

markit

Markit Credit Indices

A Primer

November 2008

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Scope of the document

This document aims to outline the different credit indices owned and managed by Markit, their characteristics and differences, and how they trade. We focus on synthetic indices backed by single name bonds CDS (senior unsecured) and single name loans CDS (senior secured): the Markit CDX and Markit iTraxx for bonds, and the Markit iTraxx LevX and Markit LCDX for loans. We purposely do not cover synthetic structured indices, such as the ABX and the CMBX, as their functioning is quite different.

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Section 1 – Credit Default Swaps

Definition

A Credit Default Swap (CDS) is a contract between two parties, a protection buyer who makes fixed periodic payments, and a protection seller, who collects the premium in exchange for making the protection buyer whole in case of default. In general trades are between institutional investors and dealers.

CDS are over-the-counter (OTC) transactions. They are similar to buying/selling insurance contracts on a corporation or sovereign entity's debt, without being regulated by insurance regulators (unlike insurance, it is not necessary to own the underlying debt to buy protection using CDS). Before trading, institutional investors and dealers enter into an ISDA Master Agreement, setting up the legal framework for trading.

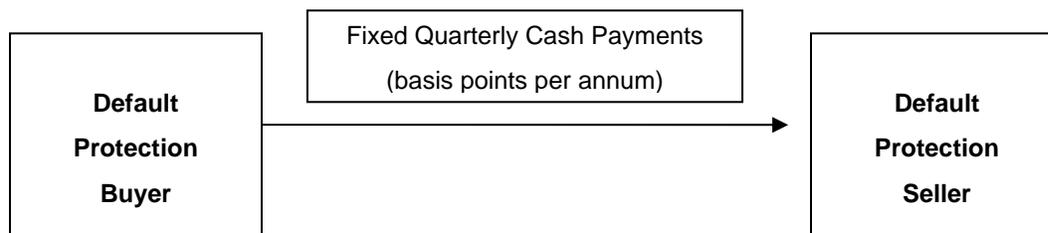
Each contract is defined by

- A Reference Entity (the underlying entity on which one is buying/selling protection on);
- A Reference Obligation (the bond or loan that is being “insured” - although it doesn't have to be the deliverable instrument in a default situation and doesn't have to have the same maturity as the CDS, it designates the lowest seniority of bonds that can be delivered in case of default);
- A Term/Tenor (5 years are the most liquid contracts);
- A Notional Principal;
- Credit Events (the specific events triggering the protection seller to pay the protection buyer – The defined events are bankruptcy, failure to pay, debt restructuring, and the rare obligation default, obligation acceleration, and repudiation/moratorium).

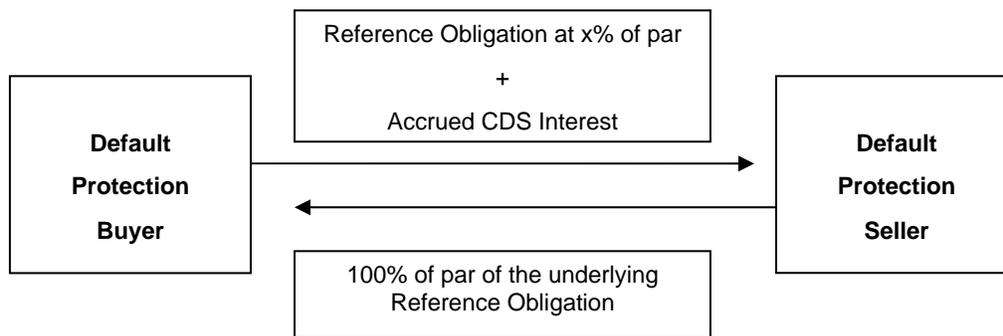
Markit Reference Entity Database (RED) is the market standard that confirms the legal relationship between reference entities that trade in the credit default swap market and their associated reference obligations, known as “pairs”. Each entity is identified with a unique 6-digit alphanumeric code, and a 9-digit code identifies the pair. RED codes are widely and successfully used by CDS market participants to electronically match and confirm CDS transactions. The RED “preferred reference obligation” is the default reference obligation for CDS trades based on liquidity criteria.

In case of a credit event, under standard physical settlement the protection buyer has to deliver a bond of seniority at least equal to that of the reference obligation – if there are multiple bonds deliverable, the protection buyer will most likely deliver the cheapest bond to the protection seller. We can represent the life of a CDS with the following cash flows:

From initiation of trade to maturity if there is no credit event:



In case of Credit Event



Note that a market-wide cash settlement mechanism has been implemented in recent years. More details will be covered under Auctions later.

Types

The different types of CDS contracts traded:

- CDS: indicates that the underlying reference entities and obligations are senior unsecured bonds, issued by corporate or sovereign issuers
- LCDS: Loan-only CDS refers to contracts where protection is bought and sold on syndicated secured leveraged loans. These are higher in the capital structure (and with higher recovery rates) than CDS.
- MCDS: The reference entity is a municipality, and the reference obligation a municipal bond.
- ABCDS: CDS on structured securities (Asset Backed Securities typically)
- Preferred CDS: CDS on Preferreds

Uses

Hedging

- CDS allow capital or credit exposure constrained businesses (banks for example) to free up capacity to facilitate doing more business.
- CDS can be short credit positioning vehicle. It is easier to buy credit protection than short bonds.
- For LCDS, counterparties can assign credit risk of bank loans without requiring consent of lender (assigning bank loans often requires borrower consent/notification), therefore CDS reduce bank exposure to credit risk without disturbing client relationships.
- CDS may allow users to avoid triggering tax/accounting implications that arise from sale of assets

Investing

- Investors take a view on deterioration or improvement of credit quality of a reference credit
- CDS offer the opportunity to take a view purely on credit
- CDS offer access to hard to find credit (limited supply of bonds, small syndicate)
- CDS allows investors to invest in foreign credits without bearing unwanted currency risk
- Investors can tailor their credit exposure to maturity requirements, as well as desired seniority in capital structure
- CDS require no cash outlay and therefore creates leverage



The standardized documentation, liquidity, ability to customize terms, and pure credit focus has made the CDS market a de facto standard for expressing a view on the credit market (either single credits, or baskets such as indices).

Pricing

CDS contracts in general trade based on a spread, which represents the cost a protection buyer has to pay the protection seller (the premium paid for protection). The protection buyer is said to be short the credit as the value of the contract rises the more the credit deteriorates.

The value of the CDS contract increases for the protection buyer if the spread increases. For example, a protection buyer paying a spread of 60bps when the current spread is 90bps would be able to unwind the position at a higher spread level.

Estimated recovery is a key part of valuing a CDS contract, as it represents the value post-default, and therefore impacts expected cash flows. For investment grade names, recovery is generally assumed to be 40% (as the probability of default is low, the recovery rate is at best an estimate). For distressed names however, where the probability of default is higher, recovery tends to be more precisely defined.

Markit offers comprehensive data service including daily credit curves for over 3,500 entity-tiers including recovery rates, and valuation services to value trades.

Notional

It is important here to note that CDS trades refer to a notional, the quantity of the underlying asset or benchmark to which the derivative contract applies. It doesn't refer to any cash exchange at time of trade, the mark-to-market size of the market. It is akin to the amount of insurance bought, not the premium paid.

Section 2 - Credit Indices

A Brief History

Synthetic credit indices originated in 2001 when JPMorgan launched the JECI and Hydi indices, and Morgan Stanley launched Synthetic TRACERS. Both firms merged their indices under the Trac-x name in 2003. During the same period iBoxx launched credit derivatives indices. In 2004 Trac-x and iBoxx merged to form the CDX in North America and the iTraxx in Europe and Asia. After being the administrator for the CDX and calculation agent for iTraxx, Markit acquired both families of indices in November 2007, and owns the iTraxx, CDX, LevX, and LCDX Indices for derivatives, and the iBoxx indices for cash bonds.

Benefits

Credit indices have expanded dramatically in recent years, with volumes rising, trading costs decreasing, and a growing visibility across financial markets. Benefits of using CDS indices include:

- **Tradability:** Credit indices can be traded and priced more easily than a basket of cash bond indices or single name CDS
- **Liquidity:** Significant liquidity is available in indices and has also driven more liquidity in the single name market
- **Operational Efficiency:** Standardized terms, legal documentation, electronic straight-through processing
- **Transaction Costs:** Cost efficient means to trade portions of the market
- **Industry Support:** Credit indices are supported by all major dealer banks, buy-side investment firms, and third parties (for example, Markit offers transaction processing and valuations services)
- **Transparency:** Rules, constituents, fixed coupon, daily prices are all available publicly

Participants

There are five main parties involved in credit indices:

- **Markit** – Markit owns and operates the indices: including licensing, marketing, administration, and calculation. Markit publishes prices daily on its website
- **Banks** – Banks trade indices on their own behalf and provide liquidity for their clients. They are intimately involved in the indices, actively participating in rolls, and playing a key part in product development
- **Institutional Investors** – Investors can hedge their positions, or express views on a specific market segments via credit indices
- **ISDA** – Markit and banks have worked with ISDA to create globally approved legal documentation for CDX, LCDX, iTraxx and LevX indices
- **Third parties** – Third parties have made trading credit indices easier by integrating them into their platform. For example, Markit Trade Processing allows buy-side and sell-side firms to communicate and confirm trade details with counterparties, including industry matching utilities like DTCC's Deriv/SERV.

Key characteristics

See Appendix 1 for a breakdown of the major credit indices, number of entities included in each index, roll dates, and maturities available to trade for each index.

Differences between Bond and Loan-only CDS Indices

	Bonds	Loans
Deliverable	Bonds or Loans	Loans only
Cancellability	CDS trade is not cancellable in cases where all the underlying debt is called or matures	CDS trade is cancellable if an issuer repays all its secured debt without issuing new relevant debt
Valuation	Duration is not adjusted for cancellability	Duration of the index needs to be reduced to account for the cancellability of the loans
Credit Event	The three most commonly used credit events are failure to pay, bankruptcy and restructuring. Also defined but rarely seen are Obligation Acceleration, Repudiation / Moratorium	Bankruptcy, Failure to Pay, and - for LevX only - Restructuring

Differences between LevX and LCDX

	LevX	LCDX
Roll Date	March and September 20 th	April and October 3 rd
Region	Europe	North America
Reference	Reference Obligation	Reference Entity
Currency	EUR	USD or EUR
Credit Event	Bankruptcy, Failure to Pay, Restructuring	Bankruptcy, Failure to Pay
Deliverables	LevX includes a Senior (1 st Lien) index, and a Sub (2 nd /3 rd Lien) index	LCDX only includes 1 st Lien loans
Loan Criteria Eligibility	Senior – min EUR500 million deal Sub – min EUR100 million deal	Loans must be on the Markit Syndicated Secured List *
Entities	Senior – 75 names Sub – 45 names	100 names
Business Days	London and TARGET Settlement Day	USD – New York and London EUR – London and TARGET Settlement Day

* Markit's Syndicated Secured List (SSL) is a database of syndicated secured loans traded in the primary and secondary markets including information about the priority of such loans gathered from market participants and other information. Markit RED maintains the SSL.

Differences between iTraxx and CDX

	iTraxx	CDX
Region	Europe and Asia	North America and Emerging Markets
Credit Event	Bankruptcy, Failure to Pay, Modified Restructuring	Bankruptcy, Failure to Pay
Currency	Europe – EUR Japan – JPY Asia ex-Japan – USD Australia - USD	USD, EUR
Reference Entities	Liquidity – A liquidity poll decides inclusions and exclusions	Dealer Poll – Dealers select reference entities to be added and removed
Business Days	London and TARGET Settlement Day	USD – New York and London EUR – London and TARGET Settlement Day

Coupon Payments

Payments from the protection buyer to protection seller are made on a quarterly basis (March 20, June 20, September 20, December 20) and accrue on a Actual/360, except for CDX.EM, where payments are semi-annual, and due on June 20 and December 20.

Rules

Indices roll every six month - a new series of the index is created with updated constituents. The previous series continues trading although liquidity is concentrated on the on-the-run series.

The roll consists of a series of steps which are administered by Markit:

- **Exclusion:** a number of entities are excluded from the index. Names no longer qualify because of a corporate action, ratings changes (for the indices where ratings are a criteria), lack of liquidity, or by dealer poll results
- **Inclusion:** New names are added to the each index to keep the number of constituents the same. Inclusion is decided by a liquidity poll for iTraxx, and a dealer poll for the CDX/LCDX/MCDX
- **Reference obligation assignment:** For each entity in the new index, a suitable reference obligation is identified by Markit RED, with input from the dealers
- **Fixed Rate determination:** Licensed Dealers determine the spread for each index and maturity. This is done via a dealer call in Europe and Asia. In North America, the licensed dealers send Markit an average spread, and the median becomes the fixed spread on the index. In addition to the fixed rate, iTraxx dealers also agree on a recovery rate used for upfront calculations (not for the determination of cash flows in case of a credit event)



- Annex: The final annex, stating the composition of each index, and fixed rate is published by Markit. The annex is attached to each index trade confirmation
- New Series starts trading

Timelines for the rolls of CDX.NA.IG, CDX.NA.HY, and LCDX are given as example in Appendix 2.

The complete rules can be found on Markit's website:

CDX and LCDX:

<http://www.markit.com/information/products/category/indices/lcdx/documentation/contentParagraphs/01/document/Markit%20CDX%20and%20Markit%20LCDX%20Rules.pdf>

iTraxx

<http://www.markit.com/information/products/category/indices/itraxx/documentation.html>

Section 3 – Trading Credit Indices

Trading Overview

Trading Conventions

Indices trade either on spread or on price. It mimics the cash instrument where some bonds trade on yields, and others on price. The CDS indices convention matches that of the underlying cash instruments.

Spread	CDX (IG, XO, HVOL), iTraxx (Europe, Japan, Asia ex-Japan, Australia), MCDX
Price	CDX (HY, EM, EM.Div), LCDX, LevX

Intuitively, if an index has a fixed coupon of 60 and the current coupon is 90, it is positive for the protection buyer (they are paying 60 for something that is currently worth 90). The price is inversely related to spread so the price of the index at 90 is lower than the price at 60, and as the protection buyer is short the credit a drop in price is positive.

Where can I trade?

Credit Indices are over-the-counter (OTC) products and can be traded with licensed dealers providing liquidity. An updated list of banks providing liquidity for the US indices is updated on the URLs shown below:

<http://www.markit.com/information/products/category/indices/lcdx/dealers.html>

http://www.markit.com/information/products/category/indices/cdx/contributing_banks.html

How do I trade?

Buying and selling the indices can be compared to buying and selling portfolios of loans or bonds. A buyer takes on the credit exposure to the loans or bonds, and is exposed to defaults, similar to buying a cash portfolio (buying the index is equivalent to selling protection). By selling the index, the exposure is passed on to another party. Exposure is similar in both cases.

The indices trade at a fixed coupon, which is paid quarterly (except for EM which is semi-annual) by the buyer of protection on the index, i.e. a short index position, and upfront payments are made at initiation and close of the trade to reflect the change in price. Correspondingly, the protection seller, or buyer of the index, receives the coupon. The indices are quoted on a clean basis.

Example:

The index launches with a price of 100 on September 20th, and a fixed coupon of 60. Investor A buys \$10,000,000 notional protection on the index on November 30th, when the spread has moved to 90 and corresponding price is 98.67 (the price is par minus the present value of the spread differences). Investor A makes an upfront payment to account for the movement in the spreads.

$$\text{Payment} = 10,000,000 * (100 - 98.67) / 100 = \$133,000$$

In addition, he will receive the accrued interest up to trade date (as he will have to make the full coupon on coupon payment date – this simplifies operations as all protection buyers make the same payment on the same date): $71 / 360 * 10,000,000 * 0.006 = \$11,833.3$

$$\text{Net outflow} = \$121,166.67$$

December 20th – Investor A pays the fixed coupon.



Cash outflow = $0.006 * 10,000,000 = \$60,000$

March 13th – Investor A closes the trade on March 13 when the spread is 120 and the equivalent price is 97.44. Investor A pays the accrued interest up to trade date and receives payment.

Inflow = $10,000,000 * (100-97.44)/100 - 0.006*10,000,000 * 104/360 = 256000 - 17333.33 = \$238,666.67$

Markit offers a variety of services around trading of single name CDSs and indices. Markit Quotes and Intraday offer intra-day CDS and indices levels, and Markit Portfolio Valuations provide buyside firms daily valuations using Markit's extensive dataset.

Valuation

There are two ways to calculate the theoretical value of an index based on the underlying instruments:

- A simplified model using risky duration only for each credit in the index generates a decent approximation. This is covered in more detail below.
- The more accurate and complex way is to use the hazard rate model for each underlying components of the index. It is not a trivial exercise and is outside the scope of this document, but will generate a more accurate value, as it allows for curvature in the credit spread curve.

For small differences in fixed and current coupon the two valuation methods will have similar results. The hazard rate model will give better results for large movements in the spread.

Simple valuation example - Take each individual credit, and multiply the risky duration of the credit by the difference between the current spread of the credit and the coupon of the index. This gives the PV on each component. The fair value price of the index is 100 minus the sum of all the PV's across all constituents.

For example, if the first credit is trading at 200 bps, with a risky duration of 3.75 years, vs. an index coupon of 150 bps, then the contribution to the index price is $3.75*50/10,000 = 0.01875$. If we assume all other credits are trading at 150 bps (i.e. equal to the index coupon), then the price of the index will be $100 - 0.01875 = 99.98125$.

The index will trade away from the intrinsic value calculated above, as it is a tradable index, and market supply and demand ultimately dictates where the index trades. However the intrinsic value provides a benchmark. The traded and intrinsic values are both available in Markit's end-of-day data services.

Credit Events

Events that can trigger a payout from the seller of the index are highlighted in the tables above and defined in Appendix 4 (Dictionary).

If a credit event occurs, a new version of the index will be issued with the defaulted entity removed and with a reduced notional (assuming 100 names in the index, the new version will contain 99 names and will have a revised notional of \$9.9 million rather than \$10 million). Historically the new version would immediately become the liquid version, although for the last two credit events (Movie Gallery, Quebecor), version 2 only started trading after the recovery rate is set. This was due to tranche trading, as the new attachment and detachment points are dependent on the recovery rate. Trading version 2 only after the recovery rate is set allows trades to be fungible.

Credit Events can be settled via two means – physical or cash settlement.

Physical settlement functions the same way as highlighted in the single name CDS section above and entails the protection buyer delivering the debt and receiving par on the portion of the index made up of the defaulted reference entity. The protection seller who took delivery of the debt is left holding the defaulted asset. This is the traditional method of settlement, but runs into problems when the notional of the outstanding debt is less than the CDS/LCDS outstanding. Additionally, every counterparty might not be able to take receipt of the debt. For an index, where the notional exposure in many trades for an actual credit will be small, and investors typically do not own the loan or bond on the credit event date, cash settlement is a better choice. The mechanics of cash settlement are simpler, faster, and more operationally efficient than physical settlement, where an actual loan/bond trade takes place.

Cash settlement is conducted by setting the recovery price in an auction, and the compensation received by the protection buyer is based on the final agreed auction price. Auctions have been developed over recent years for the unsecured market and have more recently been used in the senior secured market too. The recovery price is used across the whole market to settle trades, ensuring all contracts are settled at the same price. For more information on the auctions please see the primer on www.creditfixings.com.

Once a bankruptcy is announced, ISDA coordinates the major participants in the market and agrees an event determination date. Coupons stop accruing on the defaulted entity on this date.

An auction will most likely be announced for a date approximately three to four weeks after a credit event. Markit and Creditex administer the auction and publish the results of each step of the process on www.creditfixings.com

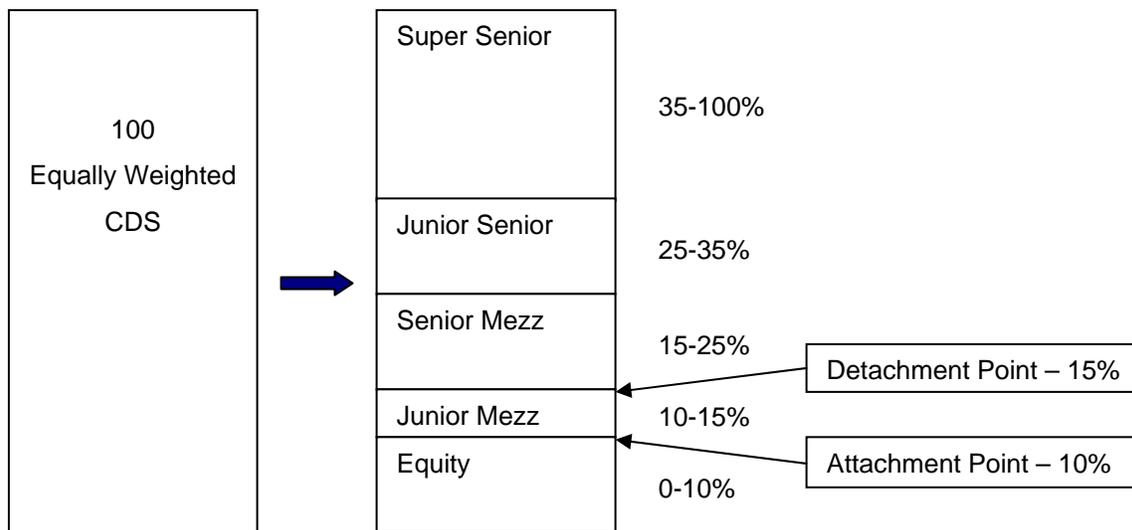
Assuming a recovery of 70 cents on the dollar, all protection buyers are compensated 30 cents in the dollar on the defaulted name. For LCDX contract holders, where each entity has a 1% weighting in the index, they are compensated $1\% * 0.3$ multiplied by the notional of the LCDX trade. For a \$10m trade, this is \$30,000.

A complete Credit Event Auction Guide is available at

<http://www.creditfixings.com/information/affiliations/fixings/contentParagraphs/00/document/Credit%20Event%20Auction%20Primer.pdf>

Section 4 – Tranches

Some of the credit indices are also available in a tranching format, which allows investors to gain exposure on a particular portion of the index loss distribution. Tranches are defined by attachment and detachment points. Defaults affect the tranches according to the seniority of the tranche in the capital structure. Example of the CDX.NA.HY tranches:



Example:

An index has 100 equal weighted names, and has the following tranches: 0-5, 5-8, 8-12, 12-15, 15-100 (in this case the 5-8 tranche has an attachment point of 5 and detachment point of 8). Investor B bought protection on the 0-5% tranche with a notional of \$10 million.

One name defaults – Recovery is set at 65% (35% Loss Given Default – LGD). The payout from the protection seller is:

$(\text{Notional} * \text{LGD} * \text{Weighting}) / \text{Tranche Size}$

Or \$700,000 to Investor B.

The 0-5% tranche is adjusted for the reduced notional (0.35 based on LGD) and 4.65% of the notional remains. The new detachment point has to be adjusted for the number of remaining names in the index, using a factor of 0.99 (the 0-5 tranche for new trades now becomes a 0-4.69 tranche). The original principal of the other tranches is unaffected but now has a smaller cushion protecting them against further losses.

Markit offers the most comprehensive pricing service for on-the-run and off-the-run tranches, providing bid, ask, and mid upfronts and spreads, as well as base correlations.

Additional information is available in Appendix 3

Conclusion

Credit indices are widely used around the world. It is therefore key to understand the basic mechanics and characteristics of each index and their differences. We have attempted to highlight each index, but if you need more in-depth information, please contact the following people:

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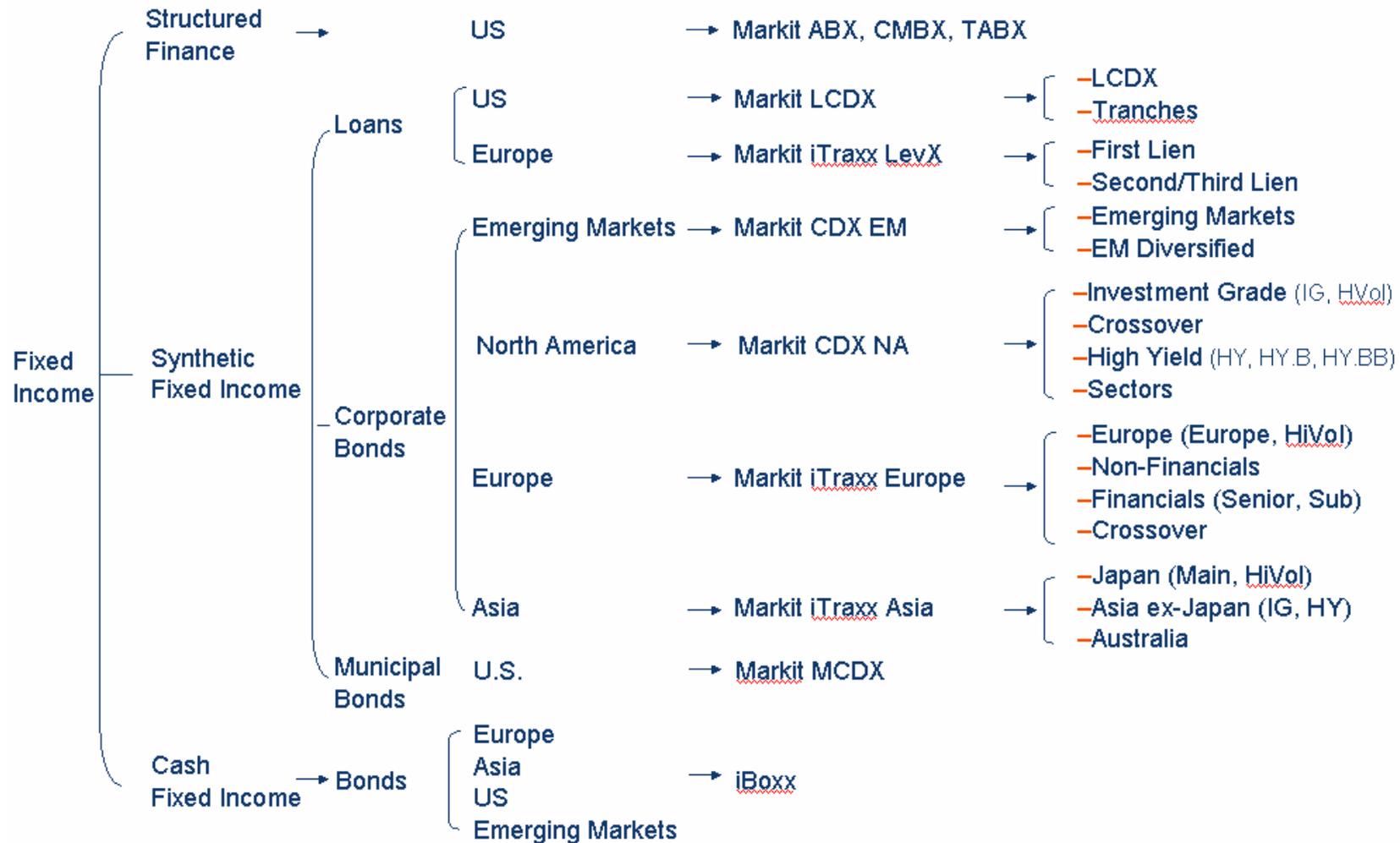
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Appendix 1 Credit Indices – A Roadmap



Appendix 1 Credit Indices – A Roadmap

	Index	# Entities (1)	Roll Dates	Maturity in years (2)	Underlying	Sub-Indices
LCDX	LCDX	100	4/3 – 10/3	3, 5	North American First Lien Senior Secured Loans	
CDX	IG	125	3/20 – 9/20	1, 2, 3, 5, 7, 10	Investment Grade	HV.01 – 30 names in IG with High Volatility Sectors
	HY	100	3/27 – 9/27	5	High Yield	HY.B, HY.BB, HB
	XO	35	3/20 – 9/20	3, 5, 7, 10	Cross-Over (7B or 6B) (3)	
	EM	14 (can vary)	3/20 – 9/20	5	Emerging Markets (Sovereign)	
	EM Div	40	3/20 – 9/20	5	Emerging Markets Diversified (Sovereign and Corporate)	
MCDX	MCDX	50 credits	4/3 – 10/3	3, 5, 10	U.S. Municipal Bonds	

(1) All indices are equally weighted – Except for EM, which is decided by poll

(2) Exact maturity is 3 months past the years after anniversary (coinciding with coupon payment dates and IMM roll dates)

(3) 7B - a rating in the BBB/Baa rating category by one of S&P, Moody's or Fitch and in the BB/Ba rating category by the other two

6B - a rating in the BB/Ba rating category by S&P, Moody's and Fitch

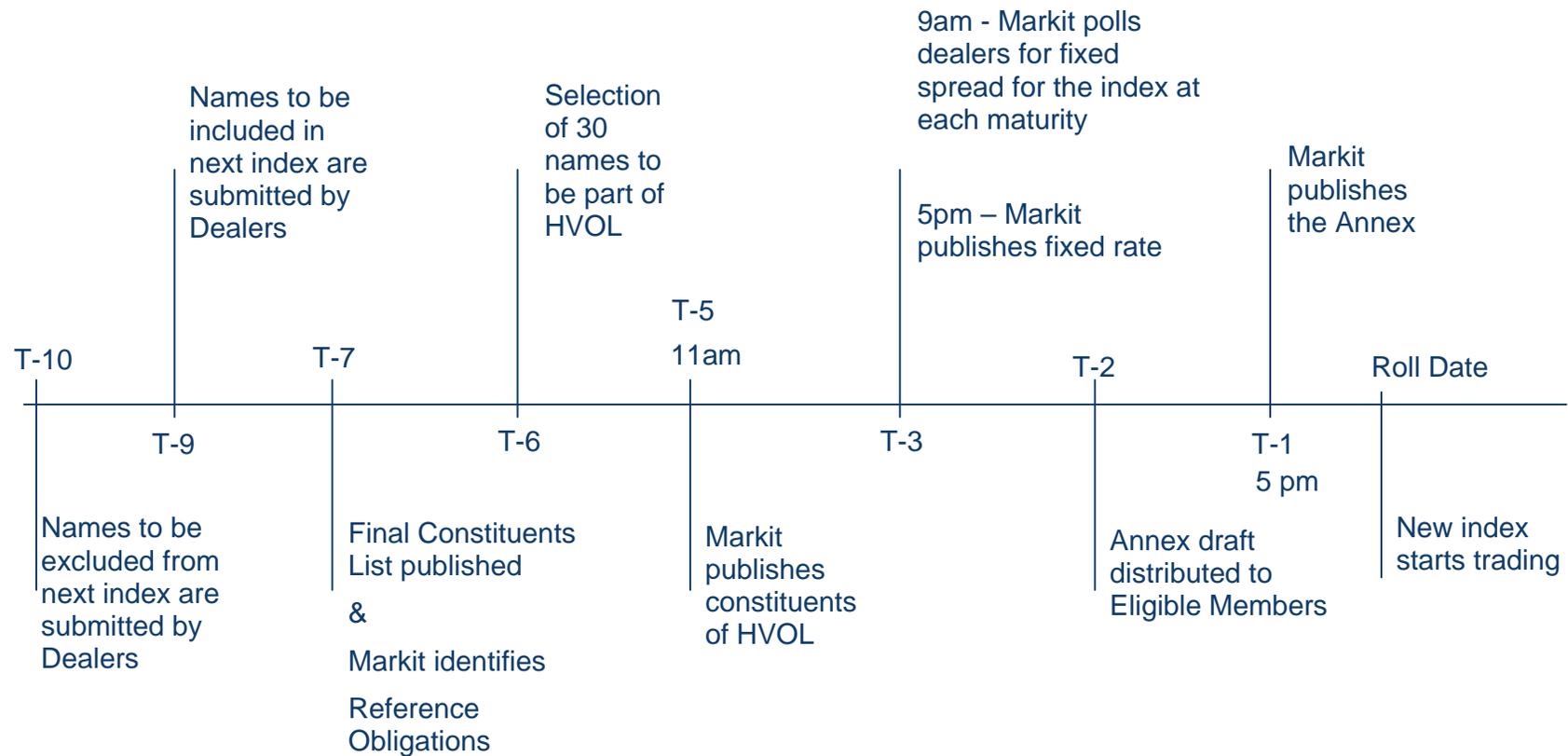
Appendix 1 Credit Indices – A Roadmap

	Index	# Entities (1)	Roll Dates	Maturity in years (2)	Underlying
iTraxx Europe	Europe	125	3/20 – 9/20	3, 5, 7, 10	Top 125 single name CDS contract by volume
	Non Financials	100	3/20 – 9/20	5, 10	
	Senior Financials	25	3/20 – 9/20	5, 10	
	Sub Financials	25	3/20 – 9/20	5, 10	
	Crossover	50	3/20 – 9/20	3, 5, 7, 10	Sub-investment grade reference entities
	High Volatility	30	3/20 – 9/20	3, 5, 7, 10	Top 30 highest spread names from iTraxx Europe
iTraxx Asia	Japan	50	3/20 – 9/20	3, 5, 10	
	Japan High Volatility	25	3/20 – 9/20	5	
	Asia ex-Japan IG	50	3/20 – 9/20	5	
	Australia	25	3/20 – 9/20	5, 10	
	Asia ex-Japan HY	20	3/20 – 9/20	5	
iTraxx LevX	LevX First Lien	75	3/20 – 9/20	5	European First Lien Syndicated Loans
	LevX Second/Third Lien	45	3/20 – 9/20	5	European Second and Third Lien Loans

(1) All indices are equally weighted

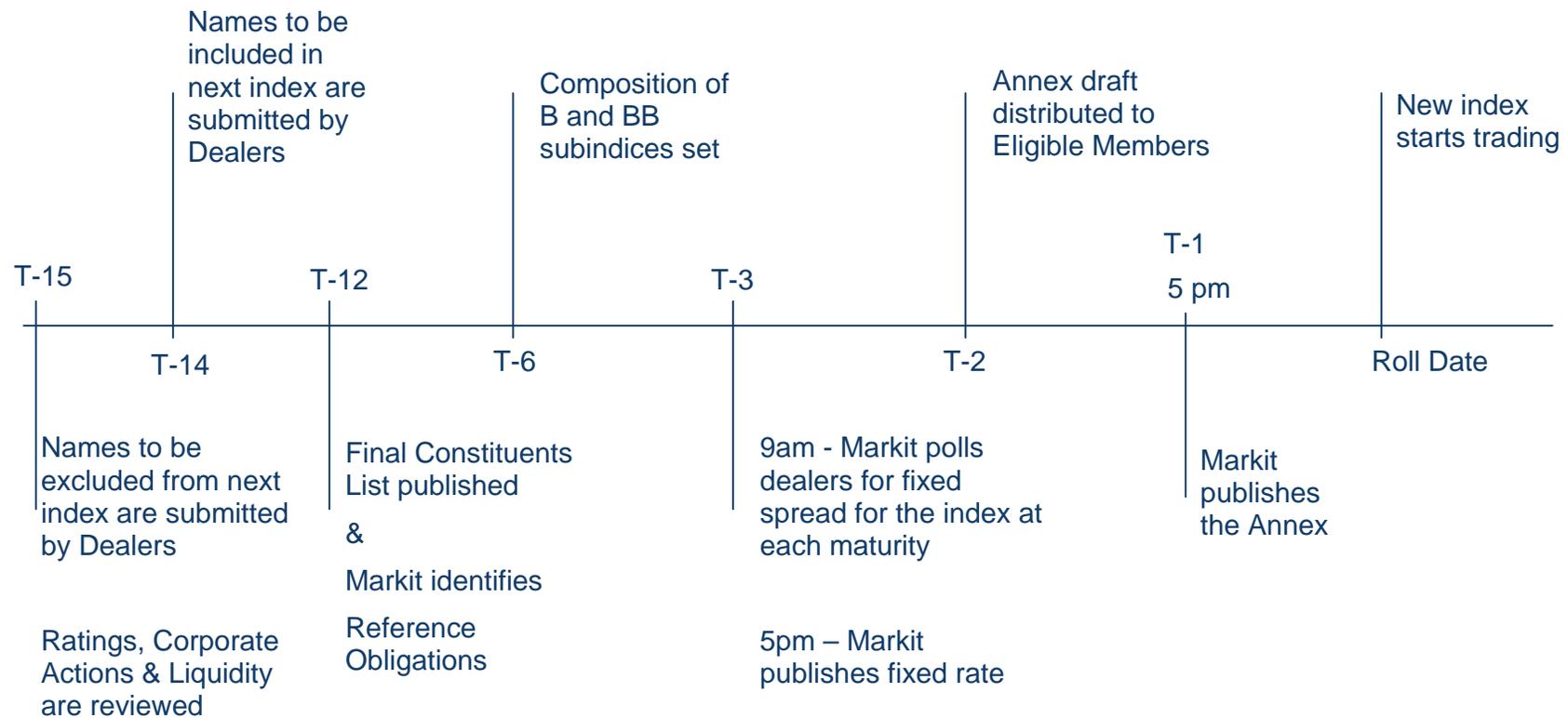
(2) Exact maturity is 3 months past the years after anniversary (coinciding with coupon payment dates and IMM roll dates)

Appendix 2 – Index Roll Timeline CDX.NA.IG





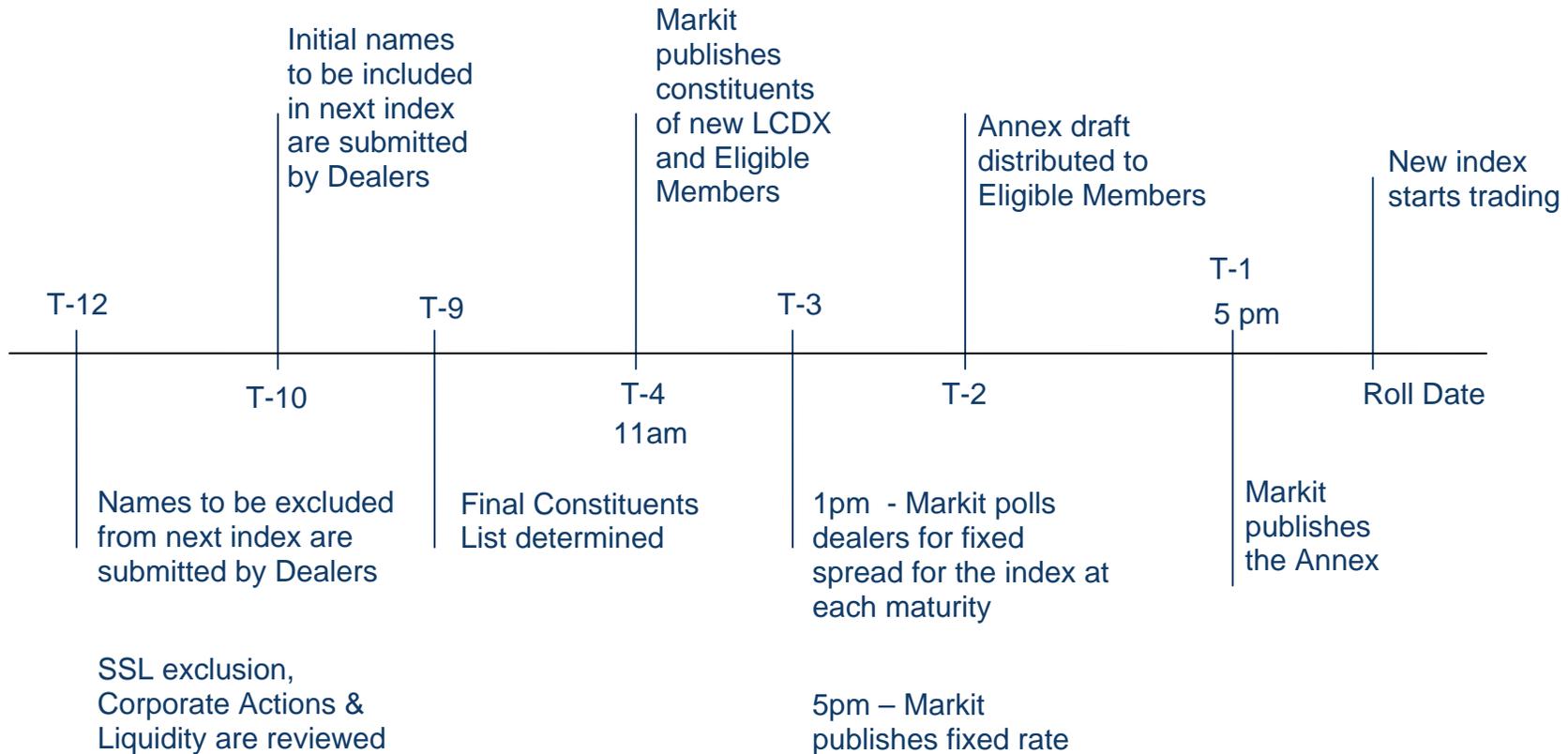
Appendix 2 – Index Roll Timeline CDX.NA.HY



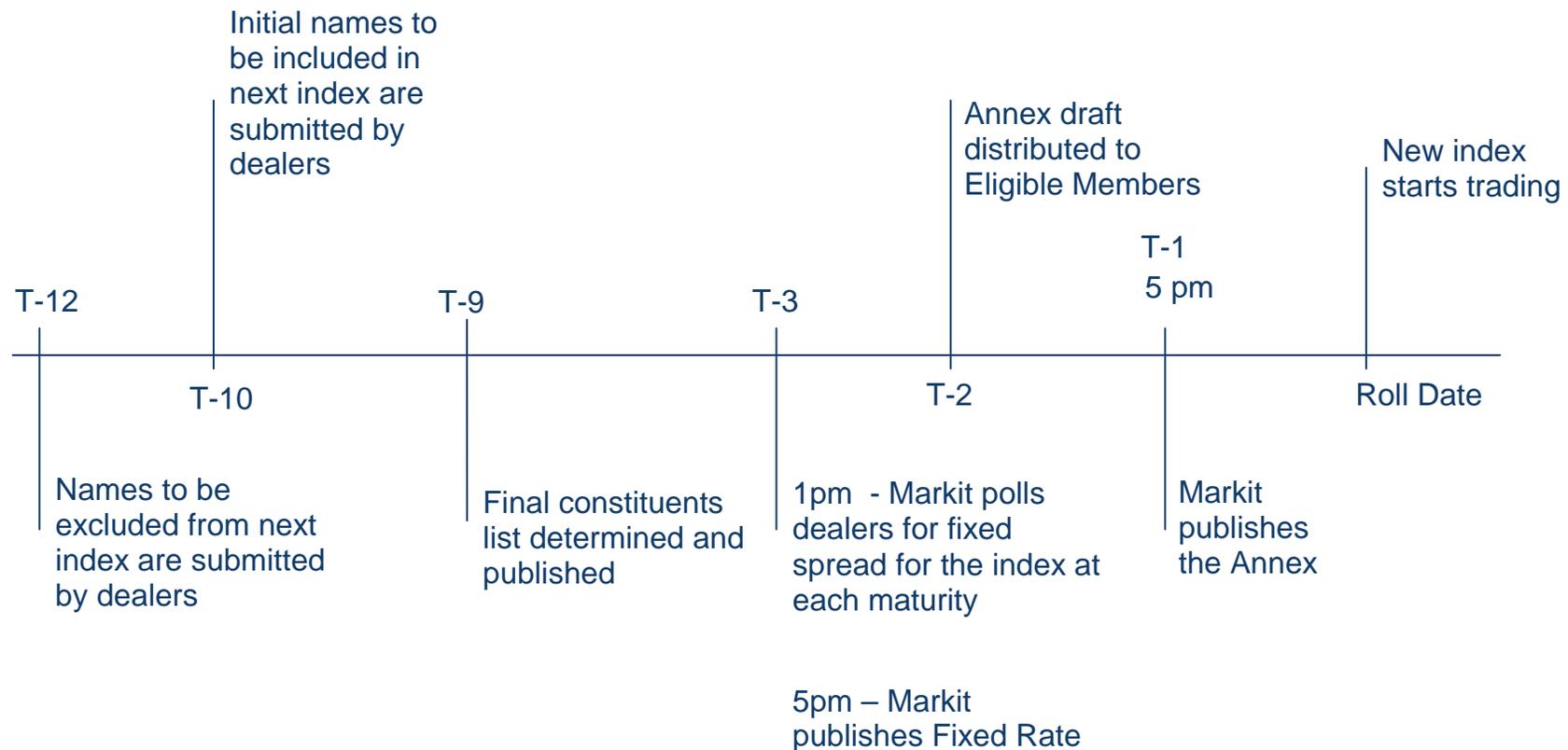


Appendix 2 – Index Roll Timeline

LCDX



Appendix 2 – Index Roll Timeline MCDX





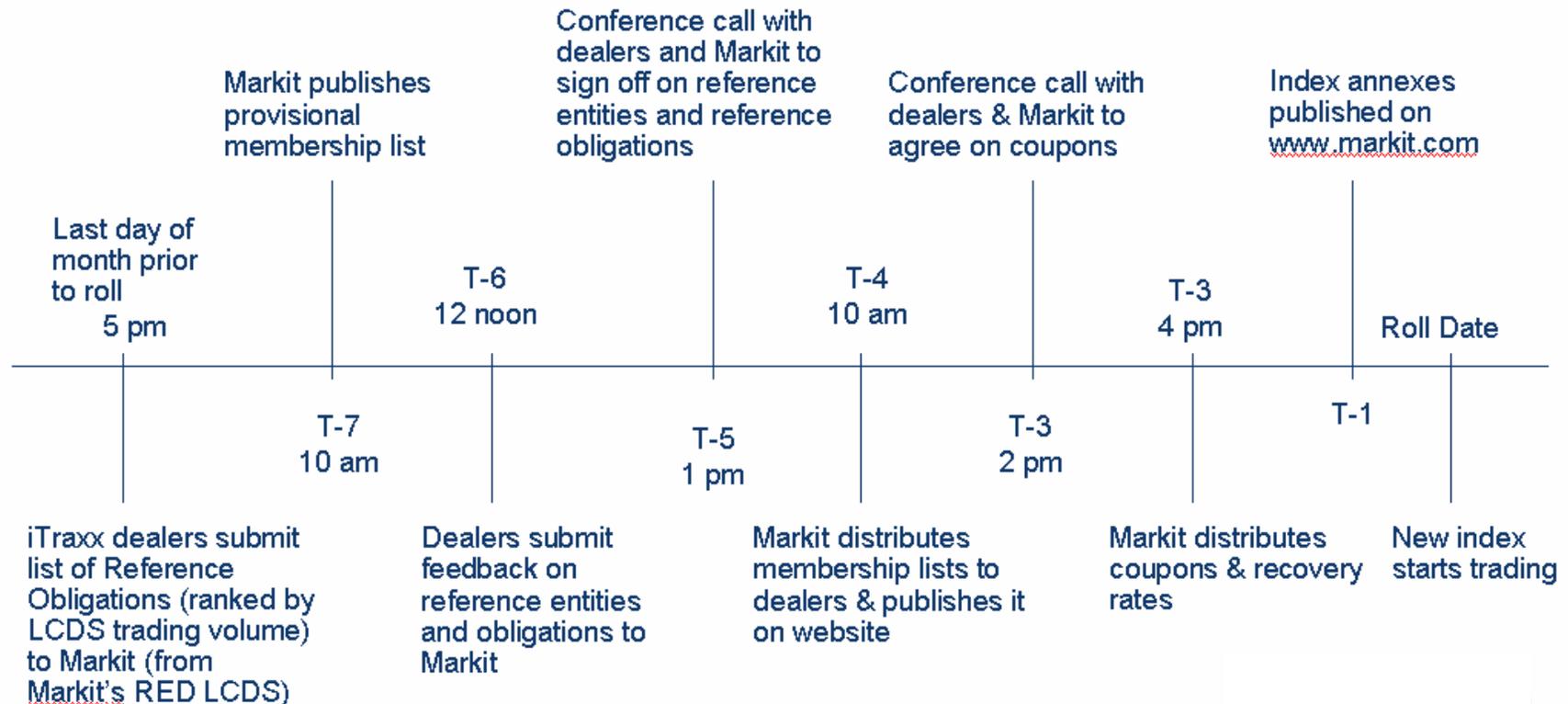
Appendix 2 – Index Roll Timeline iTraxx Europe and Crossover





Appendix 2 – Index Roll Timeline

iTraxx LevX



Appendix 3

Tranches

Index Tranches Availability

Tranches are available for the following Indices:

Index Name	Tranches
CDX.NA.HY	0-10, 10-15, 15-25, 25-35, 35-100
CDX.NA.IG	0-3, 3-7, 7-10, 10-15, 15-30, 30-100
iTraxx Europe	0-3, 3-6, 6-9, 9-12, 12-22, 22-100
iTraxx Europe XO	0-10, 10-15, 15-25, 25-35, 35-100
iTraxx Japan	0-3, 3-6, 6-9, 9-12, 12-22
iTraxx Asia ex-Japan	0-3, 3-6, 6-9, 9-12, 12-22
iTraxx Australia	0-3, 3-6, 6-9, 9-12, 12-22
LCDX	0-5, 5-8, 8-12, 12-15, 15-100

A detailed description of tranches for LCDX can be found on

<http://www.markit.com/information/products/category/indices/lcdx/tranches/contentParagraphs/01/document/Markit%20LCDX%20Tranches%20Presentation.pdf>

Pricing

LCDX – Bottom two tranches trade upfront only. Other tranches trade on spread.

CDX.HY – Bottom two tranches Trade upfront only. Other tranches trade on spread.

CDX.IG – Bottom tranche trades upfront with running spread. Other tranches trade on spread.

Appendix 4

Credit Derivatives Glossary

ABCDs – A CDS where the underlying is an Asset Backed security.

Asset Swap Spread – An asset swap involves a swap of a fixed rate in return for a floating rate. The fixed rate is derived from an asset. The floating rate is composed of a spread over LIBOR (or another floating benchmark). The asset swap spread (gross spread) is derived by valuing a bond's cash flows via the swap curve's implied zero rates. This gross spread is the basis point amount added to the swap curve, which causes a bond's computed value to equal the market price of the bond. It is comparable to a CDS spread in that it is interest rate insensitive.

Basis Point – $1/100^{\text{th}}$ of 1%. 100 basis points = 1%. A common term in fixed income and credit derivatives markets.

Basket CDS – A CDS where a group of reference entities are specified in one contract. There are several types of basket CDS including first or N^{th} -to-default swaps (where settlement is triggered when the first or N^{th} entity defaults) and add-up default swaps where settlement is contingent on all of the entities in the basket.

Binary CDS – (Also called a digital default swap) A CDS where the recovery is fixed.

Calculation agent – The party responsible for determining when a credit event has occurred, and calculating the amount of payment required by the Protection Seller.

CDS Spread – Also called a premium. The amount paid by the Protection Buyer, typically denominated in basis points and paid quarterly.

Contingent CDS – A CDS in which settlement requires both a credit event and another trigger (e.g. credit event in another reference entity or specified movement in some market variable). These are rare.

Credit Default Swap (CDS) – A credit derivative transaction in which two parties enter into an agreement, whereby one party (known as the Protection Buyer) pays the other party (the Protection Seller) periodic payments for the specified life of the agreement. The Protection Seller makes no payment unless a credit event relating to a predetermined reference asset occurs. If such an event occurs, it triggers the protection seller's settlement obligation, which can be either cash or physical, as more particularly described below.



Derivative – A broad term describing financial instruments that “derive” their value from an underlying asset or benchmark. Many derivatives are designed to transfer some form of risk from one party to another and can involve varying amounts of leverage. Included in this broad definition would be: Futures, Options (including caps and floors), Swaps (including CDS and interest rate swaps), Forwards, Floaters and hybrids of the above.

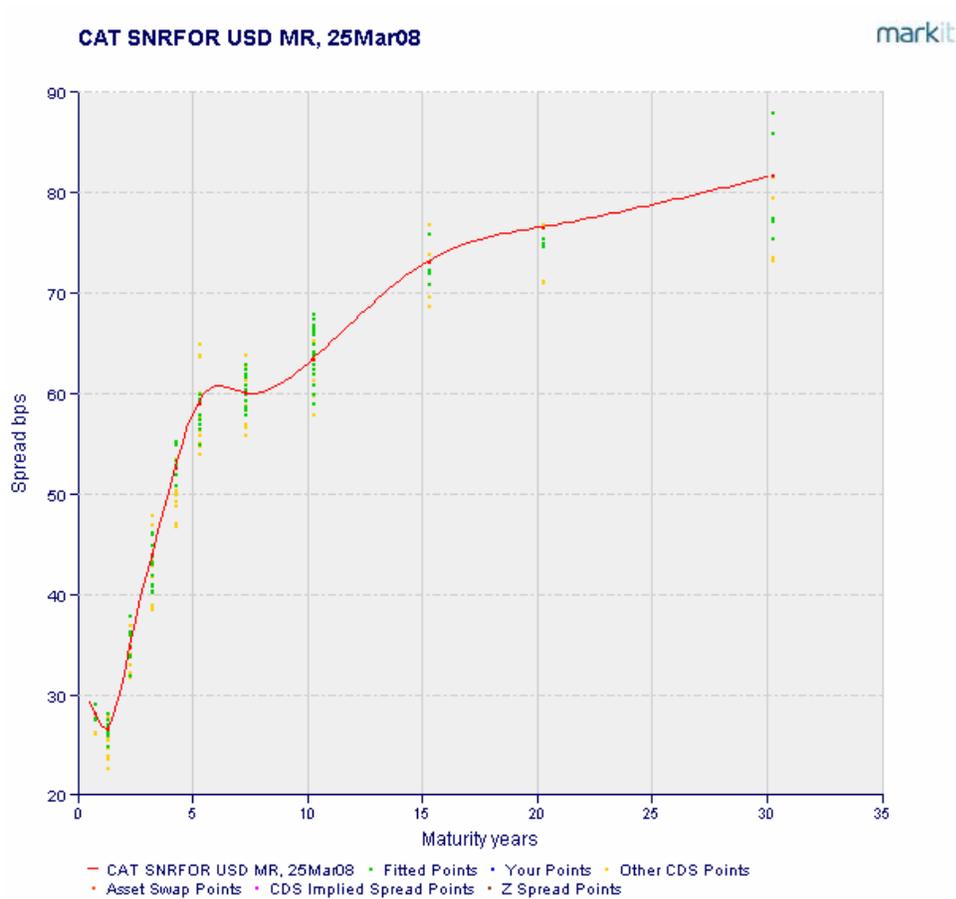
CFTC – Commodities and Futures Trading Commission – U.S. regulator charged with oversight of commodities and financial futures and options contracts.

Credit Event – This is the event triggering settlement under the CDS contract. Since the original ISDA Agreement in 1999, 6 categories of credit events have been defined:

- **Bankruptcy** – Although the ISDA 2003 Definitions refer to different ways a bankruptcy can occur, the experience has been that the reference entity has filed for relief under bankruptcy law (or equivalent law).
- **Failure to pay** - the reference entity fails to make interest or principal payments when due, after the grace period expires (if grace period is applicable in the trading documentation).
- **Debt restructuring** - the configuration of debt obligations is changed in such a way that the credit holder is unfavorably affected (maturity extended and/or coupon reduced).
- **Obligation default, obligation acceleration, and repudiation/moratorium** – the 2003 ISDA definitions define these three credit events, but they are very rare.

Credit Spread (Cash) – It is the spread to be added to a benchmark rate to compensate an investor for taking credit risk on a particular instrument. In general the benchmark rate is LIBOR.

Credit Spread Curve – The curve display of the credit spread for a unique reference entity/tier/currency/docclause combination over different tenors. Find below a picture of a Caterpillar credit spread curve from Markit’s CDS pricing service:



Restructuring Clause - Defines the credit events that trigger settlement. This is a key element as CDS spreads are higher for contracts with a broader range of credit events (i.e. more events can trigger the payment to the Protection Buyer, therefore the CDS protection is more valuable), and/or fewer restrictions on the Protection Buyer's settlement obligations (i.e. the more flexibility a Protection Buyer has to deliver a bond, the more valuable the CDS contract). Variations include:

CR – Complete Restructuring (a.k.a. full restructuring, **FR**): Any restructuring event qualifies as a credit event and any bond of maturity up to 30 years is deliverable. This is standard for EM and MCDX trades. It was the standard for IG and HY trades but was replaced by MR in 2001.

MR – Modified Restructuring: Restructuring agreements count as a credit event, but the deliverable obligation against the contract has to be limited to those with a maturity of 30 months or less after the termination date of the CDS contract or the reference obligation that is restructured (regardless of maturity). Generally used for IG trades in the US. This doc-clause started in 2001.

MM – “Modified-Modified” restructuring: In 2003, market participants in Europe found the 30 months limit on deliverable bonds to be too restrictive, so MM was introduced with a maturity limit of 60 months for restructured obligations and 30 months for all other obligations. This is used mostly in Europe.

XR – No Restructuring (a.k.a. **NR**): All restructuring events are excluded as trigger events. This is prevalent in the high yield market.

DTCC – Depository Trust & Clearing Corporation provides clearance, settlement and information services for equities, corporate and municipal bonds, government and mortgage-backed securities and over-the-counter credit derivatives. The credit default swaps matching and confirmation service provides automated, real-time matching and confirmation for standard single reference entity credit default swaps (including North American, European, Asian corporate credits, and sovereign credits), as well as credit default swap indices. The automated system currently supports new trades, full terminations, partial terminations and assignments (i.e., the assignment of the contract from one party to another, also called novation) through a fully automated environment.

Entity Pair – Refers to the combinations of reference entities and reference obligations, which are described by the full 9 digit Markit RED™ code. One reference obligation may have more than one Entity Pair. Entity Pairs also identify the Tier (see below). For each Tier, there is a ‘Preferred’ Entity Pair, defined as the most liquid. Here is an example:

Pair CLIP	Entity Name	Ticker	Entity CLIP	Preferred	Tier	Jurisdiction	Role	Record	Maturity	ISIN	CUSIP
15DA35AD9	Caterpillar Inc.	CAT	15DA35		SNRFDR	Delaware (US)	Issuer	19Jun07	01May31	US149123BJ96	149123BJ9
15DA35AC1	Caterpillar Inc.	CAT	15DA35	Y	SNRFDR	Delaware (US)	Issuer	19Jun07	15Aug16	US149123BM26	149123BM2
15DA35AA5	Caterpillar Inc.	CAT	15DA35		SNRFDR	Delaware (US)	Issuer	19Jun07	01May11	US149123BH31	149123BH3
15DA35AB3	Caterpillar Inc.	CAT	15DA35		SNRFDR	Delaware (US)	Issuer	19Jun07	15Sep09	US149123BG57	149123BG5

ISDA – The International Swaps and Derivatives Association is the global trade association representing participants in the privately negotiated derivatives industry, a business covering swaps and options across all asset classes (interest rate, currency, commodity and energy, credit and equity). ISDA was chartered in 1985, and today numbers over 670 member institutions from 50 countries on six continents. The membership includes associated service providers and consultants.

LCDS – A CDS contract where the underlying is a syndicated loan, senior secured in the capital structure.

LIBOR – London Interbank Offered Rate – An interest rate paid by high-rated borrowers, such as international banks. Somewhat of an international equivalent to the US Fed Funds rate, it is used as a reference rate for many transactions, including credit derivatives.

Long Credit – Refers to the position of the CDS Protection Seller who is exposed to the credit risk and who receives periodic payments from the Protection Buyer.

Markit CDX – Markit credit indexes focused on North America. High Grade, High Yield, and Emerging Markets are the three major sub-indexes.

Markit iTraxx – European and Asian CDS indices owned by Markit. iTraxx represents the most liquid part of the CDS market for Asia and Europe.

Markit RED™ – Markit's Reference Entity Database of approximately 3000 reference entities forming the basis of the RED code identifiers for CDS.



MCDS – A CDS contract where the underlying is a municipality, and the reference obligation is either a Revenue Liability, a General Obligation Liability, a Moral Obligation Liability or a Full Faith and Credit Liability.

Notional Principal – The quantity of the underlying asset or benchmark to which the derivative contract applies.

Present Value – An asset valuation method, which maps future cash flows from an asset and discounts the future cash flows by an appropriate discount rate.

Protection Buyer – This is the party to a CDS contract which pays a premium for protection in case a credit event occurs. The Protection Buyer can also speculate that the cost of protection will rise and profit from selling the CDS contract at a higher price than was paid.

Protection Seller – This is the party to a CDS contract receiving the premium payments, and who is exposed to the credit risk of the reference entity.

Quorum – Quorum represents a 75% majority of members when making decisions in regards to a Markit credit index.

Recovery rate – Estimate of percentage of par value bondholders will receive after a credit event. CDS for investment grade bonds generally assume a 40% recovery rate. However, CDS for lower rated bonds are more dynamic and often reflect lower estimated recovery rates.

RED Code - Industry standard identifier for CDS contracts. They are 9 character CUSIP-like codes where the first 6 characters refer to the reference entity, and the last 3 refer to the reference obligation. RED codes are used by DTCC to confirm CDS trades on the DTCC Deriv/SERV platform.

Reference Entity – Refers to the legal entity that is the subject of a CDS contract. The reference entity can be the issuer or the guarantor of the debt.

Reference Obligation – The specific bond (debt obligation) that is referenced in the CDS contract

Restructuring Credit Event – One of the types of credit events (defined above). It is a “soft” event, in which the loss to the owner of the reference obligation is not obvious. In addition, restructuring often retains a complex maturity structure, so that debt of different maturities may remain outstanding with significant differences in value.

Settlement – What occurs in the case of a credit event. Settlement can be cash or physical delivery, depending on the terms of the contract. CDS have most often specified physical delivery, but in the last three years, auctions have been held and cash settlement is becoming the standard.



Short Credit – This is the credit risk position of the Protection Buyer, who sold the credit risk of a bond to the Protection Seller.

Spread – A generic term describing the difference, generally in basis points, between the levels of two reference values. For example, it can be a dealer's bid-ask spread or a yield spread (the difference between yields on different debt instruments).

Swap – An agreement between two parties to exchange future cash flows.

Tenor – Refers to the duration of a Credit Default Swap contract. Most CDS have been written with 5 years terms, and this remains the most liquid and frequently quoted part of the credit curve; however other tenors, such as 10 years, are becoming more common.

Tier – Refers to one of four levels of debt in the capital structure of the reference entities. Each tier represents a different level of seniority or preference in liquidation or bankruptcy. There will generally be different levels for CDS protection for each of the tiers.

- Senior
- Subordinated
- Junior
- Preferred