Index Methodology Guide for the FactSet Global Quantum Computing Index™

Version 1.0 – February 3, 2025

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Index Introduction and Objective

1.1 Index Overview

The FactSet Global Quantum Computing Index (“Index”) is an equity benchmark designed to track the performance of companies involved in the research, development, manufacturing, and application of quantum computing technologies. The Index also includes companies that stand to benefit significantly as early adopters or prime beneficiaries of quantum computing's industrial deployment across various industries. The Index is modified, float adjusted market capitalization weighted and reconstituted semi-annually in June and December.

The Index is calculated and maintained by Solactive AG – the calculation agent – based on a methodology developed by FactSet. It is calculated on a price, gross and net total return basis in U.S. Dollar (USD). The price, gross, and net total return values of the index are calculated on a real-time and an end-of-day basis, Monday to Friday 9:00 a.m. to 3:55 p.m. KST (Korea Standard Time). Index values are distributed via various data channels and market data vendors, including the price marketing services of Boerse Stuttgart AG. Index values of may also be obtained from FactSet upon request.

1.2 Inception Date and Base Value

The Index Inception Date was December 13, 2019, with a base value of 100.00. The inception date refers to when the first back-tested index value was calculated. The back test is based on a similar methodology used to calculate the index when it was officially completed on February 3, 2025.

1.3 Index Valuation Days

Index Valuation Days are business days, Monday to Friday.

1.4 Completion Date

The index completion date was February 3, 2025. Completion date refers to the stated date when the index was officially completed for launch.

1.5 Reconstitution and Rebalance Schedule

The index is reconstituted and rebalanced semi-annually after the close of the 2nd Friday in June and December each year (“Reconstitution Day” and “Rebalance Day”).

If any of the existing or new index components is not trading on Reconstitution Day or Rebalance Day due to an exchange holiday, the reconstitution/rebalance is moved to the next business day.

The data used to reconstitute and rebalance the index is as of the close of last business day in May and November (“Selection Day”). Subsequent adjustment to the index composition may be made to account for corporate actions that occur between the Selection Day and the Reconstitution Day or Rebalance Day.

Index Construction

2.1 Constituent Selection and Weighting Schema

1. The securities are listed in the NYSE, NYSE American, NASDAQ, Tokyo Stock Exchange (TSE), and Korea Exchange (KRX).
2. The securities are common stocks and ADR.
3. The securities have a minimum total market capitalization of $100 Million USD, and a minimum three-month ADTV (Average Daily Trading Value) of $1 Million USD.
4. The securities' primary business is engaged in quantum computing and are classified to one of the following RBICS Focus Level 6 or Revere Hierarchy Focus industries (Table 1). These companies are considered as **Category 1 Quantum Computing Pureplay**.

Table 1.

RBICS L6 | Revere Hierarchy Name
Quantum Computing Systems
Quantum Processor Semiconductors
Technology/Hardware/Computer Hardware/Systems/Quantum Computing;
Technology/Electronic Components/Semiconductors/Processor/Quantum

5. Select Technology securities that are involved in quantum computing. These companies must be classified to Technology in the RBICS Focus Level 1 sector. They must also have a Quantum Computing Composite Keyword (QCCK) score > 0. These companies are considered as **Category 2 Quantum Computing Participants**.[1] QCCK is computed for each of the 3 countries' securities separately as follows:
    a. Query and compute a Keyword Percentile Score by searching for quantum computing related keywords on the FactSet Transcripts Database for the past 2 quarters
    b. Query and compute a Keyword Percentile Score by searching for quantum computing related keywords on the FactSet Broker Research Database for the past 2 quarters
    c. Calculate QCCK score by summing up Percentile Score from Step 5a and 5b:

(Percentile Score 5a*0.40) + (Percentile Score 5b*0.60)

[1]Securities already captured as Category 1 are excluded.

6. Select securities classified to the RBICS Focus Level 6 Industry "Semiconductor Foundry Services." Rank these securities by their market capitalization from in descending order from largest to smallest. Select the 1st ranked security. This company is also considered as a **Category 2 Quantum Computing Participant**.

7. Select Industrials securities that are involved in quantum computing primarily as early adopters or prime beneficiaries. These companies must be classified to Industrials in the RBICS Focus Level 1 sector. They must also have a Quantum Computing Composite Keyword (QCCK) score > 0. These companies are considered as **Category 3 Quantum Computing Beneficiaries**. QCCK is computed for each of the 3 countries' securities separately as follows:
    a. Query and compute a Keyword Percentile Score by searching for quantum computing related keywords on the FactSet Transcripts Database for the past 2 quarters
    b. Query and compute a Keyword Percentile Score by searching for quantum computing related keywords on the FactSet Broker Research Database for the past 2 quarters
    c. Calculate QCCK score by summing up Percentile Score from Step 7a and 7b:

    (Percentile Score 7a*0.40) + (Percentile Score 7b*0.60)

8. Select all securities in **Category 1** to be included in the index.

9. For **Category 2**, include eligible security from Step 6. Rank securities from Step 5 by their QCCK within each country from largest to smallest and remove the bottom 50 percentile. Then rank remaining securities within each country by their market cap and select up to the top 15, top 2, and top 2 ranked securities for U.S., Japan, Korea, respectively. If the total number of constituents is less than 20 for **Category 2**, select from remaining securities in **Category 2** based on their market capitalization in descending order, irrespective of their country until it reaches 20.

10. For **Category 3**, rank securities by their QCCK within each country from largest to smallest and remove the bottom 50 percentile. Then rank remaining securities by their market capitalization irrespective of their country and select up to the top 5 ranked securities.

11. If index constituents are less than 30 from Step 8 to 10, select from remaining securities in **Category 2** based on their QCCK score in descending order, irrespective of their country, until they reach 30.

12. Weight constituents by their float adjusted market capitalization. **Category 3** shall be capped at no more than 9%. **Category 2** shall be capped at no more than 75%, with individual non-Semiconductor and Semiconductor securities[2] capped at no more than 8% and 5%, respectively. Aggregated total weight of U.S. listed constituents are capped at no more than 95%. Aggregated total weight of constituents with 5% or more weights shall not exceed 50%, and if not feasible, relax aggregated total weight at 1% incrementally. At every month end, any constituent exceeding 15% index weight shall be reset back to 10% at the open on the first business day of the following month.[3]

In addition to the above selection schema, FactSet may at its discretion and in consultation with index users and the public, modify one or more selection criterion to ensure relevant and timely capture of the theme. Modifications shall be announced 30 days prior to Reconstitution Day or as early as feasible.

[2]Non-Semiconductor securities are any companies not classified to the RBICS Focus L3 "Semiconductor Manufacturing" or "Semiconductor Equipment and Services." Semiconductor securities are any companies classified to the RBICS Focus L3 "Semiconductor Manufacturing" or "Semiconductor Equipment and Services."

[3] This rule will be implemented on a going forward basis starting on February 3, 2025, and will be not be implemented retroactively.

2.2 Index Return Formulas

The price, gross and net total return levels of the index are calculated using the following formulas.

$$I_{(t)} = \frac{\sum_{i=1}^{n} S_{i(t)} \times P_{i(t)} \times FX_{i(t)}}{D_{(t)}}$$

where:
$I_{(t)}$ = Index value on Index Valuation Day (t)
$D_{(t)}$ = Divisor on Index Valuation Day (t)
n = Number of stocks in the index
$P_{i(t)}$ = Closing price of stock (i) on Index Valuation Day (t)
$S_{i(t)}$ = Number of allocated shares of stock (i) on Index Valuation Day (t)
$FX_{i(t)}$ = Latest WM Reuters FX rate available at 4:00pm London time on Index Valuation Day (t) required to convert closing price of stock (i) in index currency, USD

and on Inception Date, where (t) = 0, the initial divisor is calculated as follows:

$$D_{(0)} = \frac{\sum_{i=1}^{n} S_{i(0)} \times P_{i(0)} \times FX_{i(0)}}{I_{(0)}}$$

where:
$I_{(0)}$ = Price Returns Index value on Index Inception Date
$D_{(0)}$ = Divisor on Index Inception Date
n = Number of stocks in the index on Index Inception Date
$P_{i(0)}$ = Price of stock (i) on Index Inception Date
$S_{i(0)}$ = Number of allocated shares of stock (i) on Index Inception Date
$FX_{i(t)}$ = Lastest WM Reuters FX rate available at 4:00pm London time on Index Valuation Day (t) required to convert closing price of stock (i) in index currency, USD.

Allocated shares ("S") are the number of shares required for each constituent such that all constituents are weighted according to the index methodology. Allocated shares ("S") would be adjusted accordingly to account for Corporate Actions.

Net total return is calculated to account for the effect of tax withholding on dividends by adjusting dividend taken out due to tax payment.

2.3 Index Divisor Adjustments

From time to time, the index divisor is adjusted to account for corporate actions that could distort index value and continuity using the following formula:

$$D_{(t+1)} = D_{(t)} \times \frac{\sum_{i=1}^{n} AS_{i(t+1)} \times AP_{i(t+1)} \times FX_{i(t)}}{\sum_{i=1}^{n} S_{i(t)} \times P_{i(t)} \times FX_{i(t)}}$$

where:

$D_{(t+1)}$ = Divisor for Index Valuation Day (t+1) after CA and rebal adjustment

$D_{(t)}$ = Divisor for Index Valuation Day (t)

$AP_{i(t+1)}$ = Adjusted price of stock (i) calculated for open on Index Valuation Day (t+1) after CA adjustment

$P_{i(t)}$ = Closing price of stock (i) on Index Valuation Day (t)

$S_{i(t)}$ = Number of allocated shares of stock (i) on Index Valuation Day (t)

$AS_{i(t+1)}$ = Adjusted number of allocated shares of stock (i) for open on Index Valuation Day (t+1) after CA adjustment.

Divisor adjustments are generally implemented on the date the corporate action becomes effective, such that for example, the ex-dividend date rather than the payment date is used to time the divisor adjustment.

Find below a detailed calculation for AP, AS, and S in case of corporate actions and rebalancing.

$AP_{i(t)}$ = Adjusted price of stock (i) is determined for the open on Index Valuation Day (t) shall mean:

- If index constituent opens ex-date in respect of the corporate action, then $AP_{i(t)}$ is determined as per Corporate Action Adjustment Section.
- Otherwise

$$AP_{i(t)} = P_{i(t-1)}$$

$S_{i(t)}$ = Number of allocated shares of stock (i) on Index Valuation date (t) is determined as

$$S_{i(t)} = AS_{i(t)}$$

$AS_{i(t)}$ = Adjusted number of allocated shares of stock (i) for open on Index Valuation Day (t) after CA adjustment is determined as:

- If such day opens immediately following the Rebalancing Day (t-1) and if:
  - index constituent opens ex-date in respect to corporate action, then $AS_{i(t)}$ is determined as per Corporate Action Adjustment Section with $S_{i(t-1)}$ replace with:

$$S_{i(t-1)} = \frac{I_{(t-1)} \text{ x } Weight_{i(t-1)}}{P_{i(t-1)} \text{ x } FX_{i(t-1)}}$$

- index constituent does not opens ex-date in respect to corporate action, then $AS_{i(t)}$ is determined as:

$$AS_{i(t)} = \frac{I_{(t-1)} \text{ x } Weight_{i(t-1)}}{P_{i(t-1)} \text{ x } FX_{i(t-1)}}$$

- On any other day:
  - index constituent opens ex-date in respect to corporate action, then $AS_{i(t)}$ is determined as per Corporate Action Adjustment Section
  - Otherwise:

$$AS_{i(t)} = S_{i(t-1)}$$

where $Weight_{i(t-1)}$ is determined as per Section 2.1.

2.4 Corporate Action Adjustments

Special Cash Dividend:

$$AP_{i,t} = P_{i,t-1} - D_{i,t} \text{ x } FX_{d,t-1}$$

Where

t = Index Valuation Date (t) is ex-date for corporate action.

$D_{i,t}$ = Dividend amount corresponding to stock (i) with ex-date (t).

$FX_{d,t-1}$ = Latest WM Reuters FX rate available at 4:00pm London time fixing on Index Valuation Day (t-1) required to convert dividend amount in underlying stock currency, USD.

Spin-off Adjustment

If an index constituent (i.e. the parent company) distributes part of its business into a spun-off company, the spun-off company will be added to the Index according to the transaction terms on the ex-date.

The parent company will remain in the Index with unchanged calculation parameters. The spun-off company will remain in the Index until the next ordinary rebalancing.

The spun-off company will be added to the Index with an open price of zero on ex-date.

If the spun-off company does not start to trade on the effective date (i.e. ex-date), a theoretical price for the spun-off company will be implemented (**see the equation below**) as a fixed price until it commences trading, from which time official prices will be used.

$$P_{f(t)}=[P_{i(t-1)}-AP_{i(t)}]xShareRatio_{i(t)} \times FX_{j,t-1}$$

Where

$P_{i(t-1)}$ = Closing price of Parent Company on Index Valuation Date (t-1).
$AP_{i(t)}$ = Open price of Parent Company on Index Valuation Date (t).
$P_{f(t)}$ = Price of Spun-off Company on Index Valuation Date (t).
$FX_{j,t-1}$ = Latest WM Reuters FX rate available at 4:00pm London time fixing on Index Valuation Day (t-1) required to convert dividend amount in underlying stock currency, USD.

Rights Issue Adjustment

$$AP_{j,t}=\frac{P_{j,t-1}+C_{j,t-1} \times \text{Share Ratio}_{j,t}}{1+\text{Share Ratio}_{j,t}}$$

$$AS_{j,t}=S_{j,t-1} \times (1+\text{Share Ratio}_{j,t})$$

Where
$C_{j,t}$ = Official tender price.

Stock Splits Adjustment

$$AP_{j,t}=\frac{P_{j,t-1}}{\text{Share Ratio}_{j,t}}$$

$$AS_{j,t}=S_{j,t-1} \times \text{Share Ratio}_{j,t}$$

Stock distribution

$$AP_{j,t}=P_{j,t-1} \times \frac{1}{1+\text{Share Ratio}_{j,t}}$$

$$AS_{j,t}=S_{j,t-1} \times (1+\text{Share Ratio}_{j,t})$$

Index Maintenance

Constituent changes may occur between review periods due to corporate events that disqualify their eligibility for index inclusion. Adjustments to corporate events are described below:

3.1 Corporate Actions – Delisting and Fast Entry

A constituent is removed immediately after being delisted from its primary markets.

3.2 Corporate Actions – Merger/Acquisition and Fast Entry

If a merger or acquisition results in one constituent acquiring another, the acquiring company remains a constituent, and the acquired company is removed. If a non-constituent acquires a constituent, the acquired constituent is removed. If a constituent acquires a non-constituent, the acquiring constituent remains a constituent.

3.3 Corporate Actions – Spin-off

If a constituent spins or splits off a portion of its business, both the spun-off companies and the parent companies (with the highest market value relative to the spun-off companies) will be kept in the index, unless it is determined the spun-off company's primary business has little relevance to the theme of the index, in which case it will be removed immediately following completion of the spin-off.

3.4 Corporate Actions – Bankruptcy

If a constituent is delisted after bankruptcy, it will be removed immediately with a price of 0 from the index.

Index Calculation and Data Correction

4.1 Index Calculation

Price, gross, and net total return values are calculated by Solactive AG. The price, gross, and net total return values are calculated on a continuous and end-of-day basis by using the trading price for each component in the index from relevant exchanges and markets. Index values are rounded to 2 decimal places and divisors are rounded to 6 decimal places.

If trading in a stock is suspended prior to the market opening, the stock's adjusted closing price from the previous day will be used in the index calculation until trading commences. If trading in a stock is suspended while the relevant market is open, the official closing price published by relevant exchange for that stock will be used for all subsequent index calculations until trading resumes.

In case of exceptional market conditions disrupting normal closing auction, or causing official closing prices not being available, Solactive and FactSet reserve the right to utilize other prices in the calculation of the official closing level.

4.2 Data Correction

Incorrect index constituent data, corporate action data, or index divisors will be corrected upon detection. If such errors are discovered within five days of occurrence, they will be corrected retroactively on the day of discovery. If discovered after five days, corrective actions will be decided based on the errors' significance and feasibility of a correction.

4.3 Decision Making in Undocumented Events

A FactSet Index Committee consisting of select employees of FactSet Research Systems Inc. is responsible for amending rules as documented in the Index Methodology Guide due to undocumented or extraordinary events.

Additional Information

5.1 Contact Information

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