97.7	7.3	9.1	6.5	9.0	7.0
5-Year Trailing	317	80.1	38	97.4	13.5	14.2	12.8	13.9	24.9
10-Year Trailing	376	57.5	24	87.5	5.5	5.8	5.1	6.0	20.0
Performance by Fee Quartile									
(Trailing 10 Years)									
25th Percentile	94	62.8	6	66.7	5.9	5.7	5.5	5.6	24.5
50th Percentile	94	57.5	6	100.0	5.2	6.9	5.2	6.4	24.5
75th Percentile	94	54.3	6	100.0	4.8	6.1	5.0	6.8	17.0
100th Percentile	94	55.3	6	83.3	3.8	4.3	4.6	4.8	13.8

Source: Morningstar. Data and calculations as of 12/31/16.

Exhibit 6 U.S. Large Growth

	Active Funds		Passive Funds		Asset-Weighted Performance		Equal-Weighted Performance		
	# at Beginning of Period	Survivorship Rate (%)	# at Beginning of Period	Survivorship Rate (%)	Active (%)	Passive (%)	Active (%)	Passive (%)	Active Success Rate (%)
Total Return									
1-Year Trailing	423	93.6	52	90.4	4.2	6.5	3.6	5.8	29.8
3-Year Trailing	447	86.8	43	97.7	6.7	8.0	5.8	8.1	10.1
5-Year Trailing	453	76.6	41	87.8	14.0	14.3	12.8	14.6	14.4
10-Year Trailing	477	49.9	29	86.2	7.0	8.1	6.5	8.5	5.9
Performance by Fee Quartile									
(Trailing 10 Years)									
25th Percentile	119	57.1	8	87.5	7.2	8.1	7.1	8.0	9.2
50th Percentile	119	63.0	7	100.0	7.4	8.3	6.8	9.3	4.2
75th Percentile	119	40.3	7	85.7	6.1	8.8	6.3	8.9	4.2
100th Percentile	119	38.7	7	71.4	6.0	9.5	5.9	7.8	5.9

Source: Morningstar. Data and calculations as of 12/31/16.

U.S. Mid-Caps

- ▶ Success rates for actively managed U.S. mid-cap funds have tended to be more diverse 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 passersby, as they migrate “south” from large-cap territory or “north” from the small-cap space, for example.
- ▶ Also of note is the narrow gap in success rates among active funds in the lowest- and highest-cost quartiles of the mid-blend category. This is one of just two categories we examined where the lowest-cost funds did not have higher success rates than their average counterpart—the other being large growth.

Exhibit 7 U.S. Mid Blend

	Active Funds		Passive Funds		Asset-Weighted Performance		Equal-Weighted Performance		
	# at Beginning of Period	Survivorship Rate (%)	# at Beginning of Period	Survivorship Rate (%)	Active (%)	Passive (%)	Active (%)	Passive (%)	Active Success Rate (%)
Total Return									
1-Year Trailing	121	95.0	50	94.0	14.5	15.2	13.4	16.9	24.8
3-Year Trailing	118	86.4	46	93.5	5.6	7.5	4.9	7.7	20.3
5-Year Trailing	130	77.7	46	84.8	13.6	14.6	12.5	14.5	20.0
10-Year Trailing	151	68.9	30	80.0	6.1	8.1	6.1	7.9	10.6
Performance by Fee Quartile									
(Trailing 10 Years)									
25th Percentile	38	71.1	8	87.5	6.5	8.0	6.5	8.3	7.9
50th Percentile	38	71.1	8	87.5	6.2	8.7	7.1	8.5	23.7
75th Percentile	38	76.3	7	71.4	5.7	8.6	6.2	8.5	5.3
100th Percentile	37	56.8	7	71.4	4.1	8.5	4.7	7.5	5.4

Source: Morningstar. Data and calculations as of 12/31/16.

Exhibit 8 U.S. Mid Value

	Active Funds		Passive Funds		Asset-Weighted Performance		Equal-Weighted Performance		
	# at Beginning of Period	Survivorship Rate (%)	# at Beginning of Period	Survivorship Rate (%)	Active (%)	Passive (%)	Active (%)	Passive (%)	Active Success Rate (%)
Total Return									
1-Year Trailing	116	94.0	23	95.7	15.6	20.3	18.1	21.7	19.8
3-Year Trailing	107	89.7	19	94.7	7.0	9.8	6.4	9.1	12.2
5-Year Trailing	113	80.5	20	95.0	13.8	14.7	13.8	15.5	16.8
10-Year Trailing	120	68.3	11	90.9	6.6	7.6	6.4	7.3	21.7
Performance by Fee Quartile									
(Trailing 10 Years)									
25th Percentile	30	63.3	3	66.7	6.7	8.2	6.8	7.8	33.3
50th Percentile	30	80.0	3	100.0	6.6	7.4	6.7	7.7	26.7
75th Percentile	30	86.7	3	100.0	6.6	5.0	6.5	6.8	20.0
100th Percentile	29	44.8	2	100.0	6.2	5.3	5.6	5.7	6.9

Source: Morningstar. Data and calculations as of 12/31/16.

Exhibit 9 U.S. Mid Growth

	Active Funds		Passive Funds		Asset-Weighted Performance		Equal-Weighted Performance		
	# at Beginning of Period	Survivorship Rate (%)	# at Beginning of Period	Survivorship Rate (%)	Active (%)	Passive (%)	Active (%)	Passive (%)	Active Success Rate (%)
Total Return									
1-Year Trailing	205	95.1	23	95.7	6.4	7.4	6.1	8.0	30.7
3-Year Trailing	215	87.9	20	85.0	4.8	6.2	3.8	4.7	32.6
5-Year Trailing	217	78.8	20	85.0	12.1	13.2	11.3	12.6	24.9
10-Year Trailing	297	54.2	12	91.7	6.7	7.6	6.4	7.3	23.2
Performance by Fee Quartile									
(Trailing 10 Years)									
25th Percentile	75	58.7	3	66.7	7.7	8.7	7.3	8.3	29.3
50th Percentile	74	56.8	3	100.0	6.1	7.7	6.2	8.1	24.3
75th Percentile	74	60.8	3	100.0	6.1	6.4	6.5	6.7	24.3
100th Percentile	74	40.5	3	100.0	5.0	6.0	5.9	7.4	14.9

Source: Morningstar. Data and calculations as of 12/31/16.

U.S. Small Caps

- Long-run success rates among actively managed U.S. small-cap funds were generally higher than those seen among large-cap funds.
- Passively managed small-blend funds had the second-lowest 10-year survivorship rate of any U.S. equity category (passive large-blend funds placed first). This was driven largely by the extinction of one third of the most costly passive options in this category. Just three of the eight passive funds in the priciest quartile of this category lasted through the end of the decade.
- As is the case with large- and mid-caps, the small-cap growth category had the lowest survivorship rate among its size cohort. Just 53% of the funds that were in the category at the end of December 2006 lived to see December 2016.

Exhibit 10 U.S. Small Blend

	Active Funds		Passive Funds		Asset-Weighted Performance		Equal-Weighted Performance		
	# at Beginning of Period	Survivorship Rate (%)	# at Beginning of Period	Survivorship Rate (%)	Active (%)	Passive (%)	Active (%)	Passive (%)	Active Success Rate (%)
Total Return									
1-Year Trailing	221	97.3	54	92.6	21.5	21.1	20.9	22.7	36.7
3-Year Trailing	199	91.5	46	93.5	6.1	7.3	5.9	7.2	35.7
5-Year Trailing	186	86.6	43	88.4	13.3	15.0	13.3	15.0	29.6
10-Year Trailing	197	65.0	35	74.3	6.9	7.8	6.3	7.1	28.9
Performance by Fee Quartile									
(Trailing 10 Years)									
25th Percentile	50	76.0	9	77.8	7.6	7.9	7.1	8.0	46.0
50th Percentile	49	63.3	9	88.9	7.1	7.7	6.4	7.6	34.7
75th Percentile	49	61.2	9	88.9	5.5	6.5	5.9	6.4	16.3
100th Percentile	49	59.2	8	37.5	5.4	6.6	5.1	6.5	18.4

Source: Morningstar. Data and calculations as of 12/31/16.

Exhibit 11 U.S. Small Value

	Active Funds		Passive Funds		Asset-Weighted Performance		Equal-Weighted Performance		
	# at Beginning of Period	Survivorship Rate (%)	# at Beginning of Period	Survivorship Rate (%)	Active (%)	Passive (%)	Active (%)	Passive (%)	Active Success Rate (%)
Total Return									
1-Year Trailing	120	94.2	20	95.0	25.7	27.4	25.6	30.4	15.0
3-Year Trailing	107	93.5	18	100.0	6.8	9.1	6.0	8.0	34.6
5-Year Trailing	105	92.4	17	100.0	14.1	15.9	13.8	15.4	27.6
10-Year Trailing	140	65.7	10	90.0	6.9	7.1	6.6	7.1	29.3
Performance by Fee Quartile									
(Trailing 10 Years)									
25th Percentile	35	48.6	3	66.7	7.3	7.7	6.9	7.7	20.0
50th Percentile	35	80.0	3	100.0	6.5	6.3	6.8	7.7	37.1
75th Percentile	35	77.1	2	100.0	6.9	6.5	6.7	7.3	37.1
100th Percentile	35	57.1	2	100.0	6.5	6.1	6.0	5.0	22.9

Source: Morningstar. Data and calculations as of 12/31/16.

Exhibit 12 U.S. Small Growth

	Active Funds		Passive Funds		Asset-Weighted Performance		Equal-Weighted Performance		
	# at Beginning of Period	Survivorship Rate (%)	# at Beginning of Period	Survivorship Rate (%)	Active (%)	Passive (%)	Active (%)	Passive (%)	Active Success Rate (%)
Total Return									
1-Year Trailing	215	94.9	13	100.0	11.3	12.7	11.6	15.1	28.4
3-Year Trailing	214	88.8	12	100.0	3.8	5.1	3.7	6.2	20.1
5-Year Trailing	224	76.8	12	100.0	12.6	13.6	12.1	14.0	18.8
10-Year Trailing	275	53.1	11	81.8	7.0	8.3	6.3	8.1	15.6
Performance by Fee Quartile									
(Trailing 10 Years)									
25th Percentile	69	56.5	3	66.7	7.8	8.6	7.0	8.9	23.2
50th Percentile	69	65.2	3	100.0	6.7	8.0	6.8	8.6	20.3
75th Percentile	69	56.5	3	66.7	6.2	6.5	6.3	6.9	11.6
100th Percentile	68	33.8	2	100.0	5.7	7.7	5.1	7.6	7.4

Source: Morningstar. Data and calculations as of 12/31/16.

Foreign Large Blend

- Investors in the lowest-cost quartile of actively managed foreign large-blend funds had the fourth-best success rate of any subgroup we examined. Over the 10-year period ending in December 2016, 44.4% of these funds managed to survive and outperform their average passive peer.
- The high success rates amongst foreign large-blend funds can be partly attributed to benchmark misspecification. Virtually all of the index funds and exchange-traded funds in this category that existed 10 years ago were benchmarked to the MSCI EAFE Index. The cap-weighted benchmark has large allocations to Japanese and UK stocks (as of Feb. 28, 2017, the two represented nearly 42% of the index's value). The relatively lackluster performance of both markets over the past 10 years has weighed on the MSCI EAFE Index's performance and created ample opportunity for active managers to add value by way of either underweighting these markets, being more selective within them, or outright omitting them from their portfolios.
- 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 one-, three-, five-, and 10-year periods we examined.

Exhibit 13 Foreign Large Blend

	Active Funds		Passive Funds		Asset-Weighted Performance		Equal-Weighted Performance		
	# at Beginning of Period	Survivorship Rate (%)	# at Beginning of Period	Survivorship Rate (%)	Active (%)	Passive (%)	Active (%)	Passive (%)	Active Success Rate (%)
Total Return									
1-Year Trailing	185	95.7	61	95.1	2.7	3.2	1.1	2.2	33.5
3-Year Trailing	181	89.5	44	86.4	-1.7	-1.4	-1.9	-1.7	43.1
5-Year Trailing	191	79.1	41	80.5	6.6	6.0	5.9	6.2	39.8
10-Year Trailing	177	59.3	21	71.4	1.3	0.6	0.4	0.5	32.2
Performance by Fee Quartile									
(Trailing 10 Years)									
25th Percentile	45	71.1	6	66.7	2.1	0.7	1.1	0.8	44.4
50th Percentile	44	63.6	5	80.0	0.2	0.6	0.3	0.5	31.8
75th Percentile	44	52.3	5	60.0	0.7	0.6	0.4	0.6	31.8
100th Percentile	44	50.0	5	80.0	0.3	-0.9	-0.3	-0.4	20.5

Source: Morningstar. Data and calculations as of 12/31/16.

Diversified Emerging Markets

- ▶ Active managers in the diversified emerging-markets category witnessed a significant decline in their one-year success rates in 2016. Nearly two thirds of them survived and beat their average passive peer in 2015. Just 37% of them both lived and outperformed through 2016. This came as emerging-markets stocks gained ground. The iShares Emerging Markets ETF EEM posted a total return of 10.9% for the year.
- ▶ At 75.6%, actively managed diversified emerging-markets funds had 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 27.9 percentage points higher than the success rate for the category as a whole during the decade ending December 2016.

Exhibit 14 Diversified Emerging Markets

	Active Funds		Passive Funds		Asset-Weighted Performance		Equal-Weighted Performance		
	# at Beginning of Period	Survivorship Rate (%)	# at Beginning of Period	Survivorship Rate (%)	Active (%)	Passive (%)	Active (%)	Passive (%)	Active Success Rate (%)
Total Return									
1-Year Trailing	229	95.2	59	89.8	10.3	11.2	8.1	10.6	37.1
3-Year Trailing	171	90.1	48	79.2	-2.7	-2.5	-3.1	-3.6	61.4
5-Year Trailing	149	82.6	38	81.6	2.1	0.9	1.7	0.8	59.1
10-Year Trailing	82	75.6	3	100.0	1.9	1.5	1.1	1.8	29.3
Performance by Fee Quartile									
(Trailing 10 Years)									
25th Percentile	21	85.7	1	100.0	1.9	1.9	1.4	1.9	42.9
50th Percentile	21	90.5	1	100.0	2.6	2.4	1.6	2.4	33.3
75th Percentile	20	70.0	1	100.0	1.4	1.2	1.2	1.2	25.0
100th Percentile	20	55.0	0	0.0	0.5	0.0	-0.3	0.0	15.0

Source: Morningstar. Data and calculations as of 12/31/16.

Intermediate-Term Bond

- Managers in the intermediate-term bond category saw a substantial uptick in their one-year success rate in 2016. Nearly three fourths of the active managers in this category were able to survive and outperform their passive peers. This is a marked turnaround relative to 2015 when just over one fourth of these funds managed the same feat. This is likely owed in large part to the fact that more credit-risky bonds rallied last year. For example, iShares iBoxx \$ High Yield Corporate Bond ETF HYG and iShares iBoxx \$ Investment Grade Corporate Bond ETF LQD posted respective total returns of 13.41% and 6.21% in 2016. Meanwhile, iShares Core US Aggregate Bond ETF AGG had a total return of 2.41%. Active managers were generously rewarded for taking credit risk in 2016.
- Actively managed intermediate-term bond funds had the highest 10-year success rate among the categories we examined, with 44.4% of active funds in this category surviving the 10-year period and outperforming their average passive peer.

Exhibit 15 Intermediate-Term Bond

	Active Funds		Passive Funds		Asset-Weighted Performance		Equal-Weighted Performance		
	# at Beginning of Period	Survivorship Rate (%)	# at Beginning of Period	Survivorship Rate (%)	Active (%)	Passive (%)	Active (%)	Passive (%)	Active Success Rate (%)
Total Return									
1-Year Trailing	262	97.3	35	97.1	3.4	2.5	3.4	2.4	74.8
3-Year Trailing	262	90.5	30	96.7	2.9	2.9	2.7	2.7	53.8
5-Year Trailing	278	80.9	30	86.7	3.1	2.1	2.7	1.9	68.4
10-Year Trailing	304	59.2	19	73.7	4.5	4.2	4.0	3.9	44.4
Performance by Fee Quartile									
(Trailing 10 Years)									
25th Percentile	76	64.5	5	80.0	4.5	4.4	4.5	4.5	56.6
50th Percentile	76	59.2	5	80.0	4.9	3.9	4.2	4.1	48.7
75th Percentile	76	56.6	5	60.0	3.5	4.0	3.4	4.1	39.5
100th Percentile	76	56.6	4	75.0	4.1	2.1	3.8	2.7	32.9

Source: Morningstar. Data and calculations as of 12/31/16.

Appendix— Summary of Results for the Periods Ending June 30, 2016, and December 31, 2015**Exhibit 16** Summary results for the period ending June 30, 2016

Category	Active Funds' Success Rates by Category (%)			
	1-Year	3-Year	5-Year	10-Year
U.S. Large Blend	20.6	22.0	12.3	14.8
U.S. Large Value	14.1	9.6	9.5	20.6
U.S. Large Growth	29.8	16.0	7.4	7.1
U.S. Mid Blend	23.5	14.8	23.1	6.9
U.S. Mid Value	8.1	16.7	13.0	26.9
U.S. Mid Growth	35.4	36.0	27.5	22.7
U.S. Small Blend	46.2	34.4	31.9	26.1
U.S. Small Value	27.7	32.1	22.6	28.6
U.S. Small Growth	27.8	17.6	21.3	17.6
Foreign Large Blend	36.3	50.0	44.7	33.1
Diversified Emerging Markets	67.9	69.6	51.6	32.4
Intermediate-Term Bond	24.5	41.5	53.3	39.0

Source: Morningstar. Calculations as of 6/30/16.

Exhibit 17 Summary results for the period ending December 31, 2015

Category	Active Funds' Success Rates by Category (%)			
	1-Year	3-Year	5-Year	10-Year
U.S. Large Blend	27.7	27.8	16.3	16.6
U.S. Large Value	36.5	34.6	19.6	33.7
U.S. Large Growth	49.3	18.9	11.9	12.2
U.S. Mid Blend	42.1	34.6	27.7	11.0
U.S. Mid Value	53.5	28.6	22.7	42.3
U.S. Mid Growth	41.4	32.6	26.1	32.5
U.S. Small Blend	50.2	34.9	32.8	24.7
U.S. Small Value	66.7	54.1	38.0	38.3
U.S. Small Growth	22.3	28.6	20.6	23.2
Foreign Large Blend	63.6	47.6	44.7	33.9
Diversified Emerging Markets	63.0	55.9	61.2	42.3
Intermediate-Term Bond	28.5	45.4	57.3	39.7

Source: Morningstar. Calculations as of 12/31/15.

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-, or 10-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-, or 10-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 inception or migrate into the category after the start of the period are not included.

Equal-Weighted Returns

In order 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 inception 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 Fund 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 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 so on) 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 fairly 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.

How is our approach similar to others?

- ▶ Our approach to this analysis is similar to others in that the overarching objective is to gauge the aggregate performance of active managers over time.
- ▶ Similar to other studies, we group active managers with their peers, using Morningstar Categories, and assess their performance against relevant benchmarks.
- ▶ We look at managers' performance on an equal-weighted basis. This illustrates how the average active manager in a given category has fared.
- ▶ Of course, investors don't necessarily select "average" managers, so we also look at active managers' performance on an asset-weighted basis. This better reflects investors' reality, as it shows how the average investor dollar has fared within a given category.
- ▶ We adjust for survivorship. We include all funds that existed at the beginning of the periods that we have examined in the denominator of our success-rate calculations. This ensures that our results reflect the opportunity set that was available to investors at the onset of each period. Nonsurviving funds' returns are also included in our return calculations for the periods when they were around. ■■■