S&P Dow Jones Indices

A Division of S&P Global



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. We have built on our 17 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 829 Australian equity funds (large, mid, and small cap, as well as A-REIT), 420 international equity funds, and 115 Australian bond funds.
- In 2019, benchmark-relative performance of Australian funds was better than in 2018 for the majority of fund categories. In the Australian Equity General, Australian Equity Mid- and Small-Cap, and Australian Equity A-REIT categories, 61.5%, 46.9%, and 65.2% of funds were outperformed by their benchmarks, respectively.

Exhibit 1: Percentage of Funds Outperformed by the Index in the Past Five Years (%)					
FUND CATEGORY	2015	2016	2017	2018	2019
Australian Equity General	36.22	76.38	59.00	86.69	61.52
Australian Equity Mid- and Small-Cap	27.27	81.73	74.04	51.94	46.92
International Equity General	72.27	86.04	52.51	70.37	71.32
Australian Bonds	85.71	62.96	68.63	98.36	72.22
Australian Equity A-REIT	84.06	77.14	43.94	78.87	65.22

Source: S&P Dow Jones Indices LLC, Morningstar. Data as of Dec. 31, 2019. Table is provided for illustrative purposes. Note: All annual figures are based on SPIVA Australia Year-End Scorecards.

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

Australian Equity General Funds: In 2019, the <u>S&P/ASX 200</u> recorded a total return of 23.4%, while Australian large-cap equity funds recorded a net return of 21.9% and 21.8% on equal- and asset-weighted bases, respectively. On an absolute and risk-adjusted basis, 61.5% and 67.9% of funds did not outperform the benchmark, respectively, and 1.8% of them were liquidated over the one-year period. Over the 5- and 10-year periods, 80.8% and 83.9% of funds underperformed the S&P/ASX 200 on an absolute basis, respectively.

- Australian Equity Mid- and Small-Cap Funds: The S&P/ASX Mid-Small gained 21.6% in 2019, while Australian mid- and small-cap funds recorded larger net returns of 25.6% and 23.3% on equal- and asset-weighted bases, respectively. On an absolute and risk-adjusted basis, 46.9% and 43.1% of funds lagged the benchmark, respectively, with 3.8% of them being liquidated. Over the 5- and 10-year periods, 69.7% and 49.1% of funds underperformed the S&P/ASX Mid-Small on an absolute basis, respectively.
- International Equity General Funds: In 2019, more than 70% of international equity funds underperformed the S&P Developed Ex-Australia LargeMidCap on absolute and risk-adjusted bases. International equity general funds posted an equal-weighted average gain of 24.6%, while the S&P Developed Ex-Australia LargeMidCap recorded a gain of 28.1%. Over the 5- and 10-year periods, 86.6% and 93.5% of funds in this category failed to beat the S&P Developed Ex-Australia LargeMidCap respectively.
- Australian Bond Funds: The <u>S&P/ASX Australian Fixed Interest 0+ Index</u> gained 7.2% in 2019, while the Australian bond funds gained 6.4% and 6.5% on an equal- and asset-weighted basis, respectively. On an absolute basis, 72.2% of Australian bond funds underperformed the benchmark, while 59.7% of funds underperformed on a risk-adjusted basis. Over 10-year period, 85.0% and 66.7% of funds in this category did not beat the benchmark on an absolute and risk-adjusted basis, respectively.
- Australian Equity A-REIT Funds: The <u>S&P/ASX 200 A-REIT</u> recorded a total return of 19.4% in 2019, while the Australian A-REIT funds gained a net return of 18.6% and 18.4% on equal- and asset-weighted bases, respectively. Of Australian A-REIT funds, 65.2% and 43.5% underperformed the benchmark on an absolute and risk-adjusted basis, respectively. Over the 10-year period, 82.0% and 71.9% of funds in this category underperformed the benchmark on an absolute and risk-adjusted basis, respectively.
- **Fund Survivorship:** As of year-end 2019, 3.5% and 14.3% of Australian funds from all measured categories were merged or liquidated over the one- and three-year periods, respectively. Over the longer periods, the survivorship rate dropped to 78.5% and 58.7% over the 5- and 10-year periods, respectively, with Australian A-REIT funds having the highest survival rates for both periods.
- Average Fund Returns: The Australian mid- and small-cap funds recorded lower asset-weighted
 returns than equal-weighted returns for all measured periods, indicating that smaller funds in this
 category tended to perform better than their larger peers. This trend has been consistently
 observed in the SPIVA Australia Scorecards.

A UNIQUE SCORECARD FOR THE ACTIVE VERSUS PASSIVE DEBATE

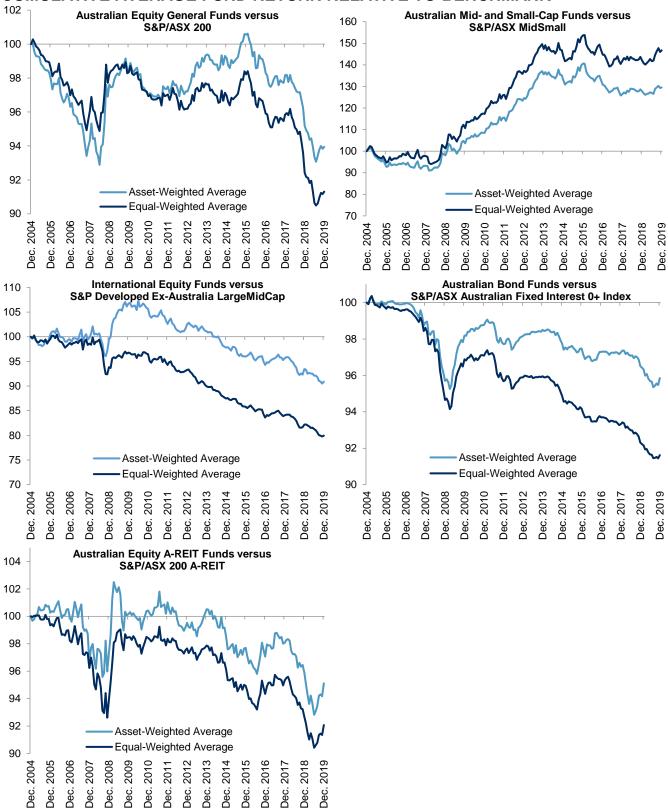
There is nothing novel about the index versus active debate. It has been a contentious subject for decades, and there are few strong believers on both sides, with the vast majority of market participants falling somewhere in between. Since its first publication 17 years ago, the SPIVA Scorecard has served 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 and longer history. Since this is meant to be a scorecard for active managers, index funds, leveraged and inverse funds, and other indexlinked 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, 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	61.52	74.54	80.79	83.92	85.30
Australian Equity Mid- and Small-Cap	S&P/ASX Mid-Small	46.92	61.48	69.72	49.07	50.00
International Equity General	S&P Developed Ex- Australia LargeMidCap	71.32	75.30	86.55	93.52	93.37
Australian Bonds	S&P/ASX Australian Fixed Interest 0+ Index	72.22	75.00	81.36	85.00	85.07
Australian Equity A-REIT	S&P/ASX 200 A-REIT	65.22	68.12	74.65	82.02	79.75

Source: S&P Dow Jones Indices LLC, Morningstar. Data as of Dec. 31, 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	67.88	84.36	82.01	83.11	84.23
Australian Equity Mid- and Small-Cap	S&P/ASX Mid-Small	43.08	72.13	66.97	54.63	52.78
International Equity General	S&P Developed Ex- Australia LargeMidCap	74.34	74.50	89.92	95.95	91.71
Australian Bonds	S&P/ASX Australian Fixed Interest 0+ Index	59.72	65.00	66.10	66.67	80.60
Australian Equity A-REIT	S&P/ASX 200 A-REIT	43.48	56.52	59.15	71.91	77.22

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

FUND CATEGORY	NO. OF FUNDS AT START	SURVIVORSHIP (%)
1-YEAR		
Australian Equity General	330	98.18
Australian Equity Mid- and Small-Cap	130	96.15
International Equity General	265	95.09
Australian Bonds	72	94.44
Australian Equity A-REIT	69	97.10
All Categories	866	96.54
3-YEAR		
Australian Equity General	326	84.66
Australian Equity Mid- and Small-Cap	122	81.15
International Equity General	251	85.26
Australian Bonds	60	95.00
Australian Equity A-REIT	69	92.75
All Categories	828	85.75
5-YEAR		
Australian Equity General	328	78.66
Australian Equity Mid- and Small-Cap	109	77.06
International Equity General	238	73.95
Australian Bonds	59	86.44
Australian Equity A-REIT	71	88.73
All Categories	805	78.51
10-YEAR		
Australian Equity General	367	58.04
Australian Equity Mid- and Small-Cap	108	62.96
International Equity General	247	53.85
Australian Bonds	60	63.33
Australian Equity A-REIT	89	66.29
All Categories	871	58.67
15-YEAR		
Australian Equity General	279	55.91
Australian Equity Mid- and Small-Cap	72	52.78
International Equity General	181	46.96
Australian Bonds	67	41.79
Australian Equity A-REIT	79	59.49
All Categories	678	52.21

Source: S&P Dow Jones Indices LLC, Morningstar. Data as of Dec. 31, 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	23.40	10.26	8.97	7.86	8.03
Australian Equity General	21.92	8.46	7.67	7.07	7.37
S&P/ASX Mid-Small	21.61	10.68	11.68	6.72	6.55
Australian Equity Mid- and Small-Cap	25.58	11.20	12.12	9.77	9.31
S&P Developed Ex- Australia LargeMidCap	28.10	14.31	12.71	12.84	8.33
International Equity General	24.61	12.62	10.71	10.71	6.72
S&P/ASX Australian Fixed Interest 0+ Index	7.19	5.10	4.16	5.71	5.73
Australian Bonds	6.39	4.32	3.43	5.12	5.11
S&P/ASX 200 A-REIT	19.36	9.10	10.93	11.55	4.89
Australian Equity A-REIT	18.60	8.22	9.98	10.80	4.31

Source: S&P Dow Jones Indices LLC, Morningstar. Data as of Dec. 31, 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	23.40	10.26	8.97	7.86	8.03
Australian Equity General	21.80	8.61	7.80	7.35	7.59
S&P/ASX Mid-Small	21.61	10.68	11.68	6.72	6.55
Australian Equity Mid- and Small-Cap	23.28	10.34	11.13	9.12	8.41
S&P Developed Ex- Australia LargeMidCap	28.10	14.31	12.71	12.84	8.33
International Equity General	24.59	12.92	11.07	11.05	7.64
S&P/ASX Australian Fixed Interest 0+ Index	7.19	5.10	4.16	5.71	5.73
Australian Bonds	6.47	4.58	3.75	5.46	5.43
S&P/ASX 200 A-REIT	19.36	9.10	10.93	11.55	4.89
Australian Equity A-REIT	18.41	8.36	10.15	10.97	4.54

Source: S&P Dow Jones Indices LLC, Morningstar. Data as of Dec. 31, 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	19.99	22.54	24.68		
Australian Equity Mid- and Small-Cap	18.97	23.49	30.69		
International Equity General	21.36	25.19	28.95		
Australian Bonds	6.02	6.83	7.42		
Australian Equity A-REIT	16.64	18.21	20.71		
3-YEAR					
Australian Equity General	6.58	8.89	10.54		
Australian Equity Mid- and Small-Cap	7.77	10.58	12.54		
International Equity General	10.61	12.59	15.19		
Australian Bonds	3.78	4.72	5.14		
Australian Equity A-REIT	6.82	8.61	9.69		
5-YEAR					
Australian Equity General	6.18	7.74	8.96		
Australian Equity Mid- and Small-Cap	9.27	11.31	13.39		
International Equity General	9.35	10.89	12.18		
Australian Bonds	2.78	3.65	4.06		
Australian Equity A-REIT	8.98	10.11	11.10		
10-YEAR					
Australian Equity General	6.27	7.14	8.12		
Australian Equity Mid- and Small-Cap	7.28	9.02	10.47		
International Equity General	9.58	11.09	12.05		
Australian Bonds	4.73	5.39	5.72		
Australian Equity A-REIT	10.12	10.62	11.58		
15-YEAR					
Australian Equity General	6.62	7.38	8.12		
Australian Equity Mid- and Small-Cap	7.76	8.65	9.70		
International Equity General	6.02	6.74	7.61		
Australian Bonds	4.93	5.49	5.81		
Australian Equity A-REIT	3.44	4.33	5.13		

Source: S&P Dow Jones Indices LLC, Morningstar. Data as of Dec. 31, 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 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		
	Australia Fund Equity - World Large Blend		
International Equity General	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 pth 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 <u>S&P/ASX</u> 300, but not in the <u>S&P/ASX 50</u>. It is a combination of the <u>S&P/ASX MidCap 50</u> and the <u>S&P/ASX Small Ordinaries</u>. 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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