Indxx Calculation Guideline

Calculation Methodology for the Indxx Indices

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Index Calculation

1. Standard Formula:

Index value on a business day using the standard formula is calculated as follows:

$$Index\ Value_t = \frac{\sum_{i=1}^{n} x_{i,t} * p_{i,t}}{Divisor_t}$$

With:
- $Index\ Value_t$ = Index Value as of business day t
- n = Number of index components on business day t
- $x_{i,t}$ = Number of index shares of index component i on business day t
- $p_{i,t}$ = Price* of index component i on business day t
- *Price = Price of index component i on business day t in local currency * Foreign exchange rate to convert the price of index component i on business day t into the index currency

2. Calculation of Index Divisor:

Index divisor is adjusted on the ex-date of a corporate action. The adjustment is completed in such a way that the index value remains unchanged. Index Divisor is calculated as follows:

$$Divisor_{t+1} = \frac{Divisor_t * Index\ Value_t \pm \Delta Market\ Capitalisation}{Index\ Value_t}$$

With:
- $Divisor_{t+1}$ = Divisor on business day t+1
- $Divisor_t$ = Divisor on business day t
- $Index\ Value_t$ = Index value on business day t
- $\Delta Market\ Capitalisation$ = The difference between the closing market capitalization of the index on business day t+1 and the adjusted closing market capitalization of the index on business day t

Corporate Actions

The following corporate actions (such as stock splits, special dividends, spin-offs and rights offerings) are applied to indices on the ex-date or earlier as decided by the Index Committee.

1. Cash Dividend

Regular distribution in form of cash dividend within the scope of dividend policy of the company. The following adjustment is implemented:

$$aPrice_{i,t+1} = Price_t - Dividend_{i,t+1}$$

With:
- $aPrice_{i,t+1}$= Adjusted opening price of index component i on business day t+1
- $Price_t$= Price of index component i on business day t
- $Dividend_{i,t+1}$= Dividend announced by the company of index component i on business day t+1

Adjustment: Divisor will decrease. (This is true for all our market capitalization weighted indices)

In some cases, depending upon the index specific rule, we adjust the dividend proceeds in the stock instead of divisor. The following adjustment is implemented:

$$af_{i,t+1} = \frac{Price_{i,t}}{Price_{i,t+1}}$$

$$s_{i,t+1} = s_{i,t} * af_{i,t+1}$$

With:
- $af_{i,t+1}$= Adjustment factor of index component I on business day t+1
- $Price_{i,t}$= Closing price of index component i on business day t
- $Price_{i,t+1}$ = Closing price of index component i on business day t+1

Adjustment: Divisor will remain unchanged. (This is true for all our attribute weighted indices)

2. Special Cash Dividend

Extraordinary distribution in the form of cash dividend which is outside the scope of dividend policy of the company. The following adjustment is implemented:

$$aPrice_{i,t+1} = Price_t - Special\ Dividend_{i,t+1}$$

With:
- $aPrice_{i,t+1}$= Adjusted opening price of index component i on business day t+1
- $Price_t$= Price of index component i on business day t
- $Special\ Dividend_{i,t+1}$= Special Dividend announced by the company of index component i on business day t+1

Adjustment: Divisor will decrease.

3. Stock Dividend

Stock Dividend is distribution of additional shares instead of cash payout. Here, the number of shares will increase by the percentage increase in stock dividend and price will decrease by the same percentage. The following adjustment is implemented:

$$s_{i,t+1} = s_{i,t} * (1 + \% \, Stock \, dividend)$$
$$aPrice_{i,t+1} = \frac{Price_{i,t}}{(1 + \% \, Stock \, dividend)}$$

With:
- $s_{i,t+1}$ = Number of shares of index component i on business day t+1
- $s_{i,t}$ = Number of shares of index component i on business day t
- $\% \, Stock \, dividend$ = Percentage of stock dividend announced by the company

Adjustment: Divisor will remain unchanged.

4. Split and reverse split

A stock split is a decision by the company's board of directors to increase the number of shares that are outstanding by issuing more shares to current shareholders. The following adjustment is implemented:

$$aS_{i,t+1} = S_{i,t} * R_{i,t+1}$$
$$aPrice_{i,t+1} = Price_{i,t} * \frac{1}{R_{i,t+1}}$$

With:
- $aS_{i,t+1}$ = Adjusted number of index shares of index component i on business day t+1
- $S_{i,t}$ = Number of index shares of index component i on business day t
- $R_{i,t+1}$ = Shares held after the split for every share held before the split
- $aPrice_{i,t+1}$ = Adjusted opening price of index component i on business day t+1
- $Price_{i,t}$ = Price of index component i on business day t

Adjustment: Divisor will remain unchanged.

5. Spin-off

Spin off is the creation of an independent company through the sale or distribution of new shares of an existing business/division of a parent company. There are various potential treatments for spin-off, which are at decided by Index Committee on a case to case basis. The adjustment for the different options of Spin-Off is as follows:

a. **Spun Off Company added to the Index, no company removed:** The following adjustment is implemented:

$$S_{e,t} = S_{p,t} * Sf$$

With:
- $S_{e,t}$ = Shares of spun off entity e added to the index on business day t
- $S_{p,t}$ = Shares of parent entity p added to the index on business day t
- Sf = Spin-off factor announced by the parent company

Adjustment: Divisor will remain unchanged

b. **Spun Off Company is not added, only the parent company remains in the Index:** Spin-Off will be adjusted for by changing the divisor to account for the change in market value (reflecting market value of the Spun-Off entity). The following adjustment is implemented:

$$S_{e,t} = S_{p,t} * Sf$$
$$Proceeds_{e,t} = S_{e,t} * Price_{e,t}$$
$$New\ Price_{e,t} = \frac{Proceeds_{e,t}}{S_{p,t}}$$
$$New\ Price_{p,t+1} = Price_{p,t+1} - Price_{e,t}$$

With:
- $S_{e,t}$= Shares of spun off entity e added to the index on business day t
- $S_{p,t}$ = Shares of parent entity p added to the index on business day t
- Sf = Spin-off factor announced by the parent company
- $Proceeds_{e,t}$= Proceeds of spun off entity e on the business day t
- $Price_{e,t}$ =Price of the spun off entity given by data provider e on business day t
- $New\ Price_{e,t}$= Price calculated of the spun off entity e on the business day t
- $New\ Price_{p,t+1}$= New price for parent company p calculated on the business day t+1
- $Price_{p,t+1}$ = Actual price of parent company p on the business day t+1

Adjustment: Divisor will decrease

c. **The Spun Off Company is not added, only the parent company remains in the Index and there will be a stock adjustment:** The following adjustment is implemented:

$$S_{e,t} = S_{p,t} * Sf$$
$$Proceeds_{e,t} = S_{e,t} * Price_{e,t}$$
$$New\ Price_{e,t} = \frac{Proceeds_{e,t}}{S_{p,t}}$$
$$New\ Price_{p,t+1} = Price_{p,t+1} - Price_{e,t}$$
$$af_{e,t+1} = \frac{Price_{p,t+1}}{New\ Price_{p,t+1}}$$
$$S_{p,t+1} = af_{e,t+1} * S_{p,t}$$

With:
- $S_{e,t}$= Shares of spun off entity e added to the index on business day t
- $S_{p,t}$ = Shares of parent entity p added to the index on business day t
- Sf = Spin-off factor announced by the parent company
- $Proceeds_{e,t}$= Proceeds of spun off entity e on the business day t
- $Price_{e,t}$ =Price of the spun off entity given by data provider e on business day t
- $New\ Price_{e,t}$= Price calculated of the spun off entity e on the business day t
- $New\ Price_{p,t+1}$= New price for parent company p calculated on the business day t+1
- $Price_{p,t+1}$ = Actual price of parent company p on the business day t+1
- $af_{e,t+1}$= Adjustment factor of spun off entity e on the business day t+1

- $S_{p,t+1}$= New number of shares of the parent company p on the business day t+1

Adjustment: Divisor will remain unchanged

6. **Addition/deletion of a company:** In case a constituent is added, removed or replaced with another constituent in the Index the following adjustment is implemented:

$$S_{n,t+1} = \frac{w_{o,t}}{Price_{n,t+1}}$$

With:
- $S_{n,t+1}$= Number of shares of new company n on the business day t+1
- $w_{o,t}$= Weight of the old company o on the business day t
- $Price_{n,t+1}$= Price of the new company n on the business day t+1

Adjustment: Divisor will remain unchanged

7. **Acquisition:** A corporate action in which a company buys most, if not all, of the target company's ownership stakes in order to assume control of the target firm. There could be three different cases:
- Target Company is a part of the index, acquiring company is not;
- Acquiring Company is a part of the index, target company is not;
- Target and Acquiring companies are a part of the index

Target Company will be removed from the index in all of the above scenarios. Proceeds will be adjusted in divisor.

Adjustment: Divisor will decrease

8. **Rights Offering:** Rights Issue gives existing shareholders the right to purchase a proportional number of new shares at a discount to the market price on a stated future date. The rights issued to a shareholder have a value, thus compensating current shareholders for the future dilution of their existing shares' value. One of the following two adjustments is implemented:

$$NS_{i,t+1} = S_{i,t} * (R)$$
$$Mcap_{i,t+1} = (S_{i,t} * P_{i,t}) + (S_{i,t} * R * Offer\ Price)$$
$$Price_{i,1+t} = \frac{Mcap_{i,t+1}}{S_{i,t+1}}$$

With:
- $NS_{i,t+1}$= New shares to be added in index component of i on the business day t+1
- $S_{i,t}$= Shares of the index component i on the business day t
- $Mcap_{i,t+1}$= Market capitalization of index component i on the business day t+1
- $P_{i,t}$= Price of the index component i on the business day t
- R= Ratio of additional shares offered by the company on a discount
- $Offer\ Price$= Discounted price of the security with respect to market price
- $Price_{i,1+t}$= New price of the index component i after adjusting for additional shares on the business day t+1
- $S_{i,t+1}$= Total number of shares of the index component i on the business day t+1

Rights Issue impacts the number of shares as well as price thereby impacting the index divisor reflecting an increase in market cap.

Adjustment: Divisor will increase. This treatment is used in our market cap weighted indices.

$$IS_{i,t+1} = IS_{i,t} * \left(Price_{i,t}/Price_{i,t+1} \right)$$
$$Mcap_{i,t+1} = \left(S_{i,t} * P_{i,t} \right) + \left(S_{i,t} * R * Offer\ Price \right)$$
$$Price_{i,t+1} = \frac{Mcap_{i,t+1}}{S_{i,t+1}}$$

Adjustment: Index Shares of the component will change. There will be no change in the divisor. This treatment is used in our attribute weighted indices.

The Index committee will decide whether to participate in the rights issue or not. If the subscription price is greater than or equal to the stock closing price, Indxx would not participate in the rights issue. In case the index doesn't participate in the rights issue, there will be no adjustment to the index shares or divisor.

9. **Delisting:** Delisting refers to the practice of removing the stock of a company from a stock exchange so that investors can no longer trade shares of the stock on that exchange. The security would be removed from the index, and the invested amount in the delisted security will be reinvested into the index.

   Adjustment: Divisor will decrease

10. **Merger:** Merger is the combination of two or more companies, generally by offering the stockholders of one company securities in the acquiring company in exchange for the surrender of their stock. The target company is removed from the Index.

    The Index Committee will decide if the surviving company should be added to the Index. If added, the divisor will be adjusted to reflect the increase in the number of shares.

    Adjustment: Divisor will increase

11. **Bankruptcy:** Bankruptcy is a legal proceeding involving a person or business that is unable to repay outstanding debts. The security would be removed from the index, and the invested amount in the acquired security will be reinvested into the index.

    Adjustment: Divisor will decrease

12. **Temporary Delisting / Prolonged Trading Suspension:** A temporary delisting/trading suspension occurs when a security stops trading on the stock exchange for a certain time period. This usually occurs when a publicly-traded company is going to release significant news about itself. The security would be removed from the index based on the Index Committee's decision and the invested amount in the acquired security will be reinvested into the index.

    Adjustment: Divisor will decrease

13. **Bonus Issue of Shares:** A bonus share is a free share of stock given to current/existing shareholders in a company, based upon the number of shares owned by them. The issue of bonus shares increases the total number of shares issued and owned, it does not increase the value of the company. The ratio of number of shares held by each shareholder remains constant.

    Adjustment: Divisor will remain unchanged

Total Return Indices

Total Return Index

In addition to all the above mentioned corporate actions, ordinary cash dividends will be applied on the ex-date for calculating TR Indices. In Price return indices, ordinary cash dividends will not be applied on the index.

Adjustment in the Index

All dividend payments will be reinvested in the index, by adjusting the divisor in the total return index on the ex-dividend date.

Index Policy

Index Committee Policy

The Index Committee is responsible for setting policy, determining index composition, and administering the indices in accordance with the Indxx index methodology. The Index Committee reserves the right to use qualitative judgment to include, exclude, adjust, or postpone the inclusion of a stock. Continued index membership of a constituent is not necessarily subject to the guidelines provided in each of the Indxx index methodology. A stock may be considered for exclusion by the Index Committee on the basis of corporate governance, accounting policies, lack of transparency and lack of representation, despite meeting all the criteria provided in each of the Indxx index methodology.

Announcements

Announcements of additions and deletions of constituents, due to various corporate actions mentioned above, in the middle of the year will be decided by the Index Committee. This will be communicated to the client well ahead of time. Also important news items as well as corporate actions with respect to all the constituents of the index will be informed to the client on a weekly basis.

Holiday Schedule

The index is calculated when the U.S. equity markets are open. In situations where an exchange is forced to close early due to unforeseen events, the index will be calculated based on the closing prices published by the exchange, or if no closing price is available, the last regular trade reported for each stock before the exchange closed.

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