

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 860 Australian equity funds (large, mid, and small cap, as well as A-REIT), 436 international equity funds, and 116 Australian bond funds.
- In 2018, apart from the Australian mid- and small-cap funds, the majority of Australian funds did not outperform their respective benchmarks and had worse relative performance than in 2017.
- 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: Percentage of Funds Outperformed by the Index in the Past Five Years (%)

FUND CATEGORY	2014	2015	2016	2017	2018
Australian Equity General	61.44	36.22	76.38	59.00	86.69
Australian Equity Mid- and Small-Cap	23.71	27.27	81.73	74.04	51.94
International Equity General	80.58	72.27	86.04	52.51	70.37
Australian Bonds	94.12	85.71	62.96	68.63	98.36
Australian Equity A-REIT	91.67	84.06	77.14	43.94	78.87

Source: S&P Dow Jones Indices LLC, Morningstar. Data as of Dec. 31, 2018. Table is provided for illustrative purposes. Note: All annual figures are based on SPIVA Australia Year-End Scorecards.

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

- **Australian Equity General Funds:** In 2018, the [S&P/ASX 200](#) recorded a loss of 2.84%, while Australian large-cap equity funds suffered bigger drawdowns of 6.29% and 5.81% on equal- and asset-weighted bases, respectively. On an absolute and risk-adjusted basis, 86.7% of funds failed to outperform the benchmark, and 4.0% of them were liquidated over the one-year period. Over the 5- and 10-year periods, 79.6% and 83.2% of funds underperformed the S&P/ASX 200 on an absolute basis, respectively.
- **Australian Equity Mid- and Small-Cap Funds:** Compared to large-cap equity funds, the mid- and small-cap funds delivered much better relative performance in 2018. The S&P/ASX Mid-Small dropped 7.98% in 2018, while the Australian mid- and small-cap funds recorded smaller losses of 7.95% and 6.95% on equal- and asset-weighted bases, respectively. On an absolute and risk-adjusted basis, 51.9% and 45.7% of funds lagged the benchmark, respectively, with 8.5% of them being liquidated. Over the 5- and 10-year periods, 70.1% and 47.2% of funds underperformed the S&P/ASX Mid-Small on an absolute basis, respectively.
- **International Equity General Funds:** In 2018, 70.4% of international equity funds underperformed the [S&P Developed Ex-Australia LargeMidCap](#) on absolute and risk-adjusted bases. The international equity general funds posted an average loss of 0.55% (equal-weighted), while the S&P Developed Ex-Australia LargeMidCap recorded a gain of 1.84%. Over the 5- and 10-year periods, about 90% of funds in this category failed to beat the S&P Developed Ex-Australia LargeMidCap, making it the worst-performing fund category by benchmark-relative returns.
- **Australian Bond Funds:** The [S&P/ASX Australian Fixed Interest 0+ Index](#) recorded a gain of 4.54% in 2018, while the Australian bond funds gained 3.24% and 3.45% on an equal- and asset-weighted basis, respectively. On an absolute basis, 98.4% of Australian bond funds underperformed the benchmark, but only 62.3% of funds underperformed on a risk-adjusted basis, as the majority of the bond funds had lower return volatility than the benchmark over the one-year period. No funds were liquidated in this category over the one-year period.
- **Australian Equity A-REIT Funds:** The [S&P/ASX 200 A-REIT](#) posted a gain of 2.91% and outperformed the S&P/ASX 200 by a significant margin in 2018. However, less than a quarter of Australian A-REIT funds managed to outperform the index on an absolute and risk-adjusted basis. Funds in this category posted returns of 0.03% and 0.79% on an equal- and asset-weighted basis, respectively, over the one-year period. Over the 5- and 10-year periods, 83.3% and 78.1% of funds underperformed the S&P/ASX 200 A-REIT on an absolute basis, respectively.
- **Fund Survivorship:** In 2018, 4.3% of Australian funds from all measured categories were merged or liquidated, with Australian bond funds recording a 100% survival rate and the Australian mid- and small-cap funds disappearing at the fastest rate (8.5%). Over the longer periods, only 80.6% and 57.7% of funds across all categories survived the 5- and 10-year periods, respectively, with international equity funds having the lowest survival rates for both periods.
- **Average Fund Returns:** Apart from the Australian mid- and small-cap funds, all fund categories recorded lower returns than their respective benchmarks for almost all measured periods on both an equal- and asset-weighted basis. International equity funds had the worst underperformance versus the benchmark for the 5-, 10-, and 15-year periods. Besides the Australian mid- and small-cap funds, all fund categories recorded higher asset-weighted returns than equal-weighted returns, indicating that larger funds tended to outperform smaller funds in these categories.

A UNIQUE SCORECARD FOR THE ACTIVE VERSUS PASSIVE DEBATE

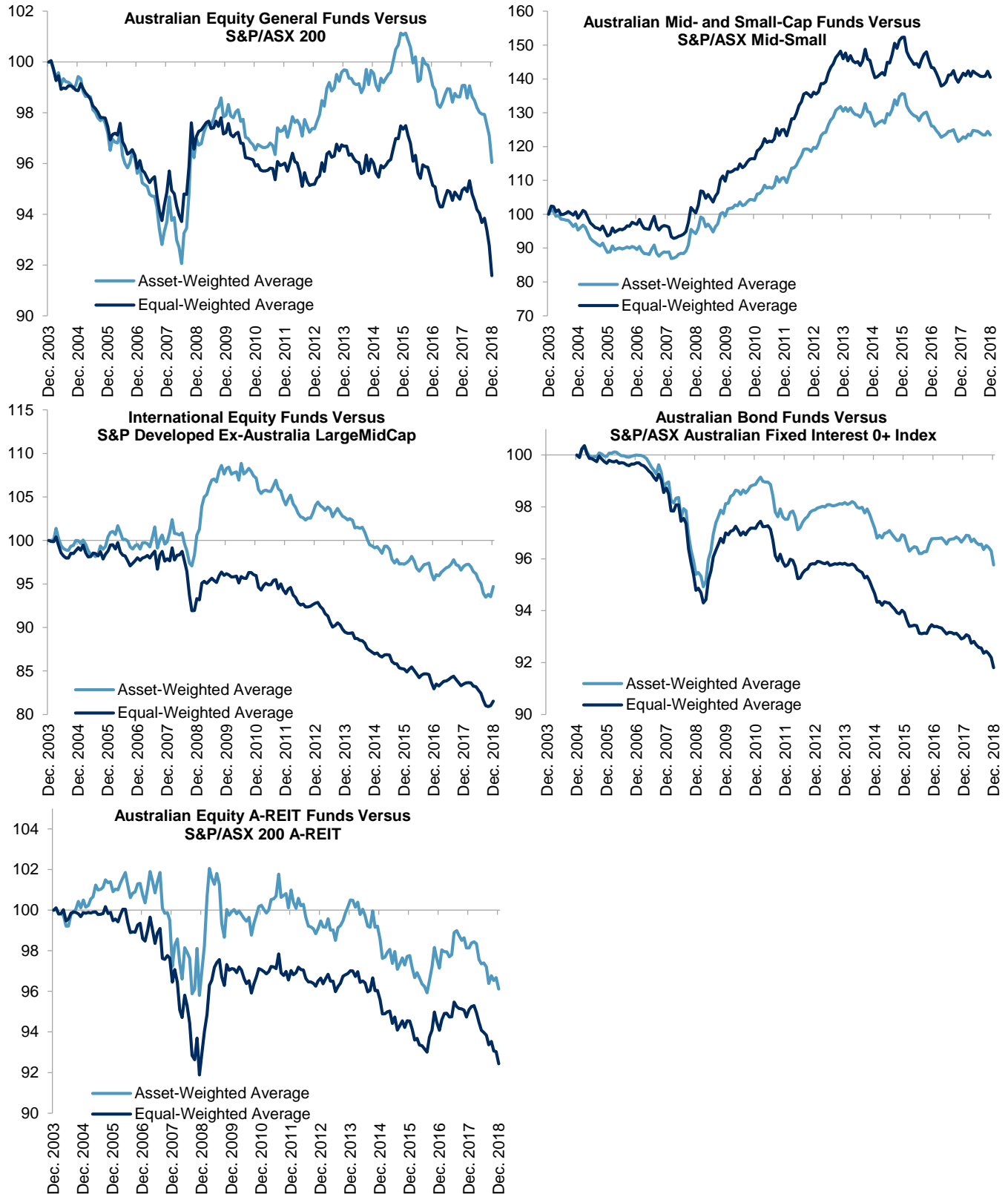
There is nothing novel about the index versus active debate. It has been a contentious subject for decades, and there are few strong believers on both sides, with the vast majority of market participants falling somewhere in between. Since its first publication 16 years ago, the SPIVA Scorecard has served 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 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 semi-annual 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 Dec. 31, 2018. 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	86.69	85.81	79.61	83.20	83.68
Australian Equity Mid- and Small-Cap	S&P/ASX Mid-Small	51.94	88.89	70.09	47.22	49.18
International Equity General	S&P Developed Ex-Australia LargeMidCap	70.37	82.38	89.40	90.87	92.64
Australian Bonds	S&P/ASX Australian Fixed Interest 0+ Index	98.36	83.64	90.20	70.97	NA
Australian Equity A-REIT	S&P/ASX 200 A-REIT	78.87	66.22	83.33	78.13	84.62

Source: S&P Dow Jones Indices LLC, Morningstar. Data as of Dec. 31, 2018. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

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	86.36	87.10	77.63	81.84	84.10
Australian Equity Mid- and Small-Cap	S&P/ASX Mid-Small	45.74	87.18	69.16	49.07	49.18
International Equity General	S&P Developed Ex-Australia LargeMidCap	69.96	80.74	89.86	92.06	91.41
Australian Bonds	S&P/ASX Australian Fixed Interest 0+ Index	62.30	58.18	72.55	69.35	NA
Australian Equity A-REIT	S&P/ASX 200 A-REIT	77.46	58.11	58.33	65.63	76.92

Source: S&P Dow Jones Indices LLC, Morningstar. Data as of Dec. 31, 2018. 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.

Report 2: Survivorship of Funds		
FUND CATEGORY	NO. OF FUNDS AT START	SURVIVORSHIP (%)
1-YEAR		
Australian Equity General	323	95.98
Australian Equity Mid- and Small-Cap	130	91.54
International Equity General	247	95.55
Australian Bonds	61	100.00
Australian Equity A-REIT	72	98.61
All Categories	833	95.68
3-YEAR		
Australian Equity General	324	84.88
Australian Equity Mid- and Small-Cap	118	83.05
International Equity General	248	83.87
Australian Bonds	55	98.18
Australian Equity A-REIT	76	90.79
All Categories	821	85.75
5-YEAR		
Australian Equity General	319	81.50
Australian Equity Mid- and Small-Cap	108	78.70
International Equity General	221	76.02
Australian Bonds	51	86.27
Australian Equity A-REIT	74	89.19
All Categories	773	80.60
10-YEAR		
Australian Equity General	382	58.12
Australian Equity Mid- and Small-Cap	108	62.96
International Equity General	256	53.91
Australian Bonds	62	56.45
Australian Equity A-REIT	98	61.22
All Categories	906	57.73
15-YEAR		
Australian Equity General	251	56.97
Australian Equity Mid- and Small-Cap	62	58.06
International Equity General	168	47.62
Australian Bonds	66	42.42
Australian Equity A-REIT	81	59.26
All Categories	628	53.34

Source: S&P Dow Jones Indices LLC, Morningstar. Data as of Dec. 31, 2018. 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	-2.84	6.69	5.63	9.00	8.29
Australian Equity General	-6.29	4.54	4.50	8.37	7.66
S&P/ASX Mid-Small	-7.98	8.85	8.50	8.56	7.36
Australian Equity Mid- and Small-Cap	-7.95	5.97	7.68	12.28	9.82
S&P Developed Ex-Australia LargeMidCap	1.84	8.15	10.38	10.24	7.26
International Equity General	-0.55	6.57	8.35	8.76	5.81
S&P/ASX Australian Fixed Interest 0+ Index	4.54	3.69	4.62	5.15	NA
Australian Bonds	3.24	2.90	3.73	4.82	5.07
S&P/ASX 200 A-REIT	2.91	7.18	12.33	10.43	5.59
Australian Equity A-REIT	0.03	6.38	11.24	10.36	5.04

Source: S&P Dow Jones Indices LLC, Morningstar. Data as of Dec. 31, 2018. 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	-2.84	6.69	5.63	9.00	8.29
Australian Equity General	-5.81	4.89	4.85	8.89	8.00
S&P/ASX Mid-Small	-7.98	8.85	8.50	8.56	7.36
Australian Equity Mid- and Small-Cap	-6.95	5.50	7.31	11.53	8.88
S&P Developed Ex-Australia LargeMidCap	1.84	8.15	10.38	10.24	7.26
International Equity General	-0.61	7.19	8.62	9.58	6.87
S&P/ASX Australian Fixed Interest 0+ Index	4.54	3.69	4.62	5.15	NA
Australian Bonds	3.45	3.28	4.10	5.19	5.41
S&P/ASX 200 A-REIT	2.91	7.18	12.33	10.43	5.59
Australian Equity A-REIT	0.79	6.58	11.33	10.32	5.32

Source: S&P Dow Jones Indices LLC, Morningstar. Data as of Dec. 31, 2018. 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	-8.29	-5.78	-4.10
Australian Equity Mid- and Small-Cap	-11.29	-7.52	-4.03
International Equity General	-3.42	-0.43	2.59
Australian Bonds	2.61	3.14	4.10
Australian Equity A-REIT	-0.91	1.82	2.75
3-YEAR			
Australian Equity General	2.87	4.73	6.23
Australian Equity Mid- and Small-Cap	3.44	5.29	6.83
International Equity General	5.18	6.79	7.88
Australian Bonds	2.43	2.96	3.53
Australian Equity A-REIT	5.30	6.51	7.72
5-YEAR			
Australian Equity General	3.19	4.62	5.67
Australian Equity Mid- and Small-Cap	4.84	7.54	9.80
International Equity General	7.05	8.24	9.67
Australian Bonds	3.19	3.73	4.48
Australian Equity A-REIT	10.21	11.21	12.14
10-YEAR			
Australian Equity General	7.50	8.34	9.28
Australian Equity Mid- and Small-Cap	9.59	11.56	13.22
International Equity General	7.55	8.82	9.84
Australian Bonds	4.30	5.18	5.64
Australian Equity A-REIT	9.31	10.14	10.86
15-YEAR			
Australian Equity General	7.02	7.76	8.43
Australian Equity Mid- and Small-Cap	8.32	9.60	10.40
International Equity General	5.06	6.03	6.79
Australian Bonds	4.78	5.46	5.78
Australian Equity A-REIT	4.51	5.26	5.66

Source: S&P Dow Jones Indices LLC, Morningstar. Data as of Dec. 31, 2018. 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 includes 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.

Exhibit 2: Australian Equity Funds: SPIVA and Morningstar Categories	
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 December 2018. 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.

Exhibit 3: SPIVA Categories and Their Benchmarks	
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 December 2018. 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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