S&P Carbon Price Risk Adjusted Indices Methodology

June 2021
# Table of Contents

Introduction

- Index Objective and Highlights 3
- Future Carbon Prices 3
- Available Index Series 3
- Supporting Documents 4

Eligibility Criteria and Index Construction

- Index Universe 5
- Constituent Selection 5
- Constituent Weightings 5
- Multiple Classes of Stock 6
- Index Calculations 6

Index Maintenance

- Rebalancing 7
- Additions and Deletions 7
- Corporate Actions 7
- Ongoing Maintenance 7
- Currency of Calculation and Additional Index Return Series 7
- Base Dates and History Availability 8

Index Data

- Calculation Return Types 9

Index Governance

- Index Committee 10

Index Policy

- Announcements 11
- Pro-forma Files 11
- Holiday Schedule 11
- Rebalancing 11
- Unexpected Exchange Closures 11
- Recalculation Policy 11
- Contact Information 11
Introduction

Index Objective and Highlights

The S&P Carbon Price Risk Adjusted Indices (each an “Index” and together “Indices”) measure the performance of the constituent companies of a respective underlying index, reweighted to account for the potential specific impact of future carbon prices on constituents’ stock prices. The indices are designed to be broad-based, non-market capitalization-weighted indices.

The indices apply a reweighting factor to all constituents of the underlying indices, which addresses the following elements:

a) The estimated impact to a company’s operating profit if carbon prices increase to the levels believed to be necessary to restrict global warming to a maximum two degree increase by the year 2100

b) The estimated impact of that loss of operating profit on a firm’s market valuation

Adjusting market valuations to account for the future possible cost of carbon emissions seeks to address potential company-specific financial value at risk attributable to carbon, rather than looking purely at quantity of emissions.

A company’s market valuation in the index is adjusted by a Carbon Price Risk Adjusted Valuation Factor.

The indices were designed in conjunction with S&P Trucost Limited (“Trucost”), environmental data specialists.

Future Carbon Prices

The indices incorporate potential future carbon prices, more specifically the portion of future carbon pricing not covered by any current carbon prices.

Companies emit carbon dioxide and/or other CO₂ equivalents during the course of normal business activities. Currently, there may be a country, region, or sector specific price for such emissions. Carbon prices are normally determined by carbon pricing regulations such as emissions trading schemes or carbon taxes.

At the time of launch, in the vast majority of cases, current prices were well below the level that the International Energy Association (“IEA”) believes are required to restrict global warming to a two degree Celsius increase by the year 2100 as per the 2015 Paris Agreement at the 21st Conference of the Parties of the UNFCCC in December 2015 (“COP21”). The difference between current and potential future carbon prices is supplied by Trucost’s Corporate Carbon Pricing Tool, and is termed the Carbon Price Risk Premium. There are specific carbon price risk premiums for both Scope 1 and Scope 2 emissions for each sector, geographic location of emissions, and year in the future.

Available Index Series

Various indices can be constructed using theoretical carbon prices at various years in the future. The following series is available:

- Carbon Price Risk 2030 Adjusted Series
Supporting Documents

This methodology is meant to be read in conjunction with supporting documents providing greater detail with respect to the policies, procedures and calculations described herein. References throughout the methodology direct the reader to the relevant supporting document for further information on a specific topic. The list of the main supplemental documents for this methodology and the hyperlinks to those documents is as follows:

<table>
<thead>
<tr>
<th>Supporting Document</th>
<th>URL</th>
</tr>
</thead>
<tbody>
<tr>
<td>S&amp;P Dow Jones Indices’ Index Mathematics Methodology</td>
<td>Index Mathematics Methodology</td>
</tr>
<tr>
<td>S&amp;P Dow Jones Indices’ Float Adjustment Methodology</td>
<td>Float Adjustment Methodology</td>
</tr>
<tr>
<td>S&amp;P Dow Jones Indices’ Global Industry Classification Standard (GICS) Methodology</td>
<td>GICS Methodology</td>
</tr>
</tbody>
</table>

The methodology is created by S&P Dow Jones Indices to achieve the aforementioned objective of measuring the underlying interest of each index governed by this methodology document. Any changes to or deviations from this methodology are made in the sole judgment and discretion of S&P Dow Jones Indices so that the index continues to achieve its objective.
Eligibility Criteria and Index Construction

Index Universe

At each annual rebalancing, each index is constructed from the constituents of an underlying index, as defined below:

<table>
<thead>
<tr>
<th>Index</th>
<th>Underlying Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>S&amp;P 500 Carbon Price Risk 2030 Adjusted Index</td>
<td>S&amp;P 500</td>
</tr>
<tr>
<td>S&amp;P Europe 350 Carbon Price Risk 2030 Adjusted Index</td>
<td>S&amp;P Europe 350</td>
</tr>
<tr>
<td>S&amp;P/ASX 200 Carbon Price Risk 2030 Adjusted Index</td>
<td>S&amp;P/ASX 200</td>
</tr>
<tr>
<td>S&amp;P Global LargeMidCap Carbon Price Risk 2030 Adjusted Index</td>
<td>S&amp;P Global LargeMidCap</td>
</tr>
</tbody>
</table>

The eligible universe of constituents is constructed from each underlying index by subjecting each stock to a liquidity screen as of the rebalancing reference date, as follows:

<table>
<thead>
<tr>
<th>Index</th>
<th>Three-Month Median Daily Value Traded</th>
<th>Buffer for Current Constituents</th>
</tr>
</thead>
<tbody>
<tr>
<td>S&amp;P 500 Carbon Price Risk 2030 Adjusted Index</td>
<td>USD $3 million</td>
<td>USD $2.4 million</td>
</tr>
<tr>
<td>S&amp;P Europe 350 Carbon Price Risk 2030 Adjusted Index</td>
<td>EUR €3 million</td>
<td>EUR €2.4 million</td>
</tr>
<tr>
<td>S&amp;P/ASX 200 Carbon Price Risk 2030 Adjusted Index</td>
<td>AUD $3 million</td>
<td>AUD $2.4 million</td>
</tr>
<tr>
<td>S&amp;P Global LargeMidCap Carbon Price Risk 2030 Adjusted Index</td>
<td>USD $3 million</td>
<td>USD $2.4 million</td>
</tr>
</tbody>
</table>

Constituent Selection

All stocks in the eligible universe, as of the rebalancing reference date, are selected and form each index.

Constituent Weightings

At each rebalancing, as of the rebalancing reference date, Selected constituents are weighted in proportion to their float-adjusted market capitalization multiplied by their Carbon Price Risk Adjusted Valuation Factor, calculated as follows:

\[
\text{Carbon Price Risk Adjusted Valuation Factor} = \frac{\text{Adjusted Company Valuation}}{\text{Current Company Market Capitalization}}
\]

where:

\[
\text{Adjusted Company Valuation} = \max(0, \text{Current Company Market Capitalization} - (\text{Estimated Loss in Earnings from Carbon Price Risk} \times \text{Valuation Multiple}))
\]

and:

\[
\text{Estimated Loss in Earnings from Carbon Price Risk} = \text{Cost of Carbon Price Risk} \times \text{Profit Impact Ratio}
\]

Cost of Carbon Price Risk is the hypothetical additional cost of a company’s current carbon emissions if carbon prices were to rise to the target levels of a specific future year. This cost is determined by Trucost’s Corporate Carbon Pricing Tool using a ‘high carbon price’ scenario.

Profit Impact Ratio is the portion of a company’s Cost of Carbon Price Risk that is assumed to correspond to the resultant loss of its operating profits. The ratio seeks to address the assumed varying price elasticities of demand and variable costs across industry groups.
Valuation Multiple is the relationship observed in market prices between operating profits and market capitalization. Each valuation multiple reflects the average multiple for a company in the same region and GICS industry group of the S&P Global LargeMidCap as of the rebalancing reference date.

If an eligible constituent has an Adjusted Company Valuation of zero, it will be added to the index with a weight of zero.

The calculations for each company’s Cost of Carbon Price Risk, corresponding Profit Impact Ratio, and Valuation Multiple are detailed in Appendices I, II and III.

Multiple Classes of Stock

All publicly listed multiple share class lines are eligible for index inclusion, subject to meeting the eligibility criteria. For more information regarding the treatment of multiple share classes, please refer to Approach A within the Multiple Share Classes section of the S&P Dow Jones Indices’ Equity Indices Policies & Practices Methodology.

Index Calculations

The index is calculated by means of the divisor methodology used in all S&P Dow Jones Indices’ equity indices.

For more information on the index calculation methodology, please refer to the Market Capitalization Weighted Indices section of S&P Dow Jones Indices’ Index Mathematics Methodology.

---

1 Companies are grouped into one of four regions: North America, Europe Developed, Asia Pacific Developed, and Emerging.
Index Maintenance

Rebalancing

The indices are rebalanced annually, effective after the close of the third Friday of December. The rebalancing reference date, and the reference universe for constituent selection, is the third Friday of November.

Additions and Deletions

Additions. Except for spin-offs, no stocks are added to the indices between rebalancings. Spinoffs are added to all indices where the parent security is a constituent at a zero price at the market close of the day before the ex-date (with no divisor adjustment) and are removed after at least one day of regular way trading (with a divisor adjustment).

Deletions. If a stock is dropped from an underlying index, it is also removed from the respective Carbon Price Risk Index simultaneously. Between rebalancings a stock can be deleted from an index due to corporate events such as mergers, takeovers, delistings, suspensions, spin-offs/demergers or bankruptcies.

Corporate Actions

The indices are reviewed on an ongoing basis to account for corporate events such as mergers, takeovers, delistings, suspensions, spin-offs/demergers or bankruptcies. Changes to index composition and related weight adjustments are made as soon as they are effective. These changes are typically announced one to five business days prior to the implementation date.

For more information on Corporate Actions, please refer to S&P Dow Jones Indices’ Equity Indices Policies & Practices Methodology.

Ongoing Maintenance

Specific changes to index constituents, such as share changes, Investable Weight Factor (IWF) changes, dividend distributions, and price adjustments, follow the policies of the underlying index.

For more information on Share Updates, Float Adjustment, and IWFs, please refer to S&P Dow Jones Indices’ Equity Indices Policies & Practices and Float Adjustment Methodology documents.

Currency of Calculation and Additional Index Return Series

The indices calculate in U.S. dollars and the respective local currency for the regional indices.

WM/Refinitiv foreign exchange rates are taken daily at 4:00 PM London time and used in the calculation of the indices. These mid-market fixings are calculated by the WM Company based on Refinitiv data and appear on Refinitiv pages WMRA.

In addition to the indices detailed in this methodology, additional return series versions of the indices may be available, including, but not limited to: currency, currency hedged, decrement, fair value, inverse, leveraged, and risk control versions. For a list of available indices, please refer to the S&P DJI Methodology & Regulatory Status Database.

For information on the index calculation, please refer to S&P Dow Jones Indices’ Index Mathematics Methodology.
For the inputs necessary to calculate certain types of indices, including decrement, dynamic hedged, fair value, and risk control indices, please refer to the Parameters documents available at [www.spdji.com](http://www.spdji.com).

**Base Dates and History Availability**

Index history availability, base dates, and base values are shown in the table below.

<table>
<thead>
<tr>
<th>Index</th>
<th>Launch Date</th>
<th>First Value Date</th>
<th>Base Date</th>
<th>Base Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>S&amp;P 500 Carbon Price Risk 2030 Adjusted Index</td>
<td>05/31/2018</td>
<td>12/21/2012</td>
<td>12/21/2012</td>
<td>100</td>
</tr>
<tr>
<td>S&amp;P Europe 350 Carbon Price Risk 2030 Adjusted Index</td>
<td>07/02/2018</td>
<td>12/21/2012</td>
<td>12/21/2012</td>
<td>100</td>
</tr>
<tr>
<td>S&amp;P/ASX 200 Carbon Price Risk 2030 Adjusted Index</td>
<td>08/01/2018</td>
<td>12/21/2012</td>
<td>12/21/2012</td>
<td>100</td>
</tr>
<tr>
<td>S&amp;P Global LargeMidCap Carbon Price Risk 2030 Adjusted Index</td>
<td>07/02/2018</td>
<td>12/21/2012</td>
<td>12/21/2012</td>
<td>100</td>
</tr>
</tbody>
</table>
Index Data

Calculation Return Types

S&P Dow Jones Indices calculates multiple return types which vary based on the treatment of regular cash dividends. The classification of regular cash dividends is determined by S&P Dow Jones Indices.

- Price Return (PR) versions are calculated without adjustments for regular cash dividends.
- Gross Total Return (TR) versions reinvest regular cash dividends at the close on the ex-date without consideration for withholding taxes.
- Net Total Return (NTR) versions, if available, reinvest regular cash dividends at the close on the ex-date after the deduction of applicable withholding taxes.

In the event there are no regular cash dividends on the ex-date, the daily performance of all three indices will be identical.

For a complete list of indices available, please refer to the daily index levels file (".SDL").

For more information on the classification of regular versus special cash dividends as well as the tax rates used in the calculation of net return, please refer to S&P Dow Jones Indices' Equity Indices Policies & Practices Methodology.

For more information on the calculation of return types, please refer to S&P Dow Jones Indices' Index Mathematics Methodology.
Index Governance

Index Committee

The S&P Carbon Price Risk Adjusted Indices are managed by an S&P Dow Jones Indices’ Index Committee. The Committee meets regularly. At each meeting, the Committee reviews pending corporate actions that may affect index constituents, statistics comparing the composition of the index to the market, companies that are being considered as candidates for addition to the index, and any significant market events. In addition, the Index Committee may revise index policy covering rules for selecting companies, treatment of dividends, share counts or other matters.

S&P Dow Jones Indices considers information about changes to its indices and related matters to be potentially market moving and material. Therefore, all Index Committee discussions are confidential.

S&P Dow Jones Indices’ Index Committees reserve the right to make exceptions when applying the methodology if the need arises. In any scenario where the treatment differs from the general rules stated in this document or supplemental documents, clients will receive sufficient notice, whenever possible.

In addition to the daily governance of indices and maintenance of index methodologies, at least once within any 12-month period, the Index Committee reviews the methodology to ensure the indices continue to achieve the stated objectives, and that the data and methodology remain effective. In certain instances, S&P Dow Jones Indices may publish a consultation inviting comments from external parties.

For information on Quality Assurance and Internal Reviews of Methodology, please refer to S&P Dow Jones Indices’ Equity Indices Policies & Practices Methodology.
Index Policy

Announcements

All index constituents are evaluated daily for data needed to calculate index levels and returns. All events affecting the daily index calculation are typically announced in advance via the Index Corporate Events report (.SDE), delivered daily to all clients. Any unusual treatment of a corporate action or short notice of an event may be communicated via email to clients.

Pro-forma Files

In addition to the corporate events file (.SDE), S&P Dow Jones Indices provides constituent pro-forma files each time the indices rebalance. The pro-forma file is typically provided daily in advance of the rebalancing date and contains all constituents and their corresponding weights and index shares effective for the upcoming rebalancing.

Please visit www.spdji.com for a complete schedule of rebalancing timelines and pro-forma delivery times.

Holiday Schedule

The indices are calculated daily, throughout the calendar year. The only days an index is not calculated are on days when all exchanges where an index’s constituents are listed are officially closed or if WM/Reuters’ exchange rates services are not published.

A complete holiday schedule for the year is available at www.spdji.com.

Rebalancing

The Index Committee may change the date of a given rebalancing for reasons including market holidays occurring on or around the scheduled rebalancing date. Any such change will be announced with proper advance notice where possible.

Unexpected Exchange Closures

For information on Unexpected Exchange Closures, please refer to S&P Dow Jones Indices’ Equity Indices Policies & Practices Methodology.

Recalculation Policy

For information on the recalculation policy, please refer to S&P Dow Jones Indices’ Equity Indices Policies & Practices Methodology.

For information on Calculations and Pricing Disruptions, Expert Judgment and Data Hierarchy, please refer to S&P Dow Jones Indices’ Equity Indices Policies & Practices Methodology.

Contact Information

For any questions regarding an index, please contact: index_services@spglobal.com.
Index Dissemination

Index Data
Daily constituent and index level data are available via subscription.

For product information, please contact S&P Dow Jones Indices, www.spdji.com/contact-us.

Website
Appendix I

Cost of Carbon Price Risk

The Cost of Carbon Price Risk is the hypothetical additional cost of a company’s current carbon emissions if carbon prices were to rise to the target levels of a specific future year. This cost is determined by Trucost’s Corporate Carbon Pricing Tool using a ‘high carbon price’ scenario.

As of the rebalancing reference date, Trucost provides the following data items for each company:

i. Carbon Scope 1 emissions (tonnes CO₂ equivalents)
ii. Carbon Scope 2 emissions (tonnes CO₂ equivalents)

If emissions data is not available from Trucost for a specific company in an index, then S&P DJI estimate Scope 1 and Scope 2 emissions by utilizing the available carbon intensities of companies from the same GICS industry group, region, and size classification.

Trucost also provides the corresponding carbon price risk premiums, defined as the gap between current and potential future carbon prices.

There are specific carbon price risk premiums that relate to a future year’s target level and are dependent on:

- whether the emissions are identified as either Scope 1 or 2
- in which country the carbon (CO₂ equivalents) is determined to be emitted
- in which of the Trucost Corporate Carbon Pricing Tool sectors the company is identified

The cost of carbon price is calculated for each company as follows:

\[
Cost\ of\ Carbon\ Price\ Risk = \sum_{e=1}^{E} \left( \sum_{c=1}^{C} \frac{Carbon\ Emissions_{e,c} \times Carbon\ Price\ Risk\ Premium_{e,c,s,y}}{C_{e,c,s}} \right)
\]

where:

- \( e = scope\ of\ carbon\ emissions,\ either\ scope\ 1\ or\ 2 \)
- \( c = country\ of\ carbon\ emissions \)
- \( n = total\ number\ of\ countries \)
- \( s = Trucost's\ Corporate\ Carbon\ Pricing\ Tool\ sector\ of\ company \)
- \( y = year\ of\ future\ carbon\ prices \)

\( Carbon\ Emissions_{e,c} = CO_2\ equivalents\ (tonnes)\ for\ the\ corresponding\ scope\ and\ country \)

\( Carbon\ Price\ Risk\ Premium_{e,c,s,y} = gap\ between\ current\ and\ potential\ future\ carbon\ prices\ for\ the\ corresponding\ scope, country, sector\ and\ future\ year\ (\$ per\ tonne\ of\ CO_2\ equivalents) \)

Each company’s geographical distribution of emissions for both Scope 1 and Scope 2 are determined as follows:
a) If available, the company’s most recent CDP (formerly the Carbon Disclosure project) data from the last three years is used to determine the proportion of both Carbon Scope 1 and 2 emissions across countries.

b) In the event of no CDP data availability for either Scope 1 or 2 for any company, then Factset’s geographical revenue data (GeoRev) is used to approximate emissions distributions across countries.

c) In the event of no Factset GeoRev data for a given company, then the Scope 1 or Scope 2 emissions are assumed to originate from the company’s country of domicile.
Appendix II

Profit Impact Ratio

The Profit Impact Ratio is the portion of a company’s Cost of Carbon Price Risk that is assumed to correspond to the resultant loss of its operating profits. The ratio seeks to address the assumed varying price elasticities of demand and variable costs across industry groups, and is used as follows:

Estimated Loss in Earnings from Carbon Price Risk = Cost of Carbon Price Risk × Profit Impact Ratio

Companies are identified as belonging to one of four broad groups according to GICS Industry Group classification, and are assigned a corresponding Profit Impact Ratio, as defined below:

<table>
<thead>
<tr>
<th>Elasticity of Demand</th>
<th>GICS Industry Groups</th>
<th>Profit Impact Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highly Inelastic</td>
<td>Software &amp; Services</td>
<td>20%</td>
</tr>
<tr>
<td></td>
<td>Diversified Financials</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Health Care Equipment &amp; Services</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Food &amp; Staples Retailing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pharmaceuticals, Biotechnology &amp; Life Sciences</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Food, Beverage &amp; Tobacco</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Household &amp; Personal Products</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Utilities</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Insurance</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Telecommunication Services</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Banks</td>
<td></td>
</tr>
<tr>
<td>Inelastic</td>
<td>Energy</td>
<td>45%</td>
</tr>
<tr>
<td></td>
<td>Capital Goods</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Retailing</td>
<td></td>
</tr>
<tr>
<td>Elastic</td>
<td>Commercial &amp; Professional Services</td>
<td>70%</td>
</tr>
<tr>
<td></td>
<td>Transportation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Media &amp; Entertainment</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Real Estate</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Consumer Durables &amp; Apparel</td>
<td></td>
</tr>
<tr>
<td>Highly Elastic</td>
<td>Technology Hardware &amp; Equipment</td>
<td>95%</td>
</tr>
<tr>
<td></td>
<td>Materials</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Consumer Services</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Automobiles &amp; Components</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Semiconductors &amp; Semiconductor Equipment</td>
<td></td>
</tr>
</tbody>
</table>
Appendix III

Valuation Multiple

To link each company’s potential loss in earnings to the impact on its market valuation, a Valuation Multiple is used as follows:

\[
Adjusted\ Company\ Valuation = \max\left[ 0, \text{Current Company Market Capitalization} - (\text{Estimated Loss in Earnings from Carbon Price Risk} \times \text{Valuation Multiple}) \right]
\]

Using market prices, the relationship between operating profits and market valuation can be observed. The valuation multiple assigned to each company is not company-specific but reflects the average multiple for a company in the same region\(^2\) and GICS industry group of the S&P Global LargeMidCap (as of rebalancing reference date).

For example, a valuation multiple of 10 for a particular group implies that if each company were to experience a $1 loss in earnings then it is assumed it may typically result in a $10 lower market capitalization for each.

To determine each regional-industry group’s valuation multiple, the respective group’s total market capitalization is divided by the group’s average operating profit over the past 5 years (EBIT is used for non-financials and Pre-Tax Income for financials).

In the event the calculated valuation multiple is negative or greater than 30, then the grouping is relaxed from regional-industry group to regional-sector. If the valuation multiple is still negative or greater than 30, then the valuation multiple is assumed to be 30.

---

\(^2\) Companies are grouped into one of four regions: North America, Europe Developed, Asia Pacific Developed, and Emerging.
Disclaimer

© 2021 S&P Dow Jones Indices. All rights reserved. S&P, S&P 500, S&P 500 LOW VOLATILITY INDEX, S&P 100, S&P COMPOSITE 1500, S&P 400, S&P MIDCAP 400, S&P 600, S&P SMALLCAP 600, S&P GIVI, GLOBAL TITANS, DIVIDEND ARISTOCRATS, S&P TARGET DATE INDICES, S&P PRISM, S&P STRIDE, GICS, SPVA, SPDR and INDEXOLOGY are registered trademarks of S&P Global, Inc. ("S&P Global") or its affiliates. DOW JONES, DJ, DJIA, THE DOW 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 or reproduction in whole or in part are prohibited without written permission of S&P Dow Jones Indices LLC. This document does not constitute an offer of services in jurisdictions where S&P Dow Jones Indices LLC, S&P Global, Dow Jones or their respective affiliates (collectively “S&P Dow Jones Indices”) do not have the necessary licenses. Except for certain custom index calculation services, 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 and providing custom calculation services. Past performance of an index is not an indication or guarantee of future results.

It is not possible to invest directly in an index. Exposure to an asset class represented by an index may be 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.

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 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 S&P and MSCI. Neither MSCI, S&P 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, S&P, 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.