

## CONTRIBUTOR

Priscilla Luk  
Senior Director  
Global Research & Design  
[priscilla.luk@spglobal.com](mailto:priscilla.luk@spglobal.com)

# SPIVA<sup>®</sup> Japan Scorecard

## 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 experience publishing the report by expanding scorecard coverage into Australia, Canada, Europe, India, South Africa, Latin America, and Japan. While this report will not end the debate on active versus passive investing in Japan, we hope to make a meaningful contribution by examining market segments in which one strategy works better than the other.
- The SPIVA Japan Scorecard reports on the performance of actively managed Japanese mutual funds against their respective benchmark indices over 1-, 3-, 5-, and 10-year investment horizons. In this scorecard, we evaluated returns of more than 754 Japanese large- and mid/small-cap equity funds, along with more than 566 international equity funds investing in global, international, and emerging markets, as well as U.S. equities.
- **Domestic Equity Funds:** The Japanese equity market rebounded in the second half of 2016, erasing the losses recorded in the first six months of the year. The majority of Japanese large- and mid/small-cap equity funds suffered smaller losses than their benchmarks during the market decline; however, they lagged the benchmarks when the market rallied. Overall in 2016, 63.6% of Japanese large-cap funds and 54.6% of Japanese mid/small-cap funds underperformed their benchmarks.

Over the 10-year horizon, more than 60% of Japanese large- and mid/small-cap equity funds underperformed their respective benchmarks. Nevertheless, Japanese mid/small-cap funds delivered returns above the benchmark on average over the 1-, 5-, and 10-year horizons.

- **Foreign Equity Funds:** The majority of foreign equity funds had disappointing performance over the 5- and 10-year periods, with over 90% of funds in foreign equity categories underperforming their respective benchmarks. This trend continued in 2016; 90.1% and 88.7% of global and international equity funds, respectively, lagged their benchmarks while 82.9% and 61.3% of emerging and U.S. equity funds, respectively, underperformed. All foreign equity fund categories delivered lower-than-benchmark average returns across the 1-, 3-, 5-, and 10-year horizons.
- **Fund Survivorship:** In 2016, Japanese equity funds had a survivorship rate of 96.3%, while foreign equity funds had a lower rate of 94.4%, collectively. Among foreign equity funds, emerging market funds had the lowest survivorship rate, at 93.4%. Over the 10-year horizon, 34.6% of Japanese mid/small-cap equity funds and 27.9% of Japanese large-cap equity funds were liquidated. Foreign equity funds tended to disappear at faster rates, with 4 out of 10 U.S. and emerging equity funds liquidated in the past 10 years. International equity funds had the lowest liquidation rate (20.9%) among all foreign equity fund categories.
- **Equal-Weighted Average Fund Returns:** Although the majority of Japanese large- and mid/small-cap equity funds underperformed their benchmarks in 2016, Japanese large-cap equity funds only lagged the S&P/TOPIX 150 by 91 bps on average, and the Japanese mid/small-cap equity fund category's average return exceeded the S&P Japan MidSmallCap by 79 bps. In contrast, the average return of foreign equity funds in 2016 was much worse, with the equal-weighted average returns of global, emerging, and international equity funds underperforming the [S&P Global 1200](#), [S&P Emerging BMI](#), and S&P Global 1200 Ex Japan by 6.2%, 3.8%, and 3.5%, respectively. Performance of U.S. equity funds was less unpleasant, with the average return lagging the S&P 500 by only 1.74%.
- **Asset-Weighted Average Fund Returns:** All fund categories recorded lower asset-weighted average returns than their equal-weighted counterparts for the majority of the periods studied (1, 3, 5, and 10 years), indicating that smaller funds tended to perform better than larger funds in the same peer group. In 2016, the asset-weighted average returns of the Japanese mid/small-cap equity funds and international equity funds lagged their equal-weighted average returns by more than 200 bps.

## 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 14 years ago, the SPIVA Scorecard has served as the de facto scorekeeper of the active versus passive debate. For more than a decade, 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 far 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 Japan 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 a JPY 10 billion fund affecting the average in the same manner as the returns of a JPY 10 million fund. However, the SPIVA Japan 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 Japan 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.*

## REPORTS

### Report 1: Percentage of Funds Outperformed by the Index

FUND CATEGORY	COMPARISON INDEX	ONE-YEAR (%)	THREE-YEAR (%)	FIVE-YEAR (%)	TEN-YEAR (%)
Japanese Large-Cap Funds	S&P/TOPIX 150	63.61	60.30	73.72	68.67
Japanese Mid/Small-Cap Funds	S&P Japan MidSmallCap	54.61	62.60	52.41	67.69
All Japanese Equity Funds	S&P Japan 500	58.20	62.88	69.33	69.06
U.S. Equity Funds	S&P 500	61.29	100.00	96.55	90.00
Global Equity Funds	S&P Global 1200	90.06	90.73	91.43	93.65
International Equity Funds	S&P Global 1200 Ex Japan	88.68	94.12	92.31	97.67
Emerging Equity Funds	S&P Emerging BMI	82.89	83.33	93.15	95.45

Source: S&P Dow Jones Indices LLC, Morningstar. Data as of Dec. 31, 2016. Table is provided for illustrative purposes. Past performance is no guarantee of future results.

### Report 2: Survivorship and Style Consistency of Japanese Equity Funds

FUND CATEGORY	NO. OF FUNDS AT START	SURVIVORSHIP (%)
<b>ONE-YEAR</b>		
Japanese Large-Cap Funds	371	96.50
Japanese Mid/Small-Cap Funds	141	95.74
All Japanese Equity Funds	512	96.29
U.S. Equity Funds	93	95.70
Global Equity Funds	171	93.57
International Equity Funds	53	96.23
Emerging Equity Funds	76	93.42
<b>THREE-YEAR</b>		
Japanese Large-Cap Funds	335	88.66
Japanese Mid/Small-Cap Funds	131	88.55
All Japanese Equity Funds	466	88.63
U.S. Equity Funds	68	86.76
Global Equity Funds	151	82.12
International Equity Funds	51	92.16
Emerging Equity Funds	78	75.64
<b>FIVE-YEAR</b>		
Japanese Large-Cap Funds	331	80.66
Japanese Mid/Small-Cap Funds	145	73.79
All Japanese Equity Funds	476	78.57
U.S. Equity Funds	29	72.41
Global Equity Funds	140	71.43
International Equity Funds	52	88.46
Emerging Equity Funds	73	64.38
<b>TEN-YEAR</b>		
Japanese Large-Cap Funds	316	72.15
Japanese Mid/Small-Cap Funds	130	65.38
All Japanese Equity Funds	446	70.18
U.S. Equity Funds	20	60.00
Global Equity Funds	63	63.49
International Equity Funds	43	79.07
Emerging Equity Funds	22	59.09

Source: S&P Dow Jones Indices LLC, Morningstar. Data as of Dec. 31, 2016. Table is provided for illustrative purposes. Past performance is no guarantee of future results.

<b>Report 3: Average Fund Performance (Equal-Weighted)</b>				
<b>INDEX/PEER GROUP</b>	<b>ONE-YEAR (%)</b>	<b>THREE-YEAR ANNUALIZED (%)</b>	<b>FIVE-YEAR ANNUALIZED (%)</b>	<b>TEN-YEAR ANNUALIZED (%)</b>
S&P/TOPIX 150	-0.39	6.19	17.88	0.22
Japanese Large-Cap Funds	-1.30	6.23	17.40	0.22
S&P Japan MidSmallCap	3.65	10.46	19.66	2.80
Japanese Mid/Small-Cap Funds	4.44	10.22	22.30	3.49
S&P Japan 500	0.00	7.09	18.30	0.81
All Japanese Equity Funds	0.31	7.37	18.82	1.21
S&P 500	8.55	12.72	24.61	6.72
U.S. Equity Funds	6.81	5.65	18.32	3.75
S&P Global 1200	5.71	8.10	20.46	4.24
Global Equity Funds	-0.49	3.96	15.15	1.42
S&P Global 1200 Ex Japan	6.23	8.26	20.66	4.59
International Equity Funds	2.73	4.82	16.08	2.06
S&P Emerging BMI	7.91	2.43	11.49	2.60
Emerging Equity Funds	4.11	0.22	8.94	0.54

Source: S&P Dow Jones Indices LLC, Morningstar. Data as of Dec. 31, 2016. All returns in JPY. Table is provided for illustrative purposes. Past performance is no guarantee of future results.

<b>Report 4: Average Fund Performance (Asset-Weighted)</b>				
<b>INDEX/PEER GROUP</b>	<b>ONE-YEAR (%)</b>	<b>THREE-YEAR ANNUALIZED (%)</b>	<b>FIVE-YEAR ANNUALIZED (%)</b>	<b>TEN-YEAR ANNUALIZED (%)</b>
S&P/TOPIX 150	-0.39	6.19	17.88	0.22
Japanese Large-Cap Funds	-1.48	5.96	16.90	0.35
S&P Japan MidSmallCap	3.65	10.46	19.66	2.80
Japanese Mid/Small-Cap Funds	2.10	6.76	18.93	1.78
S&P Japan 500	0.00	7.09	18.30	0.81
All Japanese Equity Funds	-0.60	6.15	17.27	0.61
S&P 500	8.55	12.72	24.61	6.72
U.S. Equity Funds	4.89	3.25	15.10	2.55
S&P Global 1200	5.71	8.10	20.46	4.24
Global Equity Funds	-1.70	4.60	14.27	1.16
S&P Global 1200 Ex Japan	6.23	8.26	20.66	4.59
International Equity Funds	0.37	4.33	15.23	2.33
S&P Emerging BMI	7.91	2.43	11.49	2.60
Emerging Equity Funds	6.02	-0.71	6.98	-0.51

Source: S&P Dow Jones Indices LLC, Morningstar. Data as of Dec. 31, 2016. All returns in JPY. Table is provided for illustrative purposes. Past performance is no guarantee of future results.

<b>Report 5: Quartile Breakpoints of Fund Performance</b>			
<b>FUND CATEGORY</b>	<b>THIRD QUARTILE</b>	<b>SECOND QUARTILE</b>	<b>FIRST QUARTILE</b>
<b>ONE-YEAR</b>			
Japanese Large-Cap Funds	-3.95	-1.51	0.79
Japanese Mid/Small-Cap Funds	-1.53	3.19	8.57
All Japanese Equity Funds	-3.63	-0.76	2.65
U.S. Equity Funds	0.06	6.36	13.43
Global Equity Funds	-2.39	-0.01	2.47
International Equity Funds	-1.77	0.14	1.96
Emerging Equity Funds	0.05	4.27	7.05
<b>THREE-YEAR</b>			
Japanese Large-Cap Funds	4.46	5.97	7.70
Japanese Mid/Small-Cap Funds	6.77	9.53	12.70
All Japanese Equity Funds	4.93	6.52	8.88
U.S. Equity Funds	3.79	7.10	8.85
Global Equity Funds	2.94	4.70	6.27
International Equity Funds	3.44	4.67	5.26
Emerging Equity Funds	-1.50	0.04	1.99
<b>FIVE-YEAR</b>			
Japanese Large-Cap Funds	16.24	17.12	18.43
Japanese Mid/Small-Cap Funds	18.24	21.20	25.72
All Japanese Equity Funds	16.47	17.55	19.94
U.S. Equity Funds	19.94	21.49	22.74
Global Equity Funds	13.76	16.88	18.44
International Equity Funds	15.21	17.63	18.41
Emerging Equity Funds	7.99	9.04	10.37
<b>TEN-YEAR</b>			
Japanese Large-Cap Funds	-0.84	-0.05	1.10
Japanese Mid/Small-Cap Funds	0.92	2.77	5.81
All Japanese Equity Funds	-0.65	0.48	2.06
U.S. Equity Funds	4.33	5.29	6.36
Global Equity Funds	1.69	2.35	3.31
International Equity Funds	1.53	2.03	3.28
Emerging Equity Funds	-0.24	0.22	1.66

Source: S&P Dow Jones Indices LLC, Morningstar. Data as of Dec. 31, 2016. All returns in JPY. Table is provided for illustrative purposes. Past performance is no guarantee of future results.

## APPENDIX A: GLOSSARY

### SPIVA Styles and Morningstar Fund Classifications

Data from Morningstar is obtained for all managed funds domiciled in Japan for which month-end data is available during the performance period. The data includes the most comprehensive Japanese 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 Japan Scorecard covers Japanese and international equity categories.

## Japanese Equity Funds

The SPIVA Japan Scorecard covers major capitalization levels including large-, mid-, and small-cap funds. S&P Dow Jones Indices uses the Morningstar fund categories, which determine a fund portfolio’s capitalization assignments.

The Morningstar classification system produces narrow, style-based classifications for Japanese equities 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.

<b>Exhibit 1: Japanese Equity Funds: SPIVA and Morningstar Categories</b>	
<b>SPIVA CATEGORY</b>	<b>MORNINGSTAR CATEGORY</b>
Japanese Large-Cap Funds	Japan Fund Japan Large-Cap Value Equity
	Japan Fund Japan Large-Cap Growth Equity
	Japan Fund Japan Large-Cap Blend Equity
Japanese Mid/Small-Cap Funds	Japan Fund Japan Small/Mid-Cap Value Equity
	Japan Fund Japan Small/Mid-Cap Growth Equity
	Japan Fund Japan Small/Mid-Cap Blend Equity

Source: S&P Dow Jones Indices LLC, Morningstar. Table is provided for illustrative purposes.

## International Equity Funds

For international equity, the SPIVA Japan Scorecard reports on four major categories (U.S., global, international, and emerging market funds) of interest to global asset allocators.

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

<b>Exhibit 2: International Equity Funds: SPIVA and Morningstar Categories</b>	
<b>SPIVA CATEGORY</b>	<b>MORNINGSTAR CATEGORY</b>
U.S. Equity Funds	Japan Fund North America Equity
Global Equity Funds	Japan Fund World Equity
International Equity Funds	Japan Fund World ex-Japan Equity
Emerging Equity Funds	Japan Fund Emerging Multiple Country/Area Equity

Source: S&P Dow Jones Indices LLC, Morningstar. 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 Japanese yen. 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 in Exhibit 3. 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.

<b>SPIVA CATEGORY</b>	<b>BENCHMARK INDEX</b>
Japanese Large-Cap Funds	S&P/TOPIX 150
Japanese Mid/Small-Cap Funds	S&P Japan MidSmallCap
All Japanese Equity Funds	S&P Japan 500
U.S. Equity Funds	S&P 500
Global Equity Funds	S&P Global 1200
International Equity Funds	S&P Global 1200 Ex Japan
Emerging Equity Funds	S&P Emerging BMI

Source: S&P Dow Jones Indices LLC, Morningstar. 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/TOPIX 150

The [S&P/TOPIX 150](#) is designed to represent the large-cap universe for Japan. It includes 150 highly liquid securities as leading, blue-chip companies from each of the Global Industry Classification Standard (GICS®) sectors of the Japanese market.

### S&P JAPAN MIDSMALLCAP

The S&P Japan MidSmallCap combines the S&P Japan MidCap and S&P SmallCap indices and comprises the stocks representing the lowest 30% of float-adjusted market cap in Japan. It is a subset of the [S&P Japan BMI](#), comprehensive, rules-based index measuring Japanese stock market performance.

### S&P JAPAN 500

The [S&P Japan 500](#) is designed to represent the Japanese investable market. Index constituents are drawn from eligible companies listed on the Tokyo, Osaka, or JASDAQ exchanges. Data is sourced from the comprehensive Toyo Keizai database. Constituents represent the large-, mid-, and small-cap components of the Japanese equity markets.

## S&P 500

Widely regarded as the best single gauge of the U.S. equities market, this market-capitalization-weighted index includes a representative sample of the top 500 companies in the leading industries of the U.S. economy, and it provides over 80% coverage of U.S. equities.

## S&P GLOBAL 1200

Capturing approximately 70% of the world's capital markets, the [S&P Global 1200](#) is a composite of seven headline indices, many of which are accepted leaders in their regions. It includes the [S&P 500](#) (U.S.), [S&P Europe 350](#) (Europe), [S&P/TOPIX 150](#) (Japan), [S&P/TSX 60](#) (Canada), [S&P/ASX All Australian 50](#) (Australia), [S&P Asia 50](#) (Asia Ex-Japan), and [S&P Latin America 40](#) (Latin America).

## S&P GLOBAL 1200 EX JAPAN

The S&P Global 1200 Ex Japan is a composite of six headline indices, many of which are accepted leaders in their regions. It includes the S&P 500 (U.S.), S&P Europe 350 (Europe), S&P/TSX 60 (Canada), S&P/ASX All Australian 50 (Australia), S&P Asia 50 (Asia Ex-Japan), and S&P Latin America 40 (Latin America).

## S&P EMERGING BMI

The [S&P Emerging BMI](#) captures all companies domiciled in the emerging markets within the [S&P Global BMI](#) with a float-adjusted market capitalization of at least USD 100 million and a minimum annual trading liquidity of USD 50 million.

<b>S&amp;P DJI Research Contributors</b>		
<b>NAME</b>	<b>TITLE</b>	<b>EMAIL</b>
Charles "Chuck" Mounts	Global Head	<a href="mailto:charles.mounts@spglobal.com">charles.mounts@spglobal.com</a>
<b>Global Research &amp; Design</b>		
Aye Soe, CFA	Americas Head	<a href="mailto:aye.soe@spglobal.com">aye.soe@spglobal.com</a>
Dennis Badlyans	Associate Director	<a href="mailto:dennis.badlyans@spglobal.com">dennis.badlyans@spglobal.com</a>
Phillip Brzenk, CFA	Director	<a href="mailto:phillip.brzenk@spglobal.com">phillip.brzenk@spglobal.com</a>
Smita Chirputkar	Director	<a href="mailto:smita.chirputkar@spglobal.com">smita.chirputkar@spglobal.com</a>
Rachel Du	Senior Analyst	<a href="mailto:rachel.du@spglobal.com">rachel.du@spglobal.com</a>
Qing Li	Associate Director	<a href="mailto:qing.li@spglobal.com">qing.li@spglobal.com</a>
Berlinda Liu, CFA	Director	<a href="mailto:berlinda.liu@spglobal.com">berlinda.liu@spglobal.com</a>
Ryan Poirier, FRM	Senior Analyst	<a href="mailto:ryan.poirier@spglobal.com">ryan.poirier@spglobal.com</a>
Maria Sanchez	Associate Director	<a href="mailto:maria.sanchez@spglobal.com">maria.sanchez@spglobal.com</a>
Kelly Tang, CFA	Director	<a href="mailto:kelly.tang@spglobal.com">kelly.tang@spglobal.com</a>
Peter Tsui	Director	<a href="mailto:peter.tsui@spglobal.com">peter.tsui@spglobal.com</a>
Hong Xie, CFA	Director	<a href="mailto:hong.xie@spglobal.com">hong.xie@spglobal.com</a>
Priscilla Luk	APAC Head	<a href="mailto:priscilla.luk@spglobal.com">priscilla.luk@spglobal.com</a>
Utkarsh Agrawal, CFA	Associate Director	<a href="mailto:utkarsh.agrawal@spglobal.com">utkarsh.agrawal@spglobal.com</a>
Liyu Zeng, CFA	Director	<a href="mailto:liyu.zeng@spglobal.com">liyu.zeng@spglobal.com</a>
Akash Jain	Associate Director	<a href="mailto:akash.jain@spglobal.com">akash.jain@spglobal.com</a>
Sunjiv Mainie, CFA, CQF	EMEA Head	<a href="mailto:sunjiv.mainie@spglobal.com">sunjiv.mainie@spglobal.com</a>
Daniel Ung, CFA, CAIA, FRM	Director	<a href="mailto:daniel.ung@spglobal.com">daniel.ung@spglobal.com</a>
Andrew Innes	Senior Analyst	<a href="mailto:andrew.innes@spglobal.com">andrew.innes@spglobal.com</a>
<b>Index Investment Strategy</b>		
Craig Lazzara, CFA	Global Head	<a href="mailto:craig.lazzara@spglobal.com">craig.lazzara@spglobal.com</a>
Fei Mei Chan	Director	<a href="mailto:feimei.chan@spglobal.com">feimei.chan@spglobal.com</a>
Tim Edwards, PhD	Senior Director	<a href="mailto:tim.edwards@spglobal.com">tim.edwards@spglobal.com</a>
Howard Silverblatt	Senior Industry Analyst	<a href="mailto:howard.silverblatt@spglobal.com">howard.silverblatt@spglobal.com</a>
Anu Ganti	Director	<a href="mailto:anu.ganti@spglobal.com">anu.ganti@spglobal.com</a>

## GENERAL DISCLAIMER

Copyright © 2017 by S&P Dow Jones Indices LLC, a part of S&P Global. All rights reserved. Standard & Poor's®, S&P 500® and S&P® are registered trademarks of Standard & Poor's Financial Services LLC ("S&P"), a subsidiary of S&P Global. Dow Jones® is a registered trademark of Dow Jones Trademark Holdings LLC ("Dow Jones"). Trademarks have been licensed to S&P Dow Jones Indices LLC. Redistribution, reproduction and/or photocopying in whole or in part are prohibited without written permission. This document does not constitute an offer of services in jurisdictions where S&P Dow Jones Indices LLC, Dow Jones, S&P or their respective affiliates (collectively "S&P Dow Jones Indices") do not have the necessary licenses. All information provided by S&P Dow Jones Indices is impersonal and not tailored to the needs of any person, entity or group of persons. S&P Dow Jones Indices receives compensation in connection with licensing its indices to third parties. Past performance of an index is not a guarantee of future results.

It is not possible to invest directly in an index. Exposure to an asset class represented by an index is available through investable instruments based on that index. S&P Dow Jones Indices does not sponsor, endorse, sell, promote or manage 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. S&P Dow Jones Indices makes no assurance that investment products based on the index will accurately track index performance or provide positive investment returns. S&P Dow Jones Indices LLC is not an investment advisor, and S&P Dow Jones Indices makes no representation regarding the advisability of investing in any such investment fund or other investment vehicle. A decision to invest in any such investment fund or other investment vehicle should not be made in reliance on any of the statements set forth in this document. Prospective investors are advised to make an investment in any such fund or other vehicle only after carefully considering the risks associated with investing in such funds, as detailed in an offering memorandum or similar document that is prepared by or on behalf of the issuer of the investment fund or other vehicle. Inclusion of a security within an index is not a recommendation by S&P Dow Jones Indices to buy, sell, or hold such security, nor is it considered to be investment advice.

These materials have been prepared solely for informational purposes based upon information generally available to the public and from sources believed to be reliable. No content contained in these materials (including index data, ratings, credit-related analyses and data, research, valuations, model, software or other application or output therefrom) or any part thereof (Content) may be modified, reverse-engineered, reproduced or distributed in any form or by any means, or stored in a database or retrieval system, without the prior written permission of S&P Dow Jones Indices. The Content shall not be used for any unlawful or unauthorized purposes. S&P Dow Jones Indices and its third-party data providers and licensors (collectively "S&P Dow Jones Indices Parties") do not guarantee the accuracy, completeness, timeliness or availability of the Content. S&P Dow Jones Indices Parties are not responsible for any errors or omissions, regardless of the cause, for the results obtained from the use of the Content. THE CONTENT IS PROVIDED ON AN "AS IS" BASIS. S&P DOW JONES INDICES PARTIES DISCLAIM ANY AND ALL EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE, FREEDOM FROM BUGS, SOFTWARE ERRORS OR DEFECTS, THAT THE CONTENT'S FUNCTIONING WILL BE UNINTERRUPTED OR THAT THE CONTENT WILL OPERATE WITH ANY SOFTWARE OR HARDWARE CONFIGURATION. In no event shall S&P Dow Jones Indices Parties be liable to any party for any direct, indirect, incidental, exemplary, compensatory, punitive, special or consequential damages, costs, expenses, legal fees, or losses (including, without limitation, lost income or lost profits and opportunity costs) in connection with any use of the Content even if advised of the possibility of such damages.

S&P Dow Jones Indices keeps certain activities of its business units separate from each other in order to preserve the independence and objectivity of their respective activities. As a result, certain business units of S&P Dow Jones Indices may have information that is not available to other business units. S&P Dow Jones Indices has established policies and procedures to maintain the confidentiality of certain non-public information received in connection with each analytical process.

In addition, S&P Dow Jones Indices provides a wide range of services to, or relating to, many organizations, including issuers of securities, investment advisers, broker-dealers, investment banks, other financial institutions and financial intermediaries, and accordingly may receive fees or other economic benefits from those organizations, including organizations whose securities or services they may recommend, rate, include in model portfolios, evaluate or otherwise address.