SOLACTIVE
German Index Engineering

SOLACTIVE POST EX-DATE DIVIDEND ADJUSTMENT METHODOLOGY IN STANDARD INDICES

Version 1.1

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1. INTRODUCTION

This document provides guidance on the Solactive Post Ex-Date Dividend Adjustment for Japanese and South Korean companies in Standard Indices. The methodology is intended to reflect the general dividend distribution practice in Japan and South Korea, as well as the mathematics of the Post Ex-Date Dividend Adjustment in index calculation. Defined terms used in this document shall have the meaning ascribed in General Index Guideline and Index Calculation Guideline available on Solactive's website.

2. DIVIDEND DISTRIBUTION IN JAPAN AND SOUTH KOREA

1.1 JAPAN

The majority of dividend distributions in Japan are declared in estimated amounts and these estimates are not confirmed by companies prior to the ex-date. In addition to this, some companies do not provide an estimate for dividend amounts. The final dividend amounts are declared after the ex-date. In both cases, the final dividend amounts are confirmed after their ex-dates.

1.2 SOUTH KOREA

The majority of South Korean companies do not declare an estimation for their upcoming dividend distribution prior to the ex-date. The final dividend amounts are declared after the ex-date.

3. CURRENT SOLACTIVE TREATMENT FOR DIVIDEND PAYMENTS IN JAPAN AND SOUTH KOREA

Solactive currently applies the dividend payments in indices for which an estimation is available from data vendors. In case the estimation for the dividend amount is not available, Solactive does not use any forecast mechanism to reflect the upcoming dividend payments in indices. In addition to this, the estimated amounts are considered as final dividend amounts. Consequently, Solactive performs no post ex-date correction when the estimated dividend amount is different than the dividend amount published by the relevant company.

4. POST EX-DATE DIVIDEND ADJUSTMENT

According to the methodology, Solactive will perform an adjustment in case the confirmed dividend amount is different than the estimated amount that is applied on the ex-date.

The delta amount between the confirmed and estimated dividend amount will be applied to the affected indices by using the Index Delta Dividend Points calculated with the Fraction of Shares on the dividend ex-date. With respect to the post ex-date dividend adjustment the historical index levels are not restated.

The Post Ex-Date Dividend Adjustment is performed on the pre-defined Implementation Days that are scheduled weekly on Friday. Should Friday not be a Trading Day, the Implementation Date is to be postponed to the next Business Day.

The following section is dedicated to the mathematics of the Standard Indices and Post Ex-Date Dividend Adjustment.

The index level is the sum overall Index Components of the products of the Fraction of Shares of the Index Component and the price of the Index Component at the respective Exchange:

$$(1)\ IL_t = \sum_{i=1}^{n} x_{i,t} * p_{i,t} * f_{i,t}$$

with:

$IL_t =$ $Index\ Level\ on\ Business\ Day\ t$

$x_{i,t} =$ $Fraction\ of\ Shares\ of\ Index\ Component\ i\ on\ Business\ Day\ t$

$p_{i,t} =$ $Price\ of\ Index\ Component\ i\ on\ Business\ Day\ t$

$f_{i,t} =$ $foreign\ Exchange\ Rate\ of\ Index\ Component\ i\ on\ Business\ Day\ t$

Dividend payments cause an adjustment in Fraction of Shares of the dividend paying Index Component. Due to the dividend adjustment, the Fraction of Shares of the dividend paying stock increases by the Price Adjustment Factor (PAF). On the other hand, the theoretical Adjusted Price of the dividend paying stock is reduced by the same adjustment factor.

The PAF is the relation between the Close Price of the dividend paying Index Component one day prior to the ex-date (t) and its theoretical post dividend stock price.

$$(2)\ PAF_{i,t+1} = \frac{p_{i,t}}{p_{i,t} - d_{i,t+1} * f_{i,t} * (1 - w_{i,t+1})}$$

The theoretical post dividend price is calculated as follows:

$$(3)\ ap_{i,t+1} = \frac{p_{i,t}}{PAF_{i,t+1}}$$

The final Fraction of Shares after the implementation of the dividend is calculated by the multiplication of the Fraction of Shares on the dividend ex-date (t+1) by the PAF.

$$(4)\ ax_{i,t+1} = x_{i,t} * PAF_{i,t+1}$$

with:

$PAF_{t+1} =$ $Price\ Adjustment\ Factor\ of\ Index\ Component\ i\ on\ Business\ Day\ t+1$

$d_{i,t+1} =$ $Dividend\ amount\ of\ Index\ Component\ i\ on\ Business\ Day\ t+1$

$w_{i,t+1} =$ $Withholding\ tax\ rate\ of\ Index\ Component\ i\ on\ Business\ Day\ t+1$

$ap_{i,t+1} =$ $Theoretical\ Adjusted\ Price\ Factor\ of\ Index\ Component\ i\ on\ Business\ Day\ t+1$

$ax_{i,t+1} =$ $Adjusted\ Fraction\ of\ Shares\ of\ Index\ Component\ i\ on\ Business\ day\ t+1$

The estimated dividend amounts companies will be applied to the indices as described above. A post ex-date dividend adjustment in terms of index dividend points to reflect the delta dividend between the confirmed and estimated amounts is calculated:

$$(5)\Delta d_{i,t} = (d_{i,ID} - d_{i,EX}) * (1 - w_{i,EX})$$

with:

$\Delta d_{i,t} =$ $Delta\ Dividend\ of\ Index\ Component\ i\ on\ Business\ Day\ t$

$d_{i,ID} =$ $Confirmed\ dividend\ amount\ of\ Index\ Component\ i\ on\ Implemantation\ Date$

$d_{i,EX} =$ $Estimated\ dividend\ amount\ of\ Index\ Component\ i\ on\ Ex-Date$

$w_{i,Ex} =$ $Withholding\ tax\ rate\ rate\ in\ the\ country\ of\ incorporation\ of\ Index\ Component\ i\ on\ Ex-Date$

For the calculation of Index Delta Dividend Points on the Implementation Date, the calculation parameters of the Index Component from the ex-date are multiplied by the delta dividend and divided by the close index close from one day prior to the dividend ex-date:

$$(6)DDP_{i,ID} = \frac{\Delta d_{i,ID} * x_{i,EX-1} * fx_{i,ID-1}}{IL_{EX-1}}$$

with:

$DDP_{i,ID} =$ $Index\ Delta\ Dividend\ Points\ of\ Index\ Component\ i\ on\ Implementation\ Date$

$\Delta d_{i,ID} =$ $Delta\ dividend\ of\ Index\ Component\ i\ on\ Implementation\ Date$

$x_{i,EX-1} =$ $Fraction\ of\ Shares\ of\ Index\ Component\ i\ from\ one\ day\ prior\ to\ the\ Ex-Date$

$fx_{i,ID-1} =$ $foreign\ Exchange\ Rate\ of\ Index\ Component\ i\ on\ Implementation\ Date-1$

$IL_{EX-1} =$ $Close\ Index\ Level\ from\ one\ day\ prior\ to\ the\ Ex-Date$

The Index Delta Dividend Points correspond to the delta dividend capitalization in relation to the index level.

In case multiple number of index constituents have delta dividends, the individual delta dividend points of each constituent are aggregated.

$$(7)\ \sum_{i=1}^{n} DDP_{i,ID}$$

The aggregated value of delta dividend points is added to 1 to create the Correction Factor.

$$(8)\ CF_{ID} = 1 + \sum_{i=1}^{n} DDP_{i,ID}$$

This Correction Factor is applied to the close index level from one day prior to the Implementation Day to calculate final index level after applying the Post Ex-Date Dividend Adjustment Methodology.

$$(9)\ IL_{ID}^{Open} = IL_{ID-1}^{Close} * CF_{i,ID}$$

Given the fact that the aggregated value of delta dividend points can be positive as well as negative, the Correction Factor can increase or decrease the Index Level.

The adjustment of the Index Level leads to a change on Fraction of Shares of all index constituents.

$$(10)\ \mathrm{x}_{i,ID}^{Open} = \mathrm{x}_{i,ID-1}^{Close} * CF_{i,ID}$$

with:

$CF_{ID} =$ $Index\ Level\ Correction\ Factor\ on\ Implementation\ Date$

$IL_{ID}^{Open} =$ $Opening\ Index\ Level\ on\ Implementation\ Date$

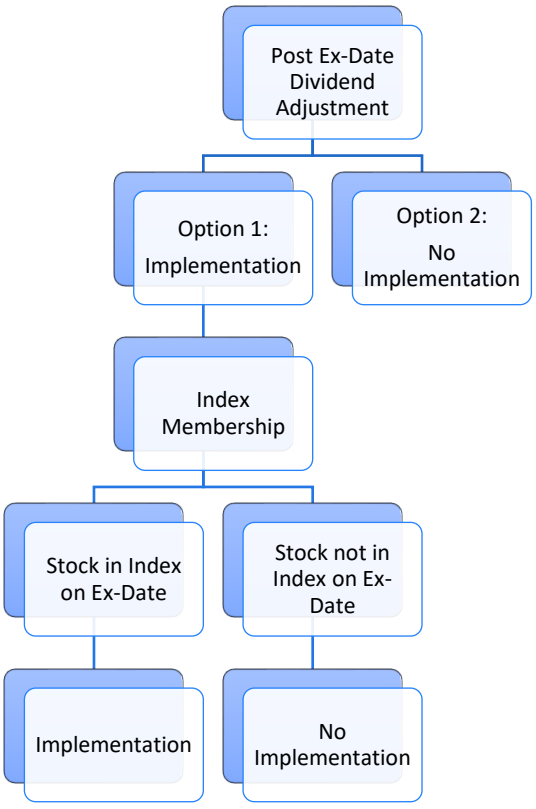
$IL_{ID-1}^{Close} =$ $Closing\ Index\ Level\ on\ Implementation\ Date - 1$

$x_{i,ID}^{Open} =$ $Opening\ Fraction\ of\ Shares\ of\ Index\ component\ i\ on\ Implementation\ Date$

$x_{i,ID-1}^{Close} =$ $Closing\ Fraction\ of\ Shares\ of\ Index\ component\ i\ on\ Implementation\ Date - 1$

The post ex-date dividend adjustment is only applicable if the affected stock with delta dividend amount is an index constituent on the ex-date and the respective index follows the Post Ex-Date Dividend Methodology on the ex-date. Furthermore, the adjustment of the delta dividend is performed even when the stock with delta is not an index constituent on the Implementation Day anymore since this respective stock was an index constituent on the original ex-date.

Solactive can define the post ex-date dividend adjustment index-specifically, if the adjustment methodology is applicable for the particular index. The implementation overview below reflects two different options for the implementation. For Solactive-owned indices, the Option 1 will be applied. Upon request of our clients, we will be able to activate the Post Ex-date Dividend Adjustment when our client is the index owner / administrator.



5. DIVIDEND ESTIMATION

Solactive will use the estimations available in the market as dividend amounts on the ex-date. In case no estimation is available, Solactive will consider the dividend amount from the same dividend period of the previous year, adjusted for any share changes such as stock splits, stock dividends or right issues between the relevant dividend period and the ex-date. If a company did not pay any dividend last year and no estimation is available for the dividend amount, Solactive will apply a dividend amount of zero as estimation to be able to conduct a further adjustment when the company confirms a dividend payment for this particular ex-date.

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