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# **Commodity Balance 15%**

**Index Rules v1.4  
Version as of 25 May 2011**

## 1. Index Descriptions

The Commodity Balance 15 % (the "Index") measures the performance of a rules-based, quantitative investment strategy that reflects the relative return of an index, based on a 15% target volatility risk control mechanism. The Index Rules are quantitative. Positions are taken in the Underlying Index.

The exposure to the Underlying Index is adjusted daily based on formulas outlined in the Index Rules which compare the volatility of the Underlying Index to the target volatility. The purpose of adjusting the exposure is to decrease the exposure to the Underlying Index when the volatility of the Underlying Index increases and to increase the exposure to the Underlying Index when its volatility decreases. The exposure to the Underlying Index is capped at 150%.

Commodity Balance 15% (the "Index") is the property of Svenska Handelsbanken AB (publ) ("Handelsbanken").

## 2. Index Rules

### 2.1 Terms and definitions relating to the Index

$ACT(t-1, t)$	Number of calendar days between the Calculation Date ( $t-1$ ) (included) and the Calculation Date ( $t$ ) (excluded)
Calculation Date, " $t$ "	any Scheduled Valuation Date on which no Index Disruption Event occurs (except as provided for in Section 3); Calculation Date ( $t-1$ ) means the preceding Calculation Date to the Calculation Date ( $t$ )
Exposure, " $E_t$ "	in respect of any Calculation Date ( $t$ ), the Exposure to the Underlying Index is determined by the Index Calculator in accordance with the formula specified in Section 2.4
Exposure change Threshold " $\Delta E$ "	The minimal amount that the exposure can be changed, i.e. if the indicated change of the exposure is less than the threshold " $\Delta E$ " it is kept unchanged as defined in Sections 2.4 and 2.7. As of the calculation date $t = 2011-05-25$ the threshold is 10%. Prior to that date it is zero.
Index	Commodity Balance 15 %
Index Calculator	Handelsbanken Capital Markets
Index Currency	United States Dollar ("USD")
Index Disruption Event	in respect of the Underlying Index, the occurrence or existence of an Underlying Index Disruption Event which in any case the Index Calculator determines is relevant.
Index Base Date, " $t_0$ "	2006-03-22 (YYYY-MM-DD)
Index Launch Date	2009-11-19
Index Level, " $I_t$ "	in respect of any Calculation Date ( $t$ ), the level of the Index calculated and announced by the Index Calculator on such date at the Valuation Time, in accordance with section 2.3
Index Owner	Svenska Handelsbanken AB (publ)
Index Sponsor	Svenska Handelsbanken AB (publ)

Initial value of the Index, " $I_0$ "	the value of the Index was set to 100 as of the Index Base Date
Maximum Exposure, " $E_{\max}$ "	150% , maximum Exposure to the Underlying Index
$N(t_1, t_2)$	the number of Calculation Dates between the Calculation Date ( $t_1$ ) (included) and the Calculation Date ( $t_2$ ) (excluded). If the Calculation Date ( $t_1$ ) occurs after the Calculation Date ( $t_2$ ), $N(t_1, t_2) = -N(t_2, t_1)$ applies.
Scheduled Valuation Day	any day on which the Underlying Index is scheduled to be calculated an/or published by its index calculator.
Target Exposure, " $TE_t$ "	in respect of any Calculation Date ( $t$ ), the Target Exposure to the Underlying Futures Index is determined by the Index Calculator in accordance with the formula specified in Section 2.4
Target Volatility, " $Vol^B$ "	15%
Valuation Time	the Scheduled Valuation Day closing time of futures contracts related to the Underlying Index, trading on any Underlying Index Exchange, without regard to after hours or any other trading outside of the regular trading sessions.

## 2.2 Terms and definitions relating to the Underlying Index

Underlying Index	the SHB Commodity Index Excess Return. The SHB Commodity Index Excess Return is published and compiled by Svenska Handelsbanken AB (publ).
Underlying Index Disruption Event	in respect of the Underlying Index, the occurrence or existence on any Scheduled Valuation Day, of an event beyond the control of the index calculator which precludes the calculation and/or the publication of the Underlying Index.
Underlying Index Exchange	each exchange where futures contracts related to the Underlying Index and/or any of its sub indices are traded.
Related Exchange	in respect of the Underlying Index, each exchange or quotation system where trading has a material effect (as determined by the Index Calculator) on the overall market for futures or options contracts relating to the Underlying Index.
Underlying Index Extraordinary Event	As described in Section 4.
Underlying Index Level " $S_t$ "	the Underlying Index level as of the Calculation Date $t$ .

### 2.3 Determination of the Index Level “ $I_t$ ”

$I_0 = 100$  (as of the index Base Date)

As of each Calculation Date ( $t$ ) when  $N(t_0, t) \geq 1$ , Index Level “  $I_t$  ” is determined by the Index Calculator in accordance with the following formula:

$$I_t = I_{t-1} \left[ 1 + E_{t-1} \left( \frac{S_t}{S_{t-1}} - 1 \right) \right]$$

where

$E_{t-1}$  = in respect of the Calculation Date  $t - 1$ , the Exposure to the Underlying Index (as described in section 2.4)

$S_t$  = in respect of the Calculation Date  $t$ , the Underlying Index Level on such date

### 2.4 Determination of the Exposure “ $E_t$ ”

Calculation of the Exposure “  $E_t$  ” is based on the Target Exposure “  $TE_t$  ”. The Target Exposure “  $TE_t$  ” is related to the historical volatility of the Underlying Index and the Convexity Correction Factor. The Target Exposure “  $TE_t$  ” may not exceed 150%. As of each Calculation Date ( $t$ ), the Target Exposure “  $TE_t$  ” is determined by the Index Calculator in accordance with the following formula:

$$TE_t = \min(E_{\max}, CCF_{t-1} * Vol^B / Vol_{t-1}^S)$$

where

$E_{\max} = 150\%$  , the Maximum Exposure to the Underlying Index

$CCF_{t-1} = \max(0.75, Vol^B / Vol_{t-1}^{UA})$  , the Convexity Correction Factor on the Calculation Date ( $t - 1$ )

$Vol_{t-1}^{UA}$  = in respect of the Calculation Date ( $t - 1$ ), the historical volatility of the Unadjusted Balance Index (as described in section 2.8)

$Vol_{t-1}^S$  = in respect of the Calculation Date ( $t - 1$ ), the historical volatility of the Underlying Index (as described in section 2.5)

The Exposure " $E_t$ " is related to the Target Exposure " $TE_t$ " in such a way that " $E_t$ " is unchanged relative to its previous value at the Calculation Date ( $t - 1$ ) if the distance  $abs(TE_t - E_{t-1})$  is smaller than the threshold " $\Delta E$ ". If the distance is greater than or equal to the threshold " $\Delta E$ " the Exposure " $E_t$ " is set equal to the Target Exposure. Thus, at each Calculation Date after the Base Date the Exposure is given by:

$$E_t = \begin{cases} TE_t & \text{if } abs(TE_t - E_{t-1}) \geq \Delta E \\ E_{t-1} & \text{if } abs(TE_t - E_{t-1}) < \Delta E \end{cases}$$

where  $abs(TE_t - E_{t-1}) = TE_t - E_{t-1}$  if  $TE_t \geq E_{t-1}$   
and  $abs(TE_t - E_{t-1}) = E_{t-1} - TE_t$  if  $TE_t < E_{t-1}$

On the index Base Date the Exposure was set equal to the Target Exposure.

## 2.5 Determination of the Historical Volatility of the Underlying Index " $Vol_t^S$ "

As of each Calculation Date ( $t$ ) when  $N(t, t_0) < 254$ , i.e., when the Historical Volatility of the Underlying Index is to be calculated for any Calculation Date after the 254th Calculation Date preceding the Index Base Date, it is determined by the Index Calculator in accordance with the following formula:

$$Vol_t^S = \sqrt{\lambda_S (Vol_{t-1}^S)^2 + (1 - \lambda_S) \left[ \ln \left( \frac{S_t}{S_{t-1}} \right) \right]^2} \cdot 252$$

where

$\lambda_S = 0.96$ , the exponentially weighted smoothing factor for calculating the historical volatility of the Underlying Index

"ln" means the logarithm to the base  $e$

As of the Calculation Date ( $t$ ) when  $N(t, t_0) = 254$ , i.e., when the number of Calculation Dates between the Calculation Date ( $t$ ) (included) and the Index Base Date ( $t_0$ ) (excluded) is 254, the Historical Volatility of the Underlying Index on such date is determined by the Index Calculation Agent in accordance with the following formula:

$$Vol_t^S = \sqrt{\sum_{i=t-49}^t \frac{\alpha_{t,i}}{SF_t^S} \left[ \ln \left( \frac{S_i}{S_{i-1}} \right) \right]^2} \cdot 252$$

where

$$\alpha_{t,i} = (1 - \lambda_S) * \lambda_S^{t-i}$$

$$SF_t^S = \sum_{j=t-49}^t \alpha_{t,j}$$

## 2.6 Determination of the Unadjusted Balance Index Level “ $I_t^{UA}$ ”

The Unadjusted Balance Index is calculated in order to obtain the Convexity Correction Factor  $CCF_t$  as defined in section 2.4.  $I_t^{UA} = 100$  as of the Calculation Date ( $t = t_0^{UA}$ ) when

$N(t_0^{UA}, t_0) = 253$ , i.e., the Unadjusted Balance Index Level was set to 100 as of the 253rd Calculation Date preceding the Index Base Date

On each Calculation Date ( $t$ ) when  $N(t_0^{UA}, t) \geq 1$ , the Unadjusted Balance Index Level “  $I_t^{UA}$  ” is determined by the Index Calculator in accordance with the following formula:

$$I_t^{UA} = I_{t-1}^{UA} \left[ 1 + E_{t-1}^{UA} \left( \frac{S_t}{S_{t-1}} - 1 \right) \right]$$

where

$E_{t-1}^{UA}$  = in respect of the Calculation Date ( $t - 1$ ), the Exposure of the Unadjusted Balance Index to the Underlying Index ( as described in section 2.7)

## 2.7 Determination of the Exposure of the Unadjusted Balance Index “ $E_t^{UA}$ ”

Calculation of the Exposure of the Unadjusted Balance Index “  $E_t^{UA}$  ” is based on the Target Exposure “  $TE_t^{UA}$  ”. The Target Exposure “  $TE_t^{UA}$  ” is related to the historical volatility of the Underlying Futures Index and it may not exceed 150%. As of each Calculation Date ( $t$ ), the Target Exposure “  $TE_t^{UA}$  ” is determined by the Index Calculator in accordance with the following formula:

$$TE_t^{UA} = \min(E_{\max}, Vol^B / Vol_{t-1}^S)$$

The Exposure “  $E_t^{UA}$  ” is related to the Target Exposure through the formula:

$$E_t^{UA} = \begin{cases} TE_t^{UA} & \text{if } abs(TE_t^{UA} - E_{t-1}^{UA}) \geq \Delta E \\ E_{t-1}^{UA} & \text{if } abs(TE_t^{UA} - E_{t-1}^{UA}) < \Delta E \end{cases}$$

where  $abs(TE_t^{UA} - E_{t-1}^{UA}) = TE_t^{UA} - E_{t-1}^{UA}$  if  $TE_t^{UA} \geq E_{t-1}^{UA}$

and  $abs(TE_t^{UA} - E_{t-1}^{UA}) = E_{t-1}^{UA} - TE_t^{UA}$  if  $TE_t^{UA} < E_{t-1}^{UA}$

On the Calculation Date ( $t = t_0^{UA}$ ) the Exposure was set to the Target Exposure, i.e.  $E_t^{UA} = TE_t^{UA}$ .

## 2.8 Determination of the Unadjusted Balance Index Historical Volatility " $Vol_t^{UA}$ "

As of each Calculation Date ( $t$ ) when  $N(t_0, t) \geq 0$ , i.e., when the Unadjusted Balance Index Historical Volatility is to be calculated for the Index Base date or any Calculation Date after the Index Base Date, it is determined by the Index Calculator in accordance with the following formula:

$$Vol_t^{UA} = \sqrt{\lambda_{UA} (Vol_{t-1}^{UA})^2 + (1 - \lambda_{UA}) \left[ \ln \left( \frac{I_t^{UA}}{I_{t-1}^{UA}} \right) \right]^2} \cdot 252$$

where

$\lambda_{UA} = 0.99$ , which is the exponentially weighted smoothing factor for calculating the Unadjusted Balance Index Historical Volatility

As of the Calculation Date ( $t$ ) when  $N(t, t_0) = 1$ , i.e., if the Unadjusted Balance Index Historical Volatility is to be calculated for the preceding Calculation Date to the Index Base date, it is determined by the Index Calculator in accordance with the following formula:

$$Vol_t^{UA} = \sqrt{\sum_{i=t-251}^t \frac{\alpha_{t,i}^{UA}}{SF_t^{UA}} \left[ \ln \left( \frac{I_i^{UA}}{I_{i-1}^{UA}} \right) \right]^2} \cdot 252$$

where

$$\alpha_{t,i}^{UA} = (1 - \lambda_{UA}) * \lambda_{UA}^{(t-i)}$$

$$SF_t^{UA} = \sum_{j=t-251}^t \alpha_{t,j}^{UA}$$

### **3. Consequences of an Index Disruption Event**

If an Index Disruption Event occurs on a Scheduled Valuation Day, there will be no level for the Index calculated or announced on such day.

If an Index Disruption Event continues for twenty consecutive Scheduled Valuation Days, then the Index Calculator may permanently cancel the Index on such twentieth Scheduled Valuation Day.

### **4. Underlying Index Extraordinary Event**

If the Underlying Index is (i) not calculated and announced by its index calculator but is calculated and announced by a successor entity acceptable to the Index Calculator, or (ii) replaced by a successor index using, in the determination of the Index Calculator, the same or a substantially similar formula for and method of calculation as used in the calculation of the Underlying Index, then in each case that index (the "Successor Index") may be deemed the Underlying Index if so specified by the Index Calculator.

If, on any Scheduled Valuation Date, the Underlying Index is permanently canceled and no Successor Index exists, then the Index Calculator shall permanently cancel the Index.

### **5. Limits of Liability**

The Index Owner is not liable for loss or damage resulting from Swedish or foreign legislative enactment, actions of Swedish or foreign authorities, war, power failure, telecommunication failure, fire, water damage, strike, blockade, lockout, boycott, or other similar circumstances outside the control of the Index Owner. The reservation with respect to strikes, blockade, lockout and boycott also applies if the Index Owner adopts or is the object of such conflict measures.

The Index Owner is not responsible in any circumstance for loss of data, non-payment of profits or other indirect damage. The Index Owner provides no express or implied warranties regarding the results which may be obtained as a consequence of the use of the Index or regarding the value of the Index at any given time. The Index Owner shall in no case be liable for errors or defects in the Index nor obligated to provide notice of, or publish, errors in the Index.