

SPIVA[®] Australia Scorecard

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Experience the active vs. passive debate on a global scale on [INDEXOLOGY[®]](#).

SUMMARY

- S&P Dow Jones Indices has been the de facto scorekeeper of the ongoing active versus passive debate since the first publication of the SPIVA U.S. Scorecard in 2002. Over the years, we have built on our 16 years of experience publishing the report by expanding scorecard coverage into Australia, Canada, Europe, India, Japan, Latin America, and South Africa.
- The SPIVA Australia Scorecard reports on the performance of Australian active funds against their respective benchmark indices over 1-, 3-, 5-, 10-, and 15-year periods.¹ In this scorecard, we evaluated returns of over 854 Australian equity funds (large, mid, and small cap, as well as A-REIT), 436 international equity funds, and 116 Australian bond funds.
- Benchmark indices for all fund categories rebounded in the first half of 2019, though the majority of funds in all categories failed to deliver better returns than their respective benchmark indices, and they recorded smaller average returns than their respective benchmarks.
- There is no consistent trend in the yearly active versus index figures, but we have consistently observed underperformance for the majority of Australian active funds in most categories over the longer periods (5-, 10-, and 15-year periods).

Exhibit 1: H1 2019 Average Fund and Index Performance

FUND CATEGORY	INDEX	INDEX RETURN (%)	EQUAL-WEIGHTED AVERAGE FUND RETURN (%)	ASSET-WEIGHTED AVERAGE FUND RETURN (%)
Australian Equity General	S&P/ASX 200	19.73	17.29	17.53
Australian Equity Mid- and Small-Cap	S&P/ASX Mid-Small	15.98	15.65	15.38
International Equity General	S&P Developed Ex-Australia LargeMidCap	17.10	15.83	15.47
Australian Bonds	S&P/ASX Australian Fixed Interest 0+ Index	6.56	5.72	5.15
Australian Equity A-REIT	S&P/ASX 200 A-REIT	19.42	16.39	15.62

Source: S&P Dow Jones Indices LLC, Morningstar. Data as of June 30, 2019. All index returns based on total return in AUD. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

¹ The fund returns used are net of fees, excluding loads.

- **Australian Equity General Funds:** The [S&P/ASX 200](#) had a strong rebound in the first half of 2019, however the majority of Australian large-cap equity funds delivered smaller returns than the benchmark. In the 12 months ending June 2019, Australian large-cap equity funds recorded an average return of 6.3%, well below the gain of 11.6% by the S&P/ASX 200. Of the funds in this category, 93.2% and 96.3% failed to outperform the benchmark on absolute and risk-adjusted bases, respectively.
- **Australian Equity Mid- and Small-Cap Funds:** The S&P/ASX Mid-Small gained 2.9% in the 12 months ending June 2019, while the Australian mid- and small-cap funds recorded a smaller average return of 1.8%, with 60.5% of funds in this category failing to beat the benchmark on both absolute and relative bases over the same period. Over the 5- and 10-year periods, 75.2% and 46.7% of funds underperformed the S&P/ASX Mid-Small on an absolute basis, respectively.
- **International Equity General Funds:** The international equity market also enjoyed a strong rebound in the first half of 2019. In the one-year period ending June 2019, the [S&P Developed Ex-Australia LargeMidCap](#) gained 12.1%, while international equity funds marked an average gain of 9.2%, with 72.9% of funds underperforming the benchmark. Over the 5- and 10-year periods, about 82.8% and 92.1% of funds underperformed the S&P Developed Ex-Australia LargeMidCap, respectively.
- **Australian Bond Funds:** The [S&P/ASX Australian Fixed Interest 0+ Index](#) recorded a gain of 9.5% in the one-year period ending June 2019, while Australian bond funds gained 7.9% and 7.3% on equal- and asset-weighted bases, respectively. On an absolute basis, 84.6% of Australian bond funds underperformed the benchmark, while only 69.2% of funds underperformed on a risk-adjusted basis. Over the 10-year period, 72.4% and 60.3% of funds underperformed the S&P/ASX Australian Fixed Interest 0+ Index on absolute and risk-adjusted bases, respectively.
- **Australian Equity A-REIT Funds:** The [S&P/ASX 200 A-REIT](#) posted a strong one-year return of 19.3% as of June 2019. Within the Australian A-REIT fund category, 71.8% of funds posted a smaller gain than the benchmark, with equal- and asset-weighted average returns of 14.4% and 13.9%, respectively. Over the 5- and 10-year periods, over 80% of funds underperformed the S&P/ASX 200 A-REIT on an absolute basis.
- **Fund Survivorship:** In the 12 months ending June 2019, 5.5% of Australian funds from all measured categories were merged or liquidated, with Australian A-REIT funds recording the highest survival rate of 97.2%. In contrast, more than 6% of funds from the Australian Equity General and Australian Equity Mid- and Small-Cap categories disappeared over the same period. Over longer horizons, only 78.5%, 59.6%, and 52.9% of funds across all categories survived the 5-, 10-, and 15-year periods, respectively.
- **Average Fund Returns:** Funds in the Australian Equity General and International Equity General categories recorded lower equal-weighted than asset-weighted returns across all measured periods, indicating funds with larger assets tended to perform better than their peers with smaller assets. In contrast, smaller funds in the Australian Equity Mid- and Small-Cap category tended to deliver better performance than those with larger assets.

A UNIQUE SCORECARD FOR THE ACTIVE VERSUS PASSIVE DEBATE

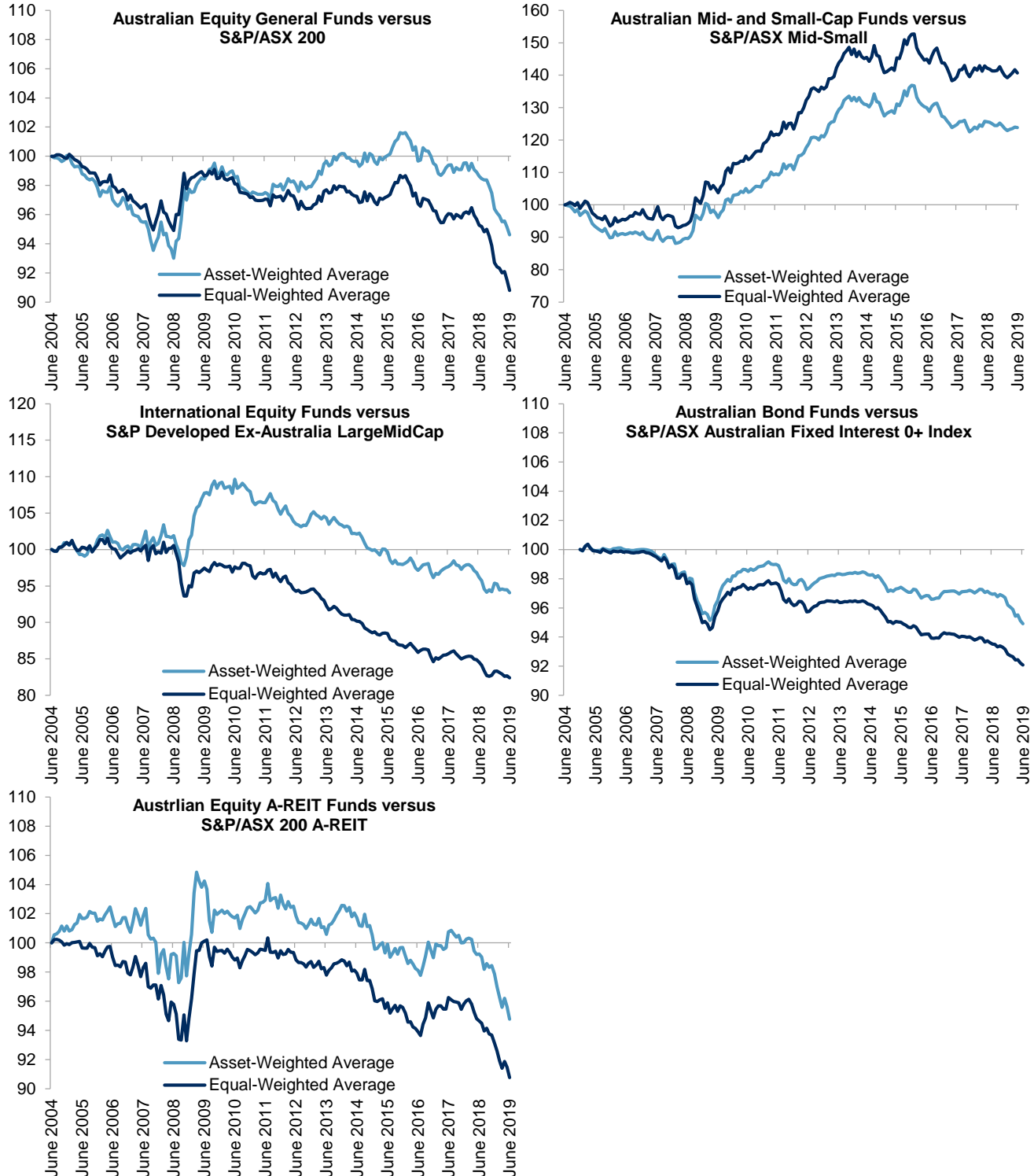
There is nothing novel about the index versus active debate. It has been a contentious subject for decades, and there are few strong believers on both sides, with the vast majority of market participants falling somewhere in between. Since its first publication 16 years ago, the SPIVA Scorecard has served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

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

- **Survivorship Bias Correction:** Many funds might be liquidated or merged during a period of study. However, for someone making an investment decision at the beginning of the period, these funds are part of the opportunity set. Unlike other commonly available comparison reports, SPIVA Scorecards account for the entire opportunity set—not just the survivors—thereby eliminating survivorship bias.
- **Apples-to-Apples Comparison:** Fund returns are often compared with a popular benchmark regardless of their investment category. The SPIVA Australia Scorecard makes an appropriate comparison by measuring a fund's returns against the returns of a benchmark that reflects the fund's investment category.
- **Asset-Weighted Returns:** Average returns for a fund group are often calculated using only equal weighting, which results in the returns of an AUD 10 billion fund affecting the average in the same manner as the returns of an AUD 10 million fund. However, the SPIVA Australia Scorecard shows both equal- and asset-weighted averages. Equal-weighted returns are a measure of average fund performance, while asset-weighted returns are a measure of the performance of the average invested dollar.
- **Data Cleaning:** SPIVA Scorecards avoid double counting multiple share classes in all count-based calculations, using only the share class with longer history or greater assets. Since this is meant to be a scorecard for active managers, index funds, leveraged and inverse funds, and other index-linked products are excluded.

Please note that neither S&P Dow Jones Indices, nor any of its affiliates make any assurance or provide any investment recommendation on the appropriateness of investing in either index or active investing. S&P Dow Jones Indices does not sponsor, endorse, sell, or promote any investment fund or other investment vehicle that is offered by third parties and that seeks to provide an investment return based on the performance of any index. The SPIVA Australia Scorecard simply provides semiannual statistics according to the SPIVA methodology and a brief analysis of those statistics. Further, S&P Dow Jones Indices does advise that anyone reading this report also read the SPIVA methodology in the report in order to understand how the data was derived.

CUMULATIVE AVERAGE FUND RETURN RELATIVE TO BENCHMARK



Source: S&P Dow Jones Indices LLC, Morningstar. Data as of June 30, 2019. All returns in AUD. Past performance is no guarantee of future results. Charts are provided for illustrative purposes and reflect hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

REPORTS

Report 1a: Percentage of Funds Outperformed by the Index (Based on Absolute Return)

FUND CATEGORY	COMPARISON INDEX	1-YEAR (%)	3-YEAR (%)	5-YEAR (%)	10-YEAR (%)	15-YEAR (%)
Australian Equity General	S&P/ASX 200	93.23	83.33	80.63	82.56	84.05
Australian Equity Mid- and Small-Cap	S&P/ASX Mid-Small	60.47	79.83	75.24	46.73	51.52
International Equity General	S&P Developed Ex-Australia LargeMidCap	72.91	74.00	82.82	92.08	91.95
Australian Bonds	S&P/ASX Australian Fixed Interest 0+ Index	84.62	77.59	90.57	72.41	NA
Australian Equity A-REIT	S&P/ASX 200 A-REIT	71.83	68.06	80.28	81.82	81.82

Source: S&P Dow Jones Indices LLC, Morningstar. Data as of June 30, 2019. Past performance is no guarantee of future results. Table is provided for illustrative purposes and reflects hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

Report 1b: Percentage of Funds Outperformed by the Index (Based on Risk-Adjusted Return)

FUND CATEGORY	COMPARISON INDEX	1-YEAR (%)	3-YEAR (%)	5-YEAR (%)	10-YEAR (%)	15-YEAR (%)
Australian Equity General	S&P/ASX 200	96.31	84.59	78.73	83.65	82.49
Australian Equity Mid- and Small-Cap	S&P/ASX Mid-Small	60.47	83.19	70.48	51.40	53.03
International Equity General	S&P Developed Ex-Australia LargeMidCap	63.75	74.00	83.70	92.92	92.53
Australian Bonds	S&P/ASX Australian Fixed Interest 0+ Index	69.23	55.17	71.70	60.34	NA
Australian Equity A-REIT	S&P/ASX 200 A-REIT	63.38	58.33	61.97	71.59	79.22

Source: S&P Dow Jones Indices LLC, Morningstar. Data as of June 30, 2019. Risk-adjusted return is computed as annualized average monthly return divided by annualized standard deviation of the monthly return for the measured periods. Past performance is no guarantee of future results. Table is provided for illustrative purposes and reflects hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

Report 2: Survivorship of Funds		
FUND CATEGORY	NO. OF FUNDS AT START	SURVIVORSHIP (%)
1-YEAR		
Australian Equity General	333	93.99
Australian Equity Mid- and Small-Cap	133	93.98
International Equity General	254	94.09
Australian Bonds	66	96.97
Australian Equity A-REIT	71	97.18
All Categories	857	94.52
3-YEAR		
Australian Equity General	325	84.62
Australian Equity Mid- and Small-Cap	121	82.64
International Equity General	253	83.79
Australian Bonds	58	94.83
Australian Equity A-REIT	73	91.78
All Categories	830	85.42
5-YEAR		
Australian Equity General	322	79.19
Australian Equity Mid- and Small-Cap	108	76.85
International Equity General	230	73.91
Australian Bonds	54	83.33
Australian Equity A-REIT	72	88.89
All Categories	786	78.50
10-YEAR		
Australian Equity General	375	59.20
Australian Equity Mid- and Small-Cap	107	62.62
International Equity General	245	55.51
Australian Bonds	60	63.33
Australian Equity A-REIT	89	66.29
All Categories	876	59.59
15-YEAR		
Australian Equity General	267	57.30
Australian Equity Mid- and Small-Cap	66	54.55
International Equity General	180	47.22
Australian Bonds	70	41.43
Australian Equity A-REIT	80	60.00
All Categories	663	52.94

Source: S&P Dow Jones Indices LLC, Morningstar. Data as of June 30, 2019. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 3: Average Fund Performance (Equal-Weighted)

INDEX/PEER GROUP	1-YEAR (%)	3-YEAR ANNUALIZED (%)	5-YEAR ANNUALIZED (%)	10-YEAR ANNUALIZED (%)	15-YEAR ANNUALIZED (%)
S&P/ASX 200	11.55	12.88	8.85	10.02	8.96
Australian Equity General	6.31	10.52	7.37	9.11	8.26
S&P/ASX Mid-Small	2.88	11.38	11.23	8.84	7.90
Australian Equity Mid- and Small-Cap	1.77	10.26	10.48	12.08	10.38
S&P Developed Ex-Australia LargeMidCap	12.08	14.50	13.71	12.91	7.56
International Equity General	9.24	12.93	11.68	11.03	6.18
S&P/ASX Australian Fixed Interest 0+ Index	9.54	4.21	5.05	5.94	NA
Australian Bonds	7.85	3.53	4.13	5.52	5.39
S&P/ASX 200 A-REIT	19.32	8.13	13.63	13.97	5.97
Australian Equity A-REIT	14.41	6.91	11.91	12.86	5.28

Source: S&P Dow Jones Indices LLC, Morningstar. Data as of June 30, 2019. All returns in AUD. Past performance is no guarantee of future results. Table is provided for illustrative purposes and reflects hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

Report 4: Average Fund Performance (Asset-Weighted)

INDEX/PEER GROUP	1-YEAR (%)	3-YEAR ANNUALIZED (%)	5-YEAR ANNUALIZED (%)	10-YEAR ANNUALIZED (%)	15-YEAR ANNUALIZED (%)
S&P/ASX 200	11.55	12.88	8.85	10.02	8.96
Australian Equity General	7.01	10.94	7.73	9.58	8.55
S&P/ASX Mid-Small	2.88	11.38	11.23	8.84	7.90
Australian Equity Mid- and Small-Cap	1.37	9.58	10.00	11.48	9.45
S&P Developed Ex-Australia LargeMidCap	12.08	14.50	13.71	12.91	7.56
International Equity General	9.60	13.28	11.86	11.39	7.12
S&P/ASX Australian Fixed Interest 0+ Index	9.54	4.21	5.05	5.94	NA
Australian Bonds	7.26	3.61	4.33	5.76	5.62
S&P/ASX 200 A-REIT	19.32	8.13	13.63	13.97	5.97
Australian Equity A-REIT	13.94	6.89	12.03	12.89	5.59

Source: S&P Dow Jones Indices LLC, Morningstar. Data as of June 30, 2019. All returns in AUD. Past performance is no guarantee of future results. Table is provided for illustrative purposes and reflects hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

Report 5: Quartile Breakpoints of Fund Performance			
FUND CATEGORY	THIRD QUARTILE	SECOND QUARTILE	FIRST QUARTILE
1-YEAR			
Australian Equity General	4.20	7.08	8.92
Australian Equity Mid- and Small-Cap	-4.20	1.22	7.02
International Equity General	6.07	9.84	13.08
Australian Bonds	6.94	8.28	9.22
Australian Equity A-REIT	10.07	15.96	19.60
3-YEAR			
Australian Equity General	8.73	11.02	12.57
Australian Equity Mid- and Small-Cap	7.02	9.29	11.18
International Equity General	11.05	13.17	15.03
Australian Bonds	2.96	3.82	4.20
Australian Equity A-REIT	5.19	7.60	8.76
5-YEAR			
Australian Equity General	5.93	7.51	8.82
Australian Equity Mid- and Small-Cap	7.85	9.26	11.95
International Equity General	10.33	11.83	13.51
Australian Bonds	3.60	4.48	4.90
Australian Equity A-REIT	10.57	12.27	13.33
10-YEAR			
Australian Equity General	8.32	9.24	10.17
Australian Equity Mid- and Small-Cap	9.80	11.50	12.87
International Equity General	10.01	11.29	12.20
Australian Bonds	5.25	5.90	6.27
Australian Equity A-REIT	12.02	12.83	14.10
15-YEAR			
Australian Equity General	7.77	8.34	9.05
Australian Equity Mid- and Small-Cap	8.99	9.87	10.81
International Equity General	5.32	6.24	7.01
Australian Bonds	5.45	5.75	6.06
Australian Equity A-REIT	4.56	5.35	6.14

Source: S&P Dow Jones Indices LLC, Morningstar. Data as of June 30, 2019. All returns in AUD. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

APPENDIX A

SPIVA Styles and Morningstar Fund Classifications

Data from Morningstar is obtained for all managed funds domiciled in Australia for which month-end data is available during the performance period. The data include the most comprehensive Australian fund data on active and finalized (merged or liquidated) funds over the chosen period. Funds are classified based on the Morningstar fund classification system, and the SPIVA Australia Scorecard covers the Australian Equity General (large-cap equity), Australian Equity Mid- and Small-Cap, International Equity General, Australian Bonds, and Australian Equity A-REIT categories.

The Morningstar classification system produces narrow, style-based classifications for Australian equity funds. S&P Dow Jones Indices has consolidated the style-based categories in order to generate a larger sample size and develop a broad-market comparison to market-based benchmarks. A narrow, style-based comparison would yield a limited sample size, given value and growth style segments are not consistently discernible over the past five years.

Morningstar categories have been mapped to SPIVA peer groups in the following manner.

SPIVA CATEGORY	MORNINGSTAR CATEGORY
Australian Equity General	Australia Fund Equity - Australia Large Blend
	Australia Fund Equity - Australia Large Growth
	Australia Fund Equity - Australia Large Value
Australian Equity Mid- and Small-Cap	Australia Fund Equity - Australia Mid/Small Blend
	Australia Fund Equity - Australia Mid/Small Growth
	Australia Fund Equity - Australia Mid/Small Value
International Equity General	Australia Fund Equity - World Large Blend
	Australia Fund Equity - World Large Growth
	Australia Fund Equity - World Large Value
Australian Bonds	Australia Fund Bonds - Australia
Australian Equity A-REIT	Australia Fund Equity - Australia Real Estate

Source: S&P Dow Jones LLC and Morningstar. Data as of June 2019. Table is provided for illustrative purposes.

Benchmarks

The chosen benchmarks are shown in Exhibit 3. All index returns are total returns (i.e., include dividend reinvestment) in Australian dollars. There has been no deduction from index returns to account for fund investment expenses. It is important to note that active fund returns are after expenses, but they do not include loads and entry fees.

The benchmarks chosen are the most commonly adopted benchmarks for funds that fall into the respective fund peer groups. In some instances, a fund may not adopt the benchmarks stipulated. However, a vast majority do set their performance hurdle based on the assigned benchmarks in this report, ensuring that the study is robust and fair.

SPIVA CATEGORY	BENCHMARK INDEX
Australian Equity General	S&P/ASX 200
Australian Equity Mid- and Small-Cap	S&P/ASX Mid-Small
International Equity General	S&P Developed Ex-Australia LargeMidCap
Australian Bonds	S&P/ASX Australian Fixed Interest 0+ Index
Australian Equity A-REIT	S&P/ASX 200 A-REIT

Source: S&P Dow Jones LLC and Morningstar. Data as of June 2019. Table is provided for illustrative purposes.

APPENDIX B: GLOSSARY

Percentage of Funds Outperformed by the Index

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

Survivorship (%)

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

Equal-Weighted Fund Performance

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

Asset-Weighted Fund Performance

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

Quartiles Breakpoints

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

Survivorship Bias

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

Fees

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

Indices

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

S&P/ASX 200

The S&P/ASX 200 is recognized as the institutional investable benchmark in Australia. The index covers approximately 80% of Australian equity market capitalization. Index constituents are drawn from eligible companies listed on the Australian Securities Exchange. The S&P/ASX 200 is a highly liquid and investable index that is designed to address investment managers' needs to benchmark against a portfolio characterized by sufficient size and liquidity.

S&P/ASX MID-SMALL

The S&P/ASX Mid-Small is designed to measure performance of companies included in the [S&P/ASX 300](#), but not in the [S&P/ASX 50](#). It is a combination of the [S&P/ASX MidCap 50](#) and the [S&P/ASX Small Ordinaries](#). The index covers approximately 18% of Australian equity market capitalization.

S&P DEVELOPED EX-AUSTRALIA LARGEMIDCAP

The S&P Developed Ex-Australia LargeMidCap is a float-adjusted, market-capitalization-weighted index comprising large- and mid-cap companies in developed markets, excluding Australia. It represents approximately 85% of each relevant market's total available capital. This index is part of the S&P Global BMI (Broad Market Index) Series.

S&P/ASX AUSTRALIAN FIXED INTEREST 0+ INDEX

The S&P/ASX Australian Fixed Interest 0+ Index is part of the S&P/ASX Australian Fixed Interest 0+ Index Series, a broad benchmark index series designed to measure the performance of Australian bonds meeting investability criteria.

S&P/ASX 200 A-REIT

The S&P/ASX 200 A-REIT is a sector subindex of the S&P/ASX 200. The index seeks to provide investors with exposure to Australian Real Estate Investment Trusts (A-REITs), which are captured under the Global Industry Classification Standard (GICS® Tier 2).

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PERFORMANCE DISCLOSURE

The S&P/ASX Australian Fixed Interest 0+ Index was launched September 5, 2014. The S&P/ASX Mid-Small was launched August 15, 2011. All information presented prior to an index's Launch Date is hypothetical (back-tested), not actual performance. The back-test calculations are based on the same methodology that was in effect on the index Launch Date. However, when creating back-tested history for periods of market anomalies or other periods that do not reflect the general current market environment, index methodology rules may be relaxed to capture a large enough universe of securities to simulate the target market the index is designed to measure or strategy the index is designed to capture. For example, market capitalization and liquidity thresholds may be reduced. Complete index methodology details are available at www.spdji.com. Past performance of the Index is not an indication of future results. Prospective application of the methodology used to construct the Index may not result in performance commensurate with the back-test returns shown.

S&P Dow Jones Indices defines various dates to assist our clients in providing transparency. The First Value Date is the first day for which there is a calculated value (either live or back-tested) for a given index. The Base Date is the date at which the Index is set at a fixed value for calculation purposes. The Launch Date designates the date upon which the values of an index are first considered live: index values provided for any date or time period prior to the index's Launch Date are considered back-tested. S&P Dow Jones Indices defines the Launch Date as the date by which the values of an index are known to have been released to the public, for example via the company's public website or its datafeed to external parties. For Dow Jones-branded indices introduced prior to May 31, 2013, the Launch Date (which prior to May 31, 2013, was termed "Date of introduction") is set at a date upon which no further changes were permitted to be made to the index methodology, but that may have been prior to the Index's public release date.

The back-test period does not necessarily correspond to the entire available history of the Index. Please refer to the methodology paper for the Index, available at www.spdji.com for more details about the index, including the manner in which it is rebalanced, the timing of such rebalancing, criteria for additions and deletions, as well as all index calculations.

Another limitation of using back-tested information is that the back-tested calculation is generally prepared with the benefit of hindsight. Back-tested information reflects the application of the index methodology and selection of index constituents in hindsight. No hypothetical record can completely account for the impact of financial risk in actual trading. For example, there are numerous factors related to the equities, fixed income, or commodities markets in general which cannot be, and have not been accounted for in the preparation of the index information set forth, all of which can affect actual performance.

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