iTraxx European Performance Credit Index Guide

April 2018

1.iTraxx European Performance Credit Index

The iTraxx European Performance Credit Index is designed to reflect the performance of a portfolio composed of on-the-run iTraxx Europe and iTraxx Crossover (iTraxx XO) 5 year CDS index protection seller positions, with a remaining cash component receiving overnight interest.

The iTraxx European Performance Credit Index is rebalanced monthly in order to maintain a CDS notional market exposure ratio of 3:1. The 3:1 market exposure ratio represents the sum of the product of the CDS indices notional and their respective bond equivalent price, to the overall index value. This can be considered as a notional to overall index portfolio value ratio with an adjustment to reduce notional rebalancing changes due to the impact of CDS present value (PV) fluctuations on the index value. This reduces the tendency to buy when the CDS value increases and sell when the CDS value decreases. When rebalancing, CDS compositions are set to 80% iTraxx Europe and 20% iTraxx Crossover 5 year CDS index protection seller positions in terms of the product of their notional and their respective bond equivalent price. The CDS index positions held are rolled to the latest issued series on the first business day the new series becomes available semi-annually in March and September (CDS notionals are also rebalanced on the roll dates). The methodology includes transaction costs.

The targeted CDS notional market exposure ratio specifies the amount of CDS the hypothetical portfolio is rebalanced to hold based on the index value. The hypothetical cash component makes up the remainder of the index value. The cash component earns interest at EONIA minus a spread (s). The cash component spread may be reviewed and updated periodically to reflect a feasible return on cash.

The index is calculated on all business days "t". Business days are determined with London and TARGET holiday calendars.

This document covers the index rules and calculation methodology.

1.1. Publication of the iTraxx European Credit Index

The iTraxx European Performance Credit Index is published and distributed once daily after 5 p.m. GMT. The index is calculated every weekday except on holidays in London and TARGET holiday calendars.

Markit publishes an index calculation calendar which is available in the indices section on www.markit.com/Documentation/Product/IBoxx under Index Calendar.

Index levels are calculated using the daily closing prices. Closing index values are published at the end of each business day in the indices section on www.markit.com/indices for registered users.

1.2. Index Summary Table

Index	Underlying Contracts	Base Currency	Tenor	Ticker	Target CDS notional market exposure ratio	Interest on cash component	Calendars
iTraxx European Performance Credit Index	iTraxx Europe, iTraxx Crossover	EUR	5Y	ITRXPRFL	3:1	EONIA minus Spread (s)	London, TARGET

2. Index Calculation

The following sections describe the calculation of the index.

2.1. Target CDS Notional Market Exposure ratio and Weightings

The variables and values for the target CDS notional market exposure ratio, composition fractions and weights used in the index calculation methodology when rebalancing the CDS indices are specified below.

The CDS notional market exposure ratio represents the sum of the product of the CDS indices notional and their respective bond equivalent price, to the overall index value. On monthly rebalancing dates when all CDS indices are rebalanced, the CDS indices' notional is set such that the CDS notional market exposure ratio is equal to the target CDS notional market exposure ratio of 3:1.

(1) $$L = 3$$

The CDS indices target composition fractions in terms of the product of their notional and their respective bond equivalent price, to be consistent with the notional market exposure ratio, are given below:

(2) $$c_m^{CDS} = 80\%$$

(3) $$c_n^{CDS} = 20\%$$

The CDS indices index target weights are given below:

(4) $$w_m^{CDS} = c_m^{CDS} \cdot L = 2.4$$

(5) $$w_n^{CDS} = c_n^{CDS} \cdot L = 0.6$$

where,

$$m = iTraxx\ Europe$$

$$n = iTraxx\ Europe\ Crossover$$

2.2. Index value

The index has an initial value of 100.

(6) $$I_{t0} = 100$$

The index is rebalanced monthly but its value is calculated daily on each business day. Its value on the next day is calculated using the overall return (R_t). The Index value represents the value of the hypothetical portfolio of CDS indices and the hypothetical cash component.

(7) $$I_t = I_{t-1} \cdot (1 + R_t)$$

The overall return is the sum of the return components for the CDS indices and cash weighted by the ratios of cash and CDS notional to index value:

(8) $$R_t = x_t^{cash} \cdot R_t^{cash} + \sum_{i \in G} x_{i,t}^{CDS} \cdot R_{i,t}^{CDS}$$

where,

$$G = \{iTraxx\ Europe, iTraxx\ Europe\ Crossover\}$$

2.3. Returns

CDS Returns

The return on the CDS indices considers the change in PV of the indices held as well as coupons, defaults and transaction costs. Excluding the default and transaction cost terms, the units of these are in terms of percentage of the product of the notional and the index factor ($f_{i,t}$) so these can be multiplied by $f_{i,t}$, the notional to index value fraction ($x_{i,t}^{CDS}$) and the index value to give the change in index value. On the roll date $\mathrm{t_{roll}}$ the old series values are used for the PV, coupon and default variables, and the new series values are used from the next day ($\mathrm{t_{roll}} + 1$). Note this means on $(t_{roll} + 1)$ both $f_{i,t} \cdot PV_{i,t}^{\%,dirty}$ and $f_{i,t-1} \cdot PV_{i,t-1}^{\%,dirty}$ use the new series data. The transaction cost term is defined in the appendix and uses both old and new series data on roll dates since the old series is sold and the new one is bought.

(9) $$R_{i,t}^{CDS} = f_{i,t} \cdot PV_{i,t}^{\%,dirty} - f_{i,t-1} \cdot PV_{i,t-1}^{\%,dirty} + \Delta_{tc_{prev},tc} \cdot f_{i,t-1} \cdot Coupon_{i,t-1}^{\%,ifCouponDate} - Default_{i,t}^{\%} - TransactionCosts_{i,t}^{\%}$$

The coupon term has a value of zero if it is not a coupon payment date. The default costs are zero on all days except the switching date (t_{swt}) that the index calculation methodology switches from the previous index version data for the underlying CDS index i to the "reduced" index version data where the defaulting entity is zero weighted as described in the management of defaults in the underlying CDS indices section. Its value is defined in appendix 5.2.

Cash Return

The cash return R_t^{cash} is the product of the interest rate for the cash component and the year fraction between t-1 and t using the Actual/360 convention. The cash component earns interest at EONIA minus a spread (s).

(10) $$R_t^{cash} = (r_{t-1}^{EONIA} - s) \cdot \Delta_{t-1,t}$$

2.4. Ratios

CDS Notional Market Exposure Ratio

The CDS notional market exposure ratio represents the sum of the product of the CDS indices notional and their respective bond equivalent price, to the overall index portfolio value and is given by the following equation:

(11) $$CNME_{tot,t} = \sum_{i \in G} \frac{Notional_{i,t} \cdot (1 + f_{i,t} \cdot PV_{i,t}^{\%,clean})}{I_t}$$

The bond equivalent price is given by the following equation:

(12) $$BondPrice_{i,t} = (1 + f_{i,t} \cdot PV_{i,t}^{\%,clean})$$

On monthly rebalancing dates when all CDS indices are rebalanced, the CDS indices' notional is set such that the CDS notional market ratio is 3:1.

(13) $$CNME_{tot,tr} = \sum_{i \in G} \frac{Notional_{i,tr} \cdot (1 + f_{i,tr} \cdot PV_{i,tr}^{\%,clean})}{I_{tr}} = \sum_{i \in G} w_i^{CDS} = L = 3$$

CDS Notional to Index Value Ratio

The notional must be determined as described in the next section in order to calculate the CDS notional to index value ratio, $x_{i,t}^{CDS}$.

(14) $$\mathrm{x}_{\mathrm{i,t}}^{\mathrm{CDS}} = \frac{\mathrm{Notional}_{\mathrm{i,t-1}}}{\mathrm{I}_{\mathrm{t-1}}}$$

Cash to Index Value Ratio

The cash to index value x_t^{cash} is calculated as 1 minus the fraction of index value from the CDS indices dirty PV. The fraction of index value from CDS is calculated using the CDS notional to index value fractions and the dirty PV as a percentage of the product of the notional and the index factor. Note the dirty PV drops when a coupon is paid increasing the fraction of cash, however this doesn't change the overall index value.

(15) $$x_t^{cash} = \frac{Cash_{t-1}}{I_{t-1}} = 1 - \sum_{i \in L} x_{i,t}^{CDS} \cdot f_{i,t-1} \cdot PV_{i,t-1}^{\%,dirty}$$

If $(\mathrm{t}-1)$ was a roll date, then the PV of the new series is used. If $(\mathrm{t}-1)$ was a date on which the methodology switched to use data from a "reduced" index version after a default, then the PV and index factor of the "reduced" index is used.

2.5. CDS Notional

The portfolio is rebalanced monthly to maintain a CDS notional market exposure ratio of 3:1. The CDS notional market exposure ratio represents the sum of the product of the CDS indices notional and their respective bond equivalent price, to the overall index portfolio value. This causes the notional to change less due to the impact of CDS present value (PV) fluctuations on the index value and reduces the

tendency to buy when the CDS value increases and sell when the CDS value decreases.

The following relation holds for each underlying CDS index when it is rebalanced:

(16) $$\frac{Notional_{i,tr} \cdot (1 + f_{i,tr} \cdot PV_{i,tr}^{\%,clean})}{I_{tr}} = w_i^{CDS}$$

The CDS notional values for each underlying CDS index that satisfy the ratios above when rebalancing can then be determined by the formula below obtained from rearranging the preceding equations. The formula below gives the notional after rebalancing on rebalancing date tr.

(17) $$Notional_{i,tr} = \frac{w_i^{CDS} \cdot I_{tr}}{(1 + f_{i,tr} \cdot PV_{i,tr}^{\%,clean})}$$

If tr is also a roll date, the $f_{i,tr} \cdot PV_{i,tr}^{\%,clean}$ data of the new series is used.

On days that are not rebalancing dates the Notional remains constant and equal to the previous day's notional.

(18) $$\mathrm{Notional}_{\mathrm{i,t \neq tr}} = \mathrm{Notional}_{\mathrm{i,t-1}}$$

2.6. CDS Notional Rebalancing Schedule

The CDS index notionals are rebalanced monthly to maintain a CDS notional market exposure ratio of 3:1. Except in March and September, the CDS notionals are rebalanced monthly on the third Wednesday of the month or the next business day if not a business day. In March and September the rebalance date is set as the 20th of March and September or the next business day if not a business day, which is typically the date the new CDS index series' become available. If one or more of the underlying CDS indices' new series does not become available on the 20th of March/September or next business day if not a business day, it will be rebalanced on the 20th if it is a business day or the next business day after the 20th if not a business day, in addition to also being rebalanced again on the delayed date when the new series for the corresponding index becomes available or the next business day if not a business day. In this case only the CDS indices whose new series release falls on the later date will be rebalanced again.

There is also a rebalancing threshold, such that if the CDS notional market exposure ratio deviates by more than 10% from the target ratio of 3:1, so either above 3.3:1 or below 2.7:1, an additional rebalancing date is triggered the following business day for all CDS indices in addition to the typically scheduled monthly rebalancing.

3. Credit Events

In the case of credit events, the ISDA Credit Determinations Committee votes to determine if a credit event has occurred for an entity and if an auction will be held. If the vote is positive for an entity in either of the underlying CDS indices, Markit publishes a new index version (the "reduced" index) giving the defaulted entity a weight of zero. Note the new "reduced" index version will still be the same CDS index series as the previous version.

The index methodology handles restructuring and non-restructuring credit events in the underlying CDS indices differently as described below.

In the case of credit events, the index calculation methodology switches from using the previous index version data for the underlying CDS index i to the "reduced" index version data on the switching date (t_{swt}) when it becomes available. However, in contrast to a normal roll to a new series in the CDS return ($R_{i,t}^{CDS}$) formula, if the switch to the "reduced" index data occurs on day $t = t_{swt}$, the $f_{i,t} \cdot PV_{i,t}^{\%,dirty}$ variables use the "reduced" CDS index i version data and $f_{i,t-1} \cdot PV_{i,t-1}^{\%,dirty}$ variables uses the previous index i version data.

4. Index Data

4.1. Credit Prices

All market data used is end of day data at mid-price. Markit CDS index prices as published by the Markit Pricing Service are used. The following pricing snap is used to calculate the index levels:

Index	Pricing Snap
iTraxx European Performance Credit Index	London 17:00 hrs

4.2. Index History

Index	Base Date	Base Level
iTraxx European Performance Credit Index	20 March 2007	100

4.3. Data Publication and Access

The table below summarises the publication of the iTraxx European Performance Credit Index data

Frequency	File Type	Access	Publication Time
Daily	Index levels	Markit FTP Server / Markit website / Bloomberg for index levels only	19:00 hrs GMT

In the event that Markit Pricing Service does not publish the relevant iTraxx price/spread or in periods of market stress or disruption as well as in illiquid or fragmented markets preventing the publication of a daily Markit iTraxx price, Markit will publish a statement outlining the course of action due to the disruption on the Markit website www.markit.com/Product/Indices under the iTraxx News page.

In the event of a major structural change within the CDS market impacting the iTraxx European Performance Credit Index calculation, Markit will confer with all relevant stakeholders and publish the outcome of any material change as well as any decisions taken at Markit's discretion that has led to the resulting methodology change.

4.4. Calendar

Markit publishes an index calculation calendar which is available in the indices section on www.markit.com/Documentation/Product/IBoxx under Calendar for registered users.

The following business calendars are used for the respective indices:

Index	Business Calendars
iTraxx European Performance Credit Index	London, TARGET

4.5. Index Restatement

Index restatement follows the policy described in the Markit Benchmark Administration Restatement Policy document, available on the Markit website www.markit.com

4.6. Index Review

Index methodology reviews for the iTraxx European Performance Credit Index outlined within this guide are performed on a periodic basis. In order to ensure the independence and the objectivity of the iTraxx European Performance Credit Indices, the index rules and their enforcement will be governed by the **Index Advisory Committee**. The purpose of this committee is to conduct a timely review of the index methodology and any changes thereto. As part of the review process, the committee will address any suggested changes brought to it by index stakeholders,

such as a potential change to any of the Index Parameters. In the event that following an index review an amendment is to be made to the Index Parameters, a notice of the proposed change will be published on the Markit iTraxx news page. Following the publication of the impending index rule change, a consultation period is put in place up until the second Wednesday following the notice having been made public or the business day thereafter if the Wednesday is not an index business day. Provided that during the consultation period no concerns raised by index stakeholders are seen to be material by the Index Advisory Committee, the rule change will be implemented for the index close on the index business day following the final day of the consultation period.

5. Appendix

5.1. Transaction Costs

The transaction cost is zero if not a rebalancing tr or roll date t_{roll}. It is the sum of the transaction cost components when rebalancing the CDS index notional and the bid-offer cost component when buying/selling CDS indices to roll to the new series on roll dates. In general the bid offer costs are calculated by assuming the bid-offer spread can be estimated as a percentage of the CDS index spread.

(19) $$\mathrm{TransactionCosts}_{\mathrm{i,t}}^{\%} = \mathrm{RebaltransactionCosts}_{\mathrm{i,t}}^{\%,\mathrm{rebal}} + \mathrm{BidOffer}_{\mathrm{i,t}}^{\%,\mathrm{roll}}$$

The $\mathrm{BidOffer}_{\mathrm{i,t}}^{\%,\mathrm{roll}}$ is zero if not a roll date. On roll dates, it is calculated as follows:

(20) $$\mathrm{BidOffer}_{\mathrm{i,t_{roll}}}^{\%,\mathrm{roll}} = \frac{1}{2} \cdot b_i \cdot d_i \cdot \left(f_{\mathrm{i},t,\mathrm{oldseries}} \cdot \mathrm{S}_{\mathrm{i,t_{roll}},\mathrm{oldseries}} \cdot RPV01_{\mathrm{i,t_{roll}},\mathrm{oldseries}} + f_{\mathrm{i},t,\mathrm{newseries}} \cdot \mathrm{S}_{\mathrm{i,t_{roll}},\mathrm{newseries}} \cdot RPV01_{\mathrm{i,t_{roll}},\mathrm{newseries}}\right)$$

For this methodology to avoid unit scaling factors RPV01 is defined as the value per unit of notional of the clean premium leg per unit of coupon. This is 10,000 times the value per unit notional of the clean premium leg per basis point of coupon. According to this document's definition as the value per unit of notional of the clean premium leg per unit of coupon, the $RPV01_{i,t}$ should have a value of about 5 for a 5Y CDS index at inception.

$\mathrm{RebalTransactionCosts}_{\mathrm{i,t}}^{\%,}$ are zero if it is not a rebalancing date otherwise it's calculated as:

(21) $$\mathrm{RebalTransactionCosts}_{\mathrm{i,tr}}^{\%,} = \mathrm{ClearingCosts}_{\mathrm{i,tr}}^{\%} + \mathrm{BidOffer}_{\mathrm{i,tr}}^{\%,\mathrm{rebal}}$$

The clearing cost is calculated as follows:

(22) $$\mathrm{ClearingCosts}_{\mathrm{i,tr}}^{\%} = \frac{1}{\mathrm{x}_{\mathrm{i,t}}^{\mathrm{CDS}}} \cdot \mathrm{g}$$

The bid-offer rebalancing transaction cost is calculated using an approximation $\eta_{i,tr}$ for the absolute value of the amount of notional to be bought or sold in the rebalancing to avoid circular dependencies in the formulas:

(23) $$\mathrm{BidOffer}_{\mathrm{i,tr}}^{\%,\mathrm{rebal}} = f_{\mathrm{i,tr}} \cdot \frac{\mathrm{n_{i,tr}}}{\mathrm{Notional_{i,tr-1}}} \cdot \frac{1}{2} \cdot \mathrm{b_i} \cdot \mathrm{S_{i,tr}} \cdot RPV01_{\mathrm{i,tr}}$$

(24) $$\eta_{\mathrm{i,tr}} = \left| \frac{\mathrm{w_i^{CDS} \cdot I_{tr}^*}}{(1+\mathrm{f_{i,tr}} \cdot \mathrm{PV_{i,tr}^{\%,clean}})} - \mathrm{Notional_{i,tr-1}} \right|$$

(25) $$\mathrm{I_{tr}^*} = \mathrm{I_{t-1}} \cdot (1 + \mathrm{R_t^*})$$

$\mathrm{I_{tr}^*}$ and $\mathrm{R_t^*}$ are the values of $\mathrm{I_{tr}}$ and $\mathrm{R_t}$ calculated assuming $\mathrm{BidOffer}_{\mathrm{i,tr}}^{\%,\mathrm{rebal}}$ on that day is zero, but including the $\mathrm{BidOffer}_{\mathrm{i,tr}}^{\%,\mathrm{roll}}$ if it is a roll date. If it is a roll date $\eta_{i,t_{roll}}$ is calculated using the formula above, where the $f_{i,tr} \cdot PV_{i,tr}^{\%,clean}$ in the denominator of the term in $\eta_{i,t_{roll}}$ is calculated with the new series data.

Transaction costs at inception

The index value at $\mathrm{t_0}$ ($\mathrm{I_{t_0}}$) is 100. No transaction costs are applied for the CDS indices that are included at inception.

5.2. Default Costs

The default costs as a percentage of notional are calculated as described below. It reflects the net protection payment cost in the case of a credit event. The default costs are zero on all days except the switching date ($\mathrm{t_{swt}}$) that the index calculation methodology switches from using the previous index version data for the underlying CDS index i to the new "reduced" index version data where the defaulting entity is zero weighted, when it becomes available. The calculation of default costs is different for restructuring and non-restructuring credit events in the underlying CDS indices.

The formula below gives the default costs for the non-restructuring case:

(26) $$\mathrm{Default}_{\mathrm{i,t_{swt}}}^{\%,\mathrm{non-res}} = \frac{1}{\mathrm{E_i}} \cdot \left(\left(1 - \mathrm{Recovery\ Rate_{e,(t_{swt}-1)}}\right) - \left(\Delta_{\mathrm{tc_{prev}, t_{EDD}}} \cdot \mathrm{Coupon}_{\mathrm{i,t_{EDD}}}^{\%}\right) \right)$$

The formula below gives the default costs for the restructuring case:

(27) $$\mathrm{Default}_{\mathrm{i,t_{swt}}}^{\%,\mathrm{res}} = \frac{-1}{\mathrm{E_i}} \cdot \left(\mathrm{PV}_{\mathrm{e,t_{swt}}}^{\%,\mathrm{dirty,single}} - \frac{1}{2} \cdot \mathrm{b_{e,(t_{swt})}} \cdot \mathrm{S_{e,(t_{swt})}} \cdot RPV01_{\mathrm{e,(t_{swt})}} \right)$$

In the unlikely event that multiple entities are removed from the underlying CDS index series on the same day, the default costs of each of these would be added. However if an entity had been removed previously at an earlier date and its default cost already included previously, it is not included again.

5.3. Index Parameters

Symbol	Value	Description
$b_{e,(t_{swt})}$	.1	Percentage of the CDS single name spread assumed to be the estimate of the bid/offer spread
b_m	.01	fraction of iTraxx Europe index spread assumed to be the estimate of the bid-offer spread
b_n	.01	fraction of iTraxx XO index spread assumed to be the estimate of the bid-offer spread
d_m	.25	Roll trade discount parameter for iTraxx Europe reflecting reduced transaction costs for trades rolling CDS indices around roll dates
d_n	.25	Roll trade discount parameter for iTraxx XO reflecting reduced transaction costs for trades rolling CDS indices around roll dates
g	.0000077	Clearing cost parameter
s	.0035	Spread subtracted from benchmark interest rate for overall interest on cash component

6. Annotations

b_m	Percentage of the CDS index spread of iTraxx Europe assumed to be Bid/Offer spread
b_n	Percentage of the CDS index spread of iTraxx XO assumed to be Bid/Offer spread
$b_{e,(t_{swt})}$	Percentage of the CDS single name spread assumed to be the estimate of the bid/offer spread
$BidOffer_{i,t}^{\%,roll}$	Bid/offer cost when buying/selling CDS indices to roll to the new series on roll dates
$BidOffer_{i,tr}^{\%,rebal}$	Bid/offer rebalancing transaction cost
$\mathrm{ClearingCosts}_{\mathrm{i,tr}}^{\%}$	Clearing cost representing other transaction costs for trading cleared CDS indices that are not bid-offer related
c_m^{CDS}	iTraxx Europe target composition fraction in terms of the product of CDS index notional and bond equivalent price
c_n^{CDS}	iTraxx XO target composition fraction in terms of the product of CDS index notional and bond equivalent price
$CNME_{tot,t}$	The CDS notional market exposure ratio is given represents the sum of the product of the CDS indices notional and their respective bond equivalent price, to the overall Index portfolio value.

$\text{Coupon}_{\text{i,t}-1}^{\%,\text{ifCouponDate}}$	Coupon as a percent of the product of the notional and the index factor (has a value of 0 if not a coupon payment date)
$\text{Default}_{\text{i,t}}^{\%}$	Default cost as a percent of the notional
d_m	Roll trade discount parameter for iTraxx Europe reflecting reduced transaction costs for trades rolling CDS indices around roll dates
d_n	Roll trade discount parameter for iTraxx XO reflecting reduced transaction costs for trades rolling CDS indices around roll date
e	Defaulting entity
E_i	Original total number of entities presents in the CDS index series i on the day it was created
$f_{i,t}$	Index factor representing the fraction of entities remaining in the CDS index out of the total number of entities at the CDS index series inception
g	Clearing cost parameter
I_t	Index value at day t
I_tr^*	I_tr calculated assuming $BidOffer_{i,tr}^{\%,rebal}$ on that day is 0 but including $BidOffer_{i,tr}^{\%,roll}$ if a roll date
i	Denotes the underlying CDS Index
L	Target CDS notional market exposure ratio
$\eta_{i,tr}$	Approximation of absolute value of the amount notional to be bought or sold at rebalancing
$\text{Notional}_{\text{i,tr}}$	CDS notional
$\text{PV}_{\text{i,t}}^{\%,\text{clean}}$	CDS index clean PV as a percent of the product of the notional and the index factor
$\text{PV}_{\text{i,t}}^{\%,\text{dirty}}$	CDS index dirty PV as a percent of the product of the notional and the index factor
$\text{PV}_{\text{e,t}_\text{swt}}^{\%,\text{dirty,single}}$	Single name CDS dirty PV for the defaulting entity e as a percent of the notional
r_{t-1}^{EONIA}	EONIA interest rate
R_t	Overall index return at time t
$\text{R}_\text{t}^{\text{cash}}$	Cash return
R_t^*	R_t calculated assuming $BidOffer_{i,tr}^{\%,rebal}$ on that day is 0 but including $BidOffer_{i,tr}^{\%,roll}$ if a roll date
$RebalTransactionCosts_{i,t}^{\%,}$	Transaction cost for rebalancing
$\text{Recovery Rate}_{\text{e},(\text{t}_\text{swt}-1)}$	Recovery rate for the entity e
$RPV01_{i,t_{roll},series}$	Clean risky annuity or risky PV01 for old or new series
$\text{RPV01}_{\text{e},(\text{t}_\text{swt})}$	Clean risky annuity or risky PV01 for the single name CDS for the defaulting entity e

s	Spread subtracted from benchmark interest rate for overall interest on cash component
$S_{i,t_{roll},series}$	CDS index spread of the old or new series on the roll date. It should be entered as a decimal number, so for example a 250bp spread should be entered as 0.0250.
$S_{e,(t_{swt})}$	Single name CDS spread for the defaulting entity e. It should be entered as a decimal number, so for example a 250bp spread should be entered as 0.0250.
t_0	Inception date (also considered as a rebalancing date)
t	Business day t
$t-1$	Previous business day
tr	Refers to rebalancing date
$TransactionCosts_{i,t}^{\%}$	Transaction cost as a percent of the notional
w_m^{CDS}	iTraxx Europe target weight
w_m^{CDS}	iTraxx XO target weight
x_t^{cash}	Ratio of cash to index value at time t
$x_{i,t}^{CDS}$	Ratio of CDS notional to index value
$\Delta_{tc_{prev},tc}$	Year fraction between the previous and the current coupon payment date using the actual/360 convention
$\Delta_{tc_{prev},t_{EDD}}$	Year fraction from the previous coupon date to the Event Determination Date using the Actual/360 convention

7. Further Information

GLOSSARY OF KEY TERMS

Further information regarding use of the Markit Credit Indices and glossary of key terms are available in the Markit Credit Index Primer located in the indices documentation section under Primers on wwww.markit.com/indices.

FOR CONTRACTUAL OR CONTENT ISSUES

Please refer to:

Markit Indices Limited
Friedrich-Ebert-Anlage 35-37
60327 Frankfurt am Main
Germany
Tel +49 (0) 69 299 868 100 Fax +49 (0) 69 299 868 149
E-mail: *indices@ihsmarkit.com*
Internet: *http://www.markit.com/*

FOR TECHNICAL ISSUES AND CLIENT SUPPORT

Please email *indices@ihsmarkit.com* or call:

Asia Pacific	Europe	USA
Japan: +81 3 6402 0127	General: +800 6275 4800	+1 877 762 7548
Singapore: +65 6922 4210	UK: +44 20 7260 2111	

FORMAL COMPLAINTS

For formal complaints or general index enquiries, please contact indices@ihsmarkit.com.

LICENCES AND DATA

iTraxx is a registered trademark of Markit Indices Limited. Markit Indices Limited owns all iTraxx data, database rights, indices and all intellectual property rights therein. A licence is required from Markit Indices Limited to create and/or distribute any product that uses, is based upon or refers to any iTraxx index or data.

OWNERSHIP

Markit Indices Limited & Markit North America are a wholly-owned subsidiary of Markit Group.

OTHER INDEX PRODUCTS

Markit Indices Limited owns, manages, compiles and publishes the iTraxx credit derivative indices.

