

CONTRIBUTORS

Daniel Ung, CFA, CAIA, FRM  
Global Research & Design  
[daniel.ung@spglobal.com](mailto:daniel.ung@spglobal.com)

# SPIVA<sup>®</sup> South Africa 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 S&P Indices Versus Active (SPIVA) U.S. Scorecard in 2002. Over the years, we have built on more than a decade of experience publishing that report by expanding coverage into Canada, Europe, India, Japan, Australia, Latin America, and South Africa. While the report will not end the debate on active versus passive investing, we hope to make a meaningful contribution by examining market segments in which one strategy works better than the other.

The SPIVA South Africa Scorecard measures the performance of actively managed, South African equity and fixed income funds denominated in South African rands (ZAR) against their respective benchmark indices over one-, three-, and five-year investment horizons.

## SCORECARD RESULTS

South African equity markets experienced another turbulent year as a result of the continued fall in commodity prices, the country's biggest export. The sense of malaise was further compounded when there was widespread disapproval of the choice of finance minister, which led to the country having three finance ministers over the course of one week, with both Fitch and Standard & Poor's Ratings Services downgrading the country's credit rating in 2015. Over the past one-year period, the performance of domestic equities, as measured by the [S&P South Africa Domestic Shareholder Weighted \(DSW\) Index](#), trailed that of the [S&P Global 1200](#) by over 29% in local currency terms, owing to the significant depreciation of the rand.

The unfavorable economic news was certainly one of the reasons the South African market experienced bouts of high volatility in the first half of the year. Normally, this would be rich ground for active management, as managers could utilize their stock-picking skills to benefit from the perceived discrepancies in the market. However, our report shows that a high proportion of South African equity funds invested in both the domestic and international equity markets did not keep up with their respective benchmarks over the one-year period. This pattern of underperformance persisted over the longer term as well. When looking at the five-year period, 74% of domestic equity funds and 96% of global funds trailed their respective benchmarks.

In regard to fixed income, the results were more favorable to active management. Active managers beat their respective benchmarks in both the short- and long-term bond categories.

Another observation from our analysis is that the size of the fund (e.g., the amount of assets under management) appears to matter. Results from Reports 3 and 4 highlight that asset-weighted returns across the three time horizons examined were generally higher than equal-weighted returns. In addition, equity funds seem to disappear at a meaningful rate. Over the five-year period, over 20% of equity funds were either liquidated or merged. Fixed income funds were affected to a lesser extent.

## A UNIQUE SCORECARD FOR THE ACTIVE VERSUS PASSIVE DEBATE

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 less frequently discussed but are often more fascinating. These data sets are rooted in the fundamental principles of the SPIVA Scorecard that regular readers will be familiar with, including the following.

- **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.
- **Asset-Weighted Returns:** Average returns for a fund group are often calculated using only equal weighting, which means the returns of a ZAR 100 billion fund affect the average in the same manner as the returns of a ZAR 100 million fund. An accurate representation of how investors fared in a particular period can be ascertained by calculating weighted average returns in which each fund's return is weighted by net assets. SPIVA Scorecards show both equal- and asset-weighted averages.
- **Data Cleaning:** SPIVA Scorecards avoid double counting multiple share classes in all count-based calculations by using only the share class with greater assets. Index, leveraged, and inverse funds, along with other index-linked products, are excluded because this is meant to be a scorecard for active managers.

## REPORTS

Report 1: Percentage of South African Funds Outperformed by Benchmarks				
Fund Category	Comparison Index	One-Year (%)	Three-Year (%)	Five-Year (%)
South African Equity	S&P South Africa DSW	50.63	63.36	74.58
Global Equity	S&P Global 1200	75.00	81.48	96.43
Short-Term Bond	STeFI Composite	37.21	42.86	21.05
Diversified/Aggregate Bond	JSE/ASSA ALBI	8.43	9.68	42.86

Source: S&P Dow Jones Indices LLC, Morningstar. Data for periods ending Dec. 31, 2015. Outperformance is based on equal-weighted fund counts. Index performance is based on total return in ZAR. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 2: Survivorship of South African Funds		
Fund Category	No. of Funds at Start	Survivorship (%)
<b>One-Year</b>		
South African Equity	168	95.24
Global Equity	37	100.00
Short-Term Bond	45	100.00
Diversified/Aggregate Bond	85	98.82
<b>Three-Year</b>		
South African Equity	141	87.94
Global Equity	29	86.21
Short-Term Bond	43	95.35
Diversified/Aggregate Bond	63	98.41
<b>Five-Year</b>		
South African Equity	134	77.61
Global Equity	31	77.42
Short-Term Bond	40	95.00
Diversified/Aggregate Bond	59	84.75

Source: S&P Dow Jones Indices LLC, Morningstar. Data for periods ending Dec. 31, 2015. Survivorship shown for funds in ZAR. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 3: Average South African Fund Performance (Equal Weighted)			
Category	One-Year (%)	Three-Year (Annualized %)	Five-Year (Annualized %)
S&P South Africa DSW	3.04	13.05	13.91
South African Equity	2.11	10.78	11.39
S&P Global 1200	32.76	33.91	27.81
Global Equity	27.14	28.67	22.57
STeFI Composite	6.45	5.84	5.76
Short-Term Bond	6.23	5.86	6.33
JSE/ASSA ALBI	-3.91	2.13	6.10
Diversified/Aggregate Bond	3.48	5.03	6.90

Source: S&P Dow Jones Indices LLC, Morningstar. Data for periods ending Dec. 31, 2015. Index performance based on total return in ZAR. Funds are equal weighted but indices are not. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

<b>Report 4: Average South African Fund Performance (Asset Weighted)</b>			
<b>Category</b>	<b>One-Year (%)</b>	<b>Three-Year (Annualized %)</b>	<b>Five-Year (Annualized %)</b>
S&P South Africa DSW	3.04	13.05	13.91
South African Equity	2.86	11.94	12.09
S&P Global 1200	32.76	33.91	27.81
Global Equity	30.48	32.71	25.73
STeFI Composite	6.45	5.84	5.76
Short-Term Bond	6.68	6.32	6.78
JSE/ASSA ALBI	-3.91	2.13	6.10
Diversified/Aggregate Bond	2.55	4.87	7.04

Source: S&P Dow Jones Indices LLC, Morningstar. Data for periods ending Dec. 31, 2015. Index performance based on total returns in ZAR. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

<b>Report 5: Quartile Breakpoints of South African Funds</b>			
<b>Fund Category</b>	<b>Third Quartile</b>	<b>Second Quartile</b>	<b>First Quartile</b>
<b>One-Year</b>			
South African Equity	-1.38	3.35	7.44
Global Equity	26.19	29.37	32.42
Short-Term Bond	5.89	6.71	7.16
Diversified/Aggregate Bond	-2.18	5.47	7.11
<b>Three-Year</b>			
South African Equity	7.98	12.25	14.52
Global Equity	29.13	31.22	33.59
Short-Term Bond	5.39	6.12	6.41
Diversified/Aggregate Bond	2.78	5.01	6.49
<b>Five-Year</b>			
South African Equity	9.45	12.21	14.32
Global Equity	23.04	24.58	25.96
Short-Term Bond	5.96	6.48	6.73
Diversified/Aggregate Bond	5.89	6.59	7.35

Source: S&P Dow Jones Indices LLC, Morningstar. Data for periods ending Dec. 31, 2015. Index performance based on total returns in ZAR. 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 South Africa for which month-end data is available during the performance period. The data includes the most-comprehensive South African 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 South Africa Scorecard covers South African and international equity and fixed income categories.

#### International and South African Funds

The SPIVA South Africa Scorecard covers both domestic and international funds that are denominated in South African rands and they have been mapped to the relevant Morningstar fund categories as indicated in this report. The Morningstar classification system produces narrow, style-based classifications for funds, particularly in relation to international equities. 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 that value and growth style segments are not consistently discernible over a five-year period.

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

Exhibit 1: South African and International Funds—SPIVA and Morningstar Categories and Their Respective Benchmarks		
Morningstar Category	SPIVA Category	Benchmark Index
Africa Open-Ended South Africa & Namibia Equity	South African Equity	S&P South Africa DSW Gross Total Return (ZAR)
Africa Open-Ended Global Large-Cap Blend Equity	Global Equity	S&P Global 1200 Gross Total Return (ZAR)
Africa Open-Ended Global Large-Cap Growth Equity		
Africa Open-Ended Global Large-Cap Value Equity		
Africa Open-Ended Global Flex-Cap Equity	Short Term Bond	South Africa Short Term Fixed Interest (STeFI) Composite Total Return (ZAR)
Africa Open-Ended ZAR/NAD—Short Term Bonds		
Africa Open-Ended ZAR/NAD—Ultra Short Term Bonds	Diversified/Aggregate Bond	Johannesburg Stock Exchange/Actuarial Society of South Africa (JSE/ASSA) All Bond Index (ALBI) Total Return (ZAR)
Africa Open-Ended ZAR/NAD—Diversified Bonds		
Africa Open-Ended ZAR/NAD—Flexible Bonds		

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

## **APPENDIX B**

### **Glossary–Reports**

#### Percentage of Funds Outperformed by the Index

We use funds with returns available for the entire period as the denominator. We determine the count of funds that have survived and beat the index, and then we report the index outperformance percentage.

#### Survivorship (%)

The survivorship measure represents the percentage of funds in existence at the beginning of the time period that are 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 reflect the returns of the total money invested in that particular style category with more accuracy.

#### Quartile 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, which is 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. The SPIVA reports remove this bias in three ways. The first method to remove the bias is to use 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. The second is explicitly to show the survivorship rate in each category. The final way is to construct a 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 South Africa Domestic Shareholder Weighted (DSW) Index

The [S&P South Africa Domestic Shareholder Weighted \(DSW\) Index](#) adjusts the weights of companies in the [S&P South Africa Composite](#) in order to reflect the level of ownership by South African investors. The S&P South Africa Composite is a float-adjusted, market-cap-weighted index that measures the performance of large-, mid-, and small-cap companies listed on the Johannesburg Stock Exchange.

### 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<sup>®</sup>](#) (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).

### South Africa Short Term Fixed Interest (STeFI) Composite

The South Africa Short Term Fixed Interest (STeFI) Composite Index approximates the performance of money market instruments in the market. Instruments such as call deposits and negotiable certificates of deposits (BCD's) represent common, liquid instruments and provide a good proxy of short-term markets.

### Johannesburg Stock Exchange/Actuarial Society of South Africa (JSE/ASSA) All Bond Index (ALBI)

The Johannesburg Stock Exchange/Actuarial Society of South Africa (JSE/ASSA) All Bond Index (ALBI) comprises the top-20 listed bonds ranked by market capitalization and liquidity.

**GLOBAL RESEARCH & DESIGN CONTACT INFORMATION****Global Head**


---

Charles Mounts	charles.mounts@spglobal.com
----------------	-----------------------------

**New York**


---

Phillip Brzenk	phillip.brzenk@spglobal.com
Qing Li	qing.li@spglobal.com
Berlinda Liu	berlinda.liu@spglobal.com
Aye Soe	aye.soe@spglobal.com
Peter Tsui	peter.tsui@spglobal.com
Hong Xie	hong.xie@spglobal.com
Kelly Tang	kelly.tang@spglobal.com

**Beijing**


---

Liyu Zeng	liyu.zeng@spglobal.com
-----------	------------------------

**Hong Kong**


---

Priscilla Luk	priscilla.luk@spglobal.com
---------------	----------------------------

**London**


---

Sunjiv Mainie	sunjiv.mainie@spglobal.com
Daniel Ung	daniel.ung@spglobal.com

**Mexico City**


---

Maria Sanchez	maria.sanchez@spglobal.com
---------------	----------------------------

**Mumbai**


---

Utkarsh Agrawal	utkarsh.agrawal@spglobal.com
-----------------	------------------------------



## ABOUT S&P DOW JONES INDICES

S&P Dow Jones Indices LLC, a division of S&P Global, is the world's largest, global resource for index-based concepts, data and research. Home to iconic financial market indicators, such as the S&P 500<sup>®</sup> and the Dow Jones Industrial Average<sup>™</sup>, S&P Dow Jones Indices LLC has over 115 years of experience constructing innovative and transparent solutions that fulfill the needs of institutional and retail investors. More assets are invested in products based upon our indices than any other provider in the world. With over 1,000,000 indices covering a wide range of assets classes across the globe, S&P Dow Jones Indices LLC defines the way investors measure and trade the markets. To learn more about our company, please visit [www.spdji.com](http://www.spdji.com).

## GENERAL DISCLAIMER

Copyright © 2016 S&P Dow Jones Indices LLC, a division of S&P Global. All rights reserved. STANDARD & POOR'S, S&P, SPDR, S&P 500, S&P EUROPE 350, S&P 100, S&P 1000, S&P COMPOSITE 1500, S&P MIDCAP 400, S&P SMALLCAP 600, GIVI, GLOBAL TITANS, S&P RISK CONTROL INDICES, S&P GLOBAL THEMATIC INDICES, S&P TARGET DATE INDICES, S&P TARGET RISK INDICES, DIVIDEND ARISTOCRATS, STARS, GICS, HOUSINGVIEWS, INDEX ALERT, INDEXOLOGY, MARKET ATTRIBUTES, PRACTICE ESSENTIALS, S&P HEALTHCARE MONITOR, SPICE, and SPIVA are registered trademarks of Standard & Poor's Financial Services LLC, a division of S&P Global ("S&P"). DOW JONES, DJ, DJIA and DOW JONES INDUSTRIAL AVERAGE are registered trademarks of Dow Jones Trademark Holdings LLC ("Dow Jones"). These trademarks together with others 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 investment product or vehicle. S&P Dow Jones Indices LLC is not a tax advisor. A tax advisor should be consulted to evaluate the impact of any tax-exempt securities on portfolios and the tax consequences of making any particular investment decision. 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. Closing prices for S&P Dow Jones Indices' US benchmark indices are calculated by S&P Dow Jones Indices based on the closing price of the individual constituents of the index as set by their primary exchange. Closing prices are received by S&P Dow Jones Indices from one of its third party vendors and verified by comparing them with prices from an alternative vendor. The vendors receive the closing price from the primary exchanges. Real-time intraday prices are calculated similarly without a second verification.

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.

Credit-related information and other analyses, including ratings, research and valuations are generally provided by licensors and/or affiliates of S&P Dow Jones Indices, including but not limited to S&P Global's other divisions such as Standard & Poor's Financial Services LLC and S&P Capital IQ LLC. Any credit-related information and other related analyses and statements in the Content are statements of opinion as of the date they are expressed and not statements of fact. Any opinion, analyses and rating acknowledgement decisions are not recommendations to purchase, hold, or sell any securities or to make any investment decisions, and do not address the suitability of any security. S&P Dow Jones Indices does not assume any obligation to update the Content following publication in any form or format. The Content should not be relied on and is not a substitute for the skill, judgment and experience of the user, its management, employees, advisors and/or clients when making investment and other business decisions. S&P Dow Jones Indices LLC does not act as a fiduciary or an investment advisor. While S&P Dow Jones Indices has obtained information from sources they believe to be reliable, S&P Dow Jones Indices does not perform an audit or undertake any duty of due diligence or independent verification of any information it receives.

To the extent that regulatory authorities allow a rating agency to acknowledge in one jurisdiction a rating issued in another jurisdiction for certain regulatory purposes, S&P Global Ratings Services reserves the right to assign, withdraw or suspend such acknowledgement at any time and in its sole discretion. S&P Dow Jones Indices, including S&P Global Ratings Services, disclaim any duty whatsoever arising out of the assignment, withdrawal or suspension of an acknowledgement as well as any liability for any damage alleged to have been suffered on account thereof.

Affiliates of S&P Dow Jones Indices LLC, including S&P Global Ratings Services, may receive compensation for its ratings and certain credit-related analyses, normally from issuers or underwriters of securities or from obligors. Such affiliates of S&P Dow Jones Indices LLC, including S&P Global Ratings Services, reserve the right to disseminate its opinions and analyses. Public ratings and analyses from S&P Global Ratings Services are made available on its Web sites, [www.standardandpoors.com](http://www.standardandpoors.com) (free of charge), and [www.ratingsdirect.com](http://www.ratingsdirect.com) and

[www.globalcreditportal.com](http://www.globalcreditportal.com) (subscription), and may be distributed through other means, including via S&P Global Rating Services publications and third-party redistributors. Additional information about our ratings fees is available at [www.standardandpoors.com/usratingsfees](http://www.standardandpoors.com/usratingsfees).

S&P Global keeps certain activities of its various divisions and business units separate from each other in order to preserve the independence and objectivity of their respective activities. As a result, certain divisions and business units of S&P Global may have information that is not available to other business units. S&P Global 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.

The Global Industry Classification Standard (GICS®) was developed by and is the exclusive property and a trademark of Standard & Poor's and MSCI. Neither MSCI, Standard & Poor's nor any other party involved in making or compiling any GICS classifications makes any express or implied warranties or representations with respect to such standard or classification (or the results to be obtained by the use thereof), and all such parties hereby expressly disclaim all warranties of originality, accuracy, completeness, merchantability or fitness for a particular purpose with respect to any of such standard or classification. Without limiting any of the foregoing, in no event shall MSCI, Standard & Poor's, any of their affiliates or any third party involved in making or compiling any GICS classifications have any liability for any direct, indirect, special, punitive, consequential or any other damages (including lost profits) even if notified of the possibility of such damages.

TSX is a trademark of TSX, Inc. and has been licensed for use by S&P Dow Jones Indices. RAFI is a trademark of Research Affiliates, LLC and has been licensed for use by S&P Dow Jones Indices. CASE-SHILLER is a registered trademark of CoreLogic Case-Shiller, LLC and has been licensed for use by S&P Dow Jones Indices. LSTA is a trademark of Loan Syndications and Trading Association, Inc. and has been licensed for use by S&P Dow Jones Indices. VIX is a trademark of Chicago Board Options Exchange, Incorporated and has been licensed for use by S&P Dow Jones Indices. BVL is a trademark of Bolsa de Valores de Lima S.A. and has been licensed for use by S&P Dow Jones Indices. VALMER is a trademark of Bolsa Mexicana de Valores, S.A.B. de C.V. and has been licensed for use by S&P Dow Jones Indices. NZX is a trademark of NZX Limited and has been licensed for use by S&P Dow Jones Indices. ISDA is a trademark of the International Swaps & Derivatives Association, Inc. and has been licensed for use by S&P Dow Jones Indices. GSCI is a registered trademark of The Goldman Sachs Group, Inc. ("Goldman") and has been licensed for use by S&P Dow Jones Indices. The S&P GSCI index is not created, owned, endorsed, sponsored, sold or promoted by Goldman or its affiliates and Goldman bears no liability with respect to such index or data related thereto. Goldman provides no guarantee as to the accuracy and/or the completeness of the S&P GSCI index or any data related thereto.

All trade names, trademarks and service marks, and attendant goodwill, now owned by Citigroup Index LLC or any of its affiliates and used in connection with the S&P/Citigroup International Treasury Bond (Ex-US) Indices shall remain its or its affiliates' respective sole property, and all rights accruing from their use shall inure solely to the benefit of Citigroup Index LLC or any of its affiliates.

IN NO EVENT WHATSOEVER SHALL CITIGROUP INDEX LLC OR ANY OF ITS AFFILIATES BE LIABLE WITH RESPECT TO SUCH INDICES FOR ANY DIRECT, INDIRECT, SPECIAL, INCIDENTAL, PUNITIVE OR CONSEQUENTIAL DAMAGES, INCLUDING BUT NOT LIMITED TO, LOSS OF PROFITS, LOST TIME OR GOODWILL, EVEN IF IT THEY HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, REGARDLESS OF THE FORM OF ACTION, WHETHER IN CONTRACT, TORT (INCLUDING NEGLIGENCE), STRICT LIABILITY OR OTHERWISE.

Brookfield Redding, Inc. and/or its affiliates (including but not limited to Brookfield Asset Management Inc., collectively "Co-Publisher") own certain intellectual property rights with respect to the Dow Jones Brookfield Infrastructure Indexes, which rights have been licensed to S&P for use.

SAM Indexes GmbH and/or its successors or affiliates (collectively, "SAM") own certain intellectual property rights with respect to the Dow Jones Sustainability Indexes, which rights have been licensed to S&P for use.