MSCI

METHODOLOGY BOOK FOR:
- MSCI GLOBAL CLIMATE CHANGE MULTI-ASSET SELECT COMBINATION INDEX
- MSCI GLOBAL CLIMATE CHANGE MULTI-ASSET SELECT INDEX

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1 Introduction

The MSCI Global Climate Change Multi-Asset Select Combination Index aims to represent the combined performance of the MSCI World Climate Change Select 200 Index and MSCI USD IG Climate Change Corporate Bond Index.

The MSCI Global Climate Change Multi-Asset Select Index aims to represent the performance of the MSCI Global Climate Change Multi-Asset Select Combination Index while targeting an annualized volatility of 5%.

Both indexes incorporate various adjustments in their calculations as described in this methodology book.

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2 Constructing the MSCI Global Climate Change Multi-Asset Select Combination Index

The MSCI Global Climate Change Multi-Asset Select Combination Index (the 'Index 1') consists of the following components:

Component	Component Name	Variant	Currency
1	MSCI World Climate Change Select 200 Index	Net	EUR
2	MSCI USD IG Climate Change Corporate Bond Index	Net without transaction costs	EUR

The Index 1 is constructed by applying the following steps:

- From each of the components a cost deducted variant is created. The formula for financing cost deduction is as follows:

  $$CIL_t = CIL_{t-1} \times \left(\left(\frac{BIL_t}{BIL_{t-1}} \right) - FinancingCost \times \frac{ACT(t-1,t)}{360} \right)$$

  where:

  CIL_t = Index Level of the component index on date t

  BIL_t = Index Level of pre cost deducted Index component on date t

  FinancingCost = 0.50%

  $ACT(t-1,t)$ = number of actual calendar days between day t-1 and t

- At initial construction and each monthly rebalancing, the cost deducted components are combined in the following proportion to create Index 1 at each rebalancing:

Component	Component Name	Variant	Currency	Weight
1	Cost deducted variant of the MSCI World Climate Change Select 200 Index	Net	EUR	50%
2	Cost deducted variant of the MSCI USD IG Climate Change Corporate Bond Index	Net without transaction costs	EUR	50%

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3 Constructing the MSCI Global Climate Change Multi-Asset Select Index

The MSCI Global Climate Change Multi-Asset Select Index is constructed by applying the following steps to MSCI Global Climate Change Multi-Asset Select Combination Index (the 'Index 2'):

- Constructing the Volatility Target Index
- Applying the MSCI Excess Return Indexes methodology[1].

3.1 CONSTRUCTING THE VOLATILITY TARGET INDEX

The objective of the Volatility Target Index is to replicate the performance of the strategy that targets 5% of volatility by varying the weights of the Index 1 and a cash component.

The Volatility Target Index is calculated in accordance with the below formula:

$$IL_t = IL_{t-1} \times (1 + IR_t)$$

Where:

IL_t is the Volatility Target Index levels on day t

IR_t is the Volatility Target Index return on day t, calculated in accordance with the following formula:

$$IR_t = W_t \times E_t + (1 - W_t) \times CashRet_t - StrategyDeductionRate \times \frac{ACT(t-1,t)}{360} - TC_t$$

where:

$$W_t = \begin{cases} W_{t-1}, & ABS\left(\frac{W_{t*} - W_{t-1}}{W_{t-1}}\right) \leq 5\% \\ W_{t*}, & ABS\left(\frac{W_{t*} - W_{t-1}}{W_{t-1}}\right) > 5\% \end{cases}$$

where:

$$W_{t*} = \text{Minimum}\left(1, \frac{TargetRiskLevel}{\sigma_t}\right)$$

Where:

[1] Please refer to the MSCI Excess Return Indexes methodology at www.msci.com/index-methodology

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$TargetRiskLevel$ = 5%

σ_t= volatility[2] of the Index 1

$$E_t = \frac{Index\ 1_t}{Index\ 1_{t-1}} - 1$$

$$CashRet_t = Rate_{t-1} \times \frac{ACT(\ t-1, t)}{360}$$

$Rate_{t-1}$ = ESTR[3] (Euro short-term rate)

$ACT(t-1, t)$ = number of actual calendar days between day t-1 and t

$StrategyDeductionRate = 0.50\%$

TC_t is used to represent rebalancing costs that may arise at the Index rebalance and determined in accordance with the following formula:

$$TC_t = C \times \mathrm{ABS}(W_t - W_{t-1})$$

where:

$C = 0.275\%$

W_t, W_{t-1} : Index 1 weight as of day *t* and day *t-1* respectively

3.2 APPLICATION OF THE MSCI EXCESS RETURN INDEXES METHODOLOGY

The MSCI Excess Return Indexes Methodology[4] is applied sequentially on the Volatility Target index from 3.1.1 to construct the MSCI Global Climate Change Multi-Asset Select. The short-term rate used for the application of the excess return methodology is ESTR (Euro short-term rate)[5].

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[2] Please refer to the Appendix for details

[3] EONIA rate is used until 30-Sep-2019 as of day t-1, post which ESTR is used

[4] Please refer to the MSCI Excess Return Indexes methodology at www.msci.com/index-methodology

[5] EONIA rate is used until 30-Sep-2019 as of day t-1, post which ESTR is used

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4 Maintenance of the Index

4.1 INDEX REVIEWS

The Global Climate Change Multi-Asset Select Combination Index is reviewed on a monthly basis as per the steps described in Section 2.

The MSCI Global Climate Change Multi-Asset Select Index is reviewed on a daily basis as per steps described in Section 3.

4.2 ONGOING EVENT RELATED CHANGES

In general, the Global Climate Change Multi-Asset Select Combination Index and MSCI Global Climate Change Multi-Asset Select Index follow the event maintenance of the component indexes. Any security added or deleted from a component index follows the same treatment in the corresponding MSCI Custom Weighted Index that uses the component index.

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Appendix: Volatility Calculation

The volatility of the Index 1, σ_t , on date t is the maximum of the long-term and short-term volatilities of the Index 1 on date t determined using the exponentially weighted volatility calculation methodology as follows:

$\sigma_t = Max\,(\sigma_{ST,t} \times \sqrt{252/5}, \sigma_{LT,t} \times \sqrt{252/5})$

where:

$$\sigma_{ST,t} = \sqrt{\lambda_{ST} \times \left(\sigma_{ST,t-1}\right)^2 + (1 - \lambda_{ST}) \times (r_{t-i})^2}$$

$$\sigma_{LT,t} = \sqrt{\lambda_{LT} \times \left(\sigma_{LT,t-1}\right)^2 + (1 - \lambda_{LT}) \times (r_{t-i})^2}$$

where:

$\sigma_{ST,t}$ and $\sigma_{LT,t}$ are the short-term and long-term realized volatilities respectively for day t

$\sigma_{ST,t-1}$ and $\sigma_{LT,t-1}$ are short-term and long-term realized volatilities respectively for day t-1

λ_{ST} and λ_{LT} are the short-term and long-term decay factors respectively, 0.94 and 0.97

i is the number of “days lag” in the return calculation used for computing volatility (i.e., the lag between the return date and the volatility calculation date), 2 days.

r_{t-i} is the logarithmic weekly return of the index component on “$t - i$” day

The volatility on day t is dependent on the initial estimate of volatility, the initial estimate of volatility is 5%.

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