S&P Dow Jones Indices

A Division of S&P Global

S&P DJI ESG Score

Methodology

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Introduction

S&P DJI ESG Scores

S&P Dow Jones Indices ("S&P DJI"), in association with SAM (part of S&P Global), together provide Environmental, Social, and Governance ("ESG") scores (together the "S&P DJI ESG Scores") that robustly measure companies' financially material ESG factors. S&P DJI ESG Scores are based on S&P Global ESG Scores, derived from the SAM Corporate Sustainability Assessment (CSA). The SAM CSA is an analysis of ESG factors, developed and enhanced since 1999, to identify companies well-equipped to recognize and respond to emerging sustainability opportunities and challenges in the global market.

SAM pursues an integrated approach to analyzing sustainability performance. An interdisciplinary team of analysts design, monitor, and refine the annual SAM CSA with the purpose of generating additional insights into companies' value-creating and risk-mitigating ESG potential. The assessment focuses on sustainability criteria that are financially relevant to corporate performance, valuation, and security selection.

For the purposes of the SAM ESG assessment, companies are assigned to industries defined by SAM and the assessment is largely specific to each industry. SAM uses the Global Industry Classification Standard (GICS®) as its starting point for determining industry classification. At the industry group and sector levels, the SAM Industries match the standard GICS classifications, but some nonstandard aggregations are done at the industry level.

In an effort to further mitigate biases within the data used to determine SAM's ESG scores, and thereby provide a stronger signal of material ESG factors, S&P DJI collaborated with SAM to further refine the score construction methodology by examining how the underlying data points collected by the SAM CSA are managed and scored. The result is the final S&P DJI ESG Score, which more accurately depicts companies' overall ESG sensitivity relative to other companies categorized in the same industry.

S&P DJI ESG Score Methodology

Corporate Sustainability Assessment and SAM Data Collection

Annually in March SAM issues a SAM CSA request to over 3,400 companies based on size, region, and country. The SAM CSA uses 61 SAM Industries, derived from GICS, to analyze companies using industry-specific questionnaires that evaluate a range of financially relevant sustainability criteria. The SAM CSA analysis awards an ESG score to each company.

Companies that fail to respond to the SAM CSA, or those outside the universe of invited companies, can still be assessed and receive an ESG Score. In those cases, SAM analysts assess those companies using available data, and form self-assessed scores.

For more information on the SAM CSA process, please refer to the SAM website: *https://www.spglobal.com/esg/csa/*.

Anchor Universe

The SAM CSA is performed on a universe of companies on an annual basis. Included in this universe are the constituents of the S&P Global LargeMidCap Index and S&P Global 1200 as of the September review effective date. The combination of the constituents of these indices determines the “anchor universe” used as a benchmark to normalize the S&P DJI ESG Scores. The anchor universe composition remains constant until the subsequent September.

Score Calculation

During the SAM CSA process ESG indicators are calculated for each company covering various sustainability topics. Within each industry, each indicator has a different weight in the final ESG score calculation, which is calculated as the weighted sum of the indicators. Weights are defined in the SAM CSA, and reviewed each year on the basis of the financial materiality of each topic to the specific industry by SAM.

The equation for the S&P DJI ESG scores is as follows:

$$\mathrm{T}_{it} = \sum_{j=1}^{N} w_{I(i)jt}\tilde{c}_{ijt}$$

In the above equation, the notations represent the following:

i $= 1, 2, \cdots,$: denotes the companies in the anchor universe

t $= 1, 2, \cdots,$: denotes the assessment years

j $= 1, 2, \cdots, N$: denotes the question level indicators

$\tilde{c}_{ijt}$ = the adjusted indicator j for company i for year t. The adjustment is described below in the normalization section, and is calculated based on the question level indicators c_{ijt}

c_{ijt} = the indicator j at question level for company *i*, i.e. the S&P Global ESG Score from the SAM CSA

$w_{I(i)jt}$= the weight of indicator j for company i on assessment year t, where the sum of all weights for a specific company in a specific year is one:

$$\sum_{j=1}^{N} w_{I(i)jt} = 1 , \forall\, i, t.$$

$I(i) \in \{1, \ldots, 61\}$ = the industry of company *i*

The weights $w_{I(i)jt}$ are dependent on the specific SAM Industry due to the ESG methodology's industry-specific approach as defined by SAM. Therefore, the weights for each indicator *j* vary across industries. Some ESG indicators are used across all industries, whereas some are industry-specific. If an indicator is not relevant for a specific industry, the corresponding industry weight is zero.

Missing Data Treatment

To account for the information bias that exists as a result of data being provided directly by the companies through the SAM CSA vs data being collected by SAM analyst, as well as the differences in transparency found in corporate sustainability reporting, a framework is used to deal with missing data for questions where a low level of publicly available information is available. This framework is only applied to all companies assessed by SAM without company input. This is due to the amount of publicly available data being less than what companies can provide when filling in questionnaires themselves.
Generally, SAM CSA questions are deemed mandatory if the information is found by SAM analysts for more than 50% of companies. SAM industry experts also have discretion to categorize specific questions as mandatory based on their fundamental importance, regardless of their answer rate, or to deem questions as non-mandatory even if they have answer rates greater than 50%.

During the 2017 and 2018 yearly SAM CSA methodology reviews, changes were made, with an added emphasis on questions requiring publicly available information from all companies, including participating companies. The changes were prompted by increasing investor expectations with regard to corporate transparency and rising expectations on what should be included in companies' public disclosures. As part of this review, the "public" questions were added to the list of mandatory questions used in the SAM CSA methodology. As a result, the mandatory questions from 2018 onwards are based on both the 50% rule previously described, as well as all "public" questions if not already selected as part of the 50% rule. Another result of this change is that all three Dimensions (environmental, social, and governance) within the SAM CSA will contain a minimum set of mandatory questions, and no dimension can be marked as "not applicable", preserving the overall weights of each dimension in each industry within the S&P Global ESG Score.

If no information was found on a mandatory question, a score of zero is assigned to that question, and the total score for that company is calculated inclusive of the zero. Thus companies are penalized for a lack of reporting.

If no information is found on a non-mandatory question, the question is disregarded in the total score calculation. The weight of the indicator is redistributed among the weights of all other indicators. Following the notation above, the process followed in the case of missing information is the following for company *i* and question *j* at time *t*:

- If question *j* is mandatory, then $c_{ijt} = 0$ and the total score is calculated as usual.
- If question *j* is not mandatory, then $w_{I(i)jt} = 0$ and the weights are redistributed among the other questions in the same criteria/dimension pertaining to the company's SAM industry. The new weights for the other questions *k* in that criteria/dimension for company *i* are defined as follows:

$$w'_{I(i)kt} = \frac{w_{I(i)kt}}{1 - w_{I(i)jt}}, \forall i \text{ and } \forall k \neq j \text{ in that criteria/dimension}$$

Normalization

In addition to the missing data biases, there are other naturally embedded biases in the data gathered in the SAM CSA. Some questions are harder than others to score well on, resulting in a lower average score. Some questions also have multiple outliers or present most of the scores concentrated in a small range of values.

In order to eliminate these biases, S&P DJI normalizes the ESG indicators. The normalized figures measure the difference between a specific value and the industry mean, accounting for the standard deviation of values for the industry.

For example, in an industry where most companies score between 60 and 70, a company scoring 80 is very good, and will receive a high score. In an industry where most of the companies score between 90 and 100, a score of 80 is quite low. This will lead to a lower score for the company compared to peers. If 95% of the companies in an industry score between 80 and 90, a company scoring 95 is far above the peers. In an industry where the score range is between 50 and 90, then a score of 95 is further above.

The normalization is performed by a sigmoid-function on a standard z-score:

$$\tilde{c}_{ijt} = \sum \left(\frac{c_{ijt} - \bar{c}_{I(i)jt}}{\sigma_{I(i)jt}} \right)$$

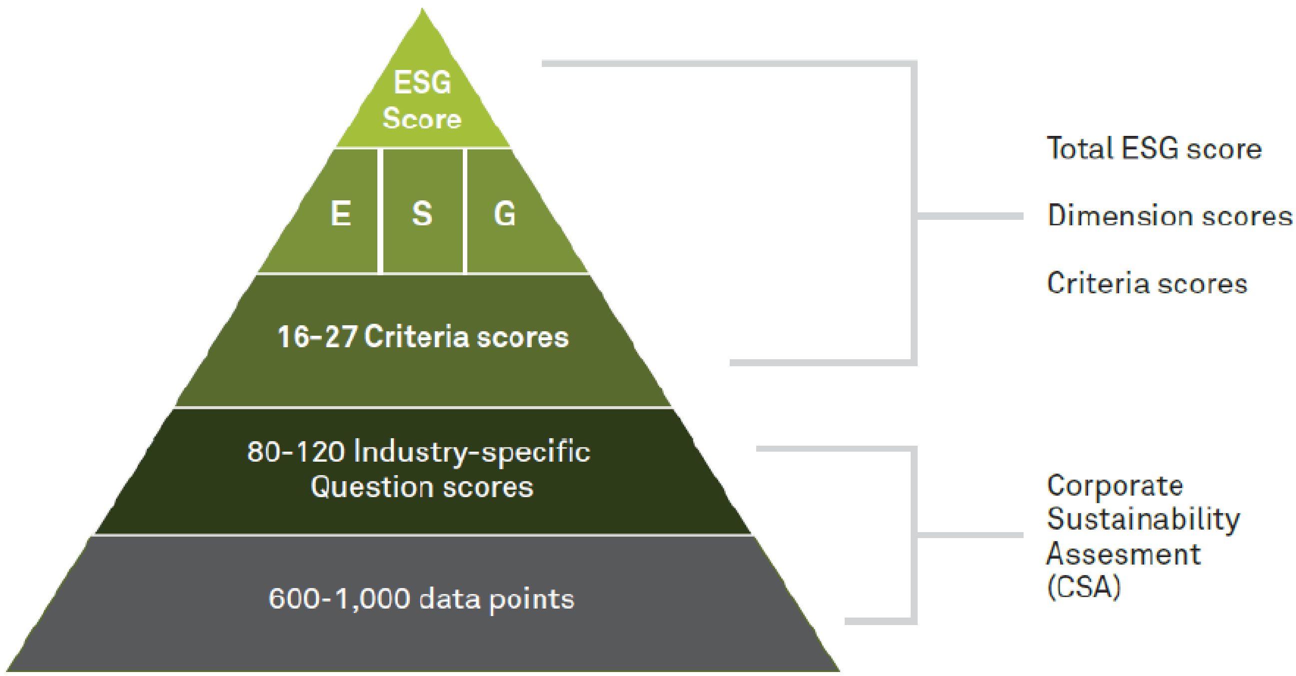
where:

$\bar{c}_{I(i)jt}$	= the average for indicator c_{ijt} within the peer group I(i)
$\sigma_{I(i)jt}$	= the corresponding standard deviation
$\sum(x) = \frac{2}{1+e^{-x}} - 1$	= the sigmoid-function, which smooths the final indicator is in the range $(-1,1)$

The average and the standard deviation are calculated only among the anchor universe within industries. Additional companies which are assessed in following months use the same normalization parameters to normalize the indicators. Consequently, their score will not modify the parameters.

Total Score and Normalized Total Score

The Total Score of a company is the weighted sum of the normalized indicators. The aggregation is done on different levels (criteria level, dimension level, and ESG level), with each company receiving one score for each criteria to which its industry is assigned, three dimension level scores (Environmental Score, Social Score, and Governance Score) and one Total ESG Score. The weights used in the sum depend on the company’s industry and the aggregation level as shown in Exhibit 1 below:



Source: SAM. Chart is provided for illustrative purposes

For example, the Total Score at the criteria level is calculated as a weighted sum of the scores of each question in that criteria, while the dimension level Total Score is the weighted sum of scores of all the criteria in that dimension. The Total ESG Score is the weighted sum of scores of all dimensions. The Total Score is defined as:

$$\mathrm{T}_{it} = \sum_{j=1}^{N} w_{I(i)jt} \tilde{c}_{ijt}$$

where:

$j = 1, 2, \cdots, N$ are the set of indicators considered at the specific aggregation level.

Total Scores can still be biased, as some industries tend to have better Total Scores than others. As a result, the Total Scores are also normalized. The Normalized Total Score for each company i at year t is below:

$$\tilde{T}_{it} = \frac{T_{it} - \bar{T}_{I(i)t}}{\sigma_{I(i)t}}$$

where:

$\bar{T}_{I(i)t}$ = the average of the total scores for industry I to which company i belongs and assessment year t,

$\sigma_{I(i)t}$ = the corresponding standard deviation

When Z-scores are calculated, the average and the standard deviation are calculated only among the anchor universe within Industries. Additional companies which are self-assessed (SA) by SAM in the following months use the same normalization parameters to normalize the indicators. Consequently, their score will not modify the parameters.

Probability Score, Final Score, and S&P DJI ESG Score

The Normalized Total Score gives a measure of the performance of each company compared to its SAM industry peers. However, it is not indicative of how the company is positioned in percentage at GICS sector or industry group levels. The Probability Score represents what percentage of an infinitely large population each company would be better than. The Probability Score is defined as the normal cumulative density function with mean 0 and standard deviation 1 calculated on the Normalized Total Score for company *i* and assessment year *t* as defined in the equation below:

$$\mathrm{P}_{it} = F_t(\tilde{T}_{it})$$

Probability Scores are then multiplied by 100, resulting in a Final Score.

This Final Score is done on different levels: criteria level, dimension level, and ESG level

The Final ESG-level score for each company i is called the S&P DJI ESG Score for that company

Media & Stakeholder Analysis

The Media & Stakeholder Analysis (MSA) forms an integral part of the SAM Corporate Sustainability Assessment. MSA enables SAM to monitor companies' sustainability performance on an ongoing basis, by assessing current controversies with potentially negative reputational or financial impacts.
SAM monitors news coverage of assessed companies on a daily basis using news stories from the media and stakeholder groups compiled and pre-screened by RepRisk. RepRisk is a leading business intelligence provider specializing in environmental, social and governance issues. News stories covered by the MSA include a range of issues. These include issues such as economic crime or corruption, fraud, illegal commercial practices, human rights issues, labor disputes, workplace safety, catastrophic accidents or environmental violations.

Each indicator is linked to a specific criteria in the SAM CSA. Each MSA Case has a score and works as a multiplier to the corresponding Criteria score: no MSA cases mean that the company gets full score for that Criteria, while an MSA case reduces the score of the company in the Criteria by a specific percentage. Multiple cases corresponding to the same Criteria for a single company may have a significantly higher impact than a single case, as the multiplication factors are summed up. More information on the MSA methodology can be found in the *MSA Methodology Guidebook*.

S&P DJI ESG Score Maintenance

S&P DJI ESG Score Timeline

S&P DJI ESG Scores are updated on an annual basis in two separate batches. The initial batch, updated on an annual basis in September using input data gathered from that year's SAM CSA, includes the top 2,500 stocks in the coverage universe by float-adjusted market capitalization. The second batch, updated on an annual basis in March using input data gathered from the prior year's SAM CSA, contains every other company in the coverage universe. For example, a company in the second batch would receive an updated S&P DJI ESG Score in March of 2020, calculated with data from the SAM CSA conducted in 2019.

The mean and standard deviation used in the S&P DJI ESG Score standardization are derived from the covered companies in the anchor universe in batch one annually in September. Companies in the anchor universe that are scored as part of batch two are normalized using the mean and standard deviation from the past September.

S&P DJI ESG Score Governance

S&P DJI ESG Score Methodology Committee

The S&P DJI ESG Score methodology and structure fall under the overall supervision of the S&P DJI ESG Score Committee. All committee members are full-time professionals from both S&P DJI and SAM. The Committee meets regularly. At each meeting the Committee reviews the scoring methodology to ensure the methodology is accurate, transparent, and complete in the description of how S&P DJI ESG Scores are calculated. In addition, the Committee may revise the methodology process if the committee determines a change is needed to better implement the intent of the scoring process.

S&P Dow Jones Indices' 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 the S&P DJI ESG scores and maintenance of the S&P DJI ESG Score methodology, at least once within any 12-month period, the Committee reviews the methodology to ensure the methodology continues to achieve its purpose, and that the data and calculation process remain effective.

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