LCDX

The New North American Loan-Only
Credit Default Swap Index

21st May 2007

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LCDX: First LCDS Index Supported by all Major Dealers

- Supported by Key Market Participants
  - Licensed by fourteen dealers
  - ISDA
  - CDS IndexCo

- Markit, in line with all other CDS IndexCo indices has been mandated as the Licensing, Administration, Marketing and Calculation Agent for LCDX
  - Index rolls managed by Markit
  - Official LCDX Daily Closing Price published on LCDX webpage
  - Trade documentation published for public on Markit website
  - Managing process for credit events and LCDS cancellation
  - Reference Obligations selected from the RED for Loans/Syndicated Secured List which is maintained by Markit

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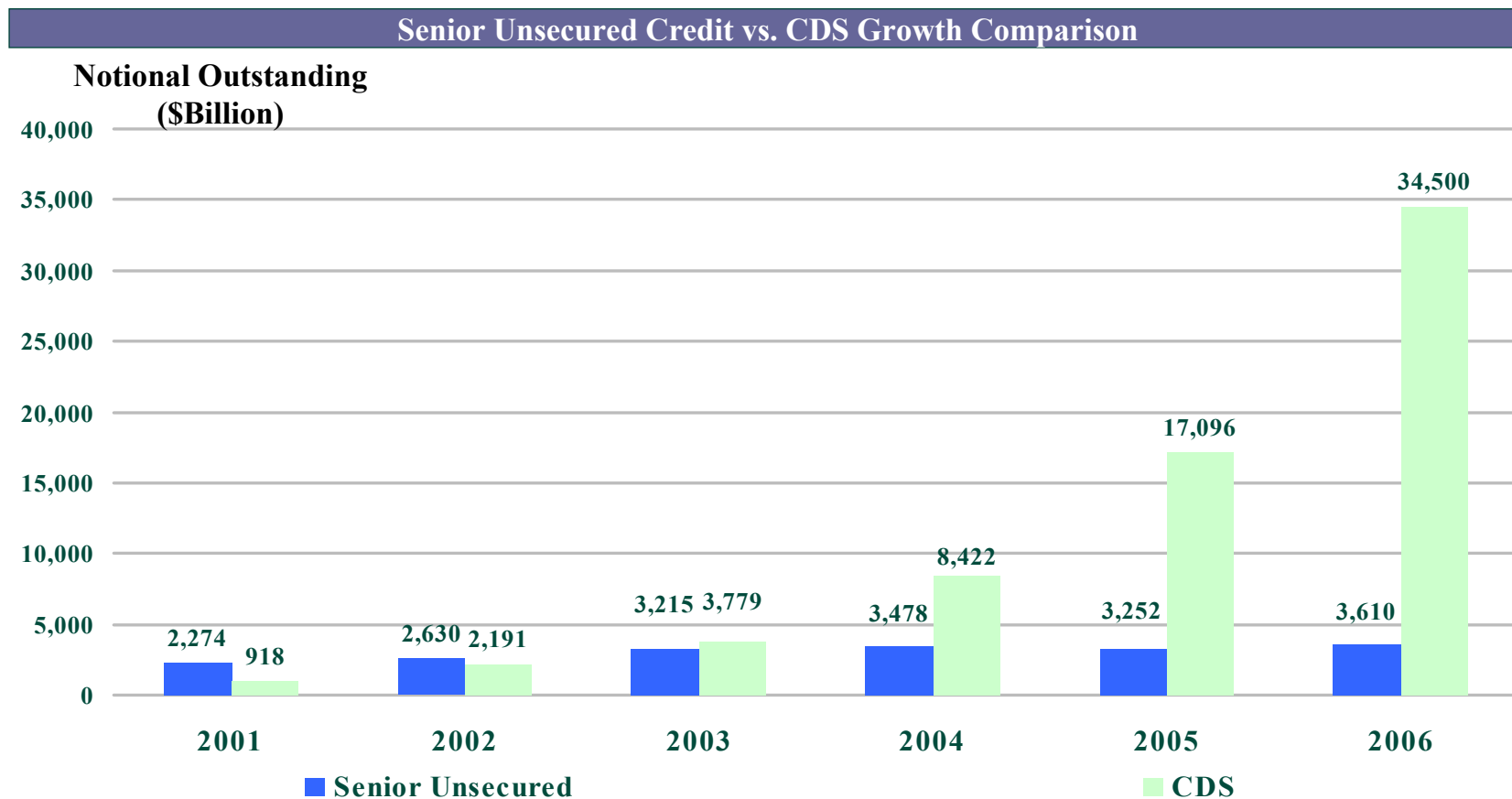
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- CDS IndexCo
  - Owns and maintains the CDX, ABX and CMBX families of credit default swap (CDS) indices
  - Liquidity commitments on CDX from over 20 dealer institutions across the 3 products
  - Formed from a merger of the major CDS indices (iBoxx and Trac-X) in April 2004 to form CDX in North America
  - Between $25 and $50 billion of CDX notional volume traded daily
  - Introduction of second generation products such as index tranches and index options

- Broad market acceptance and effective management of the indices has resulted in increased:
  - Liquidity
  - Transparency
  - Market consensus (portfolio names, correlation calculations)
  - Standardization

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Market Overview

Product Context

Senior Unsecured Credit vs. CDS Growth Comparison

Notional Outstanding ($Billion)

Senior Unsecured / CDS data:

- 2001: 2,274 / 918
- 2002: 2,630 / 2,191
- 2003: 3,215 / 3,779
- 2004: 3,478 / 8,422
- 2005: 3,252 / 17,096
- 2006: 3,610 / 34,500

■ Senior Unsecured   ■ CDS

Source: Lehman Brothers Credit component of the Global Aggregate Index, ISDA.
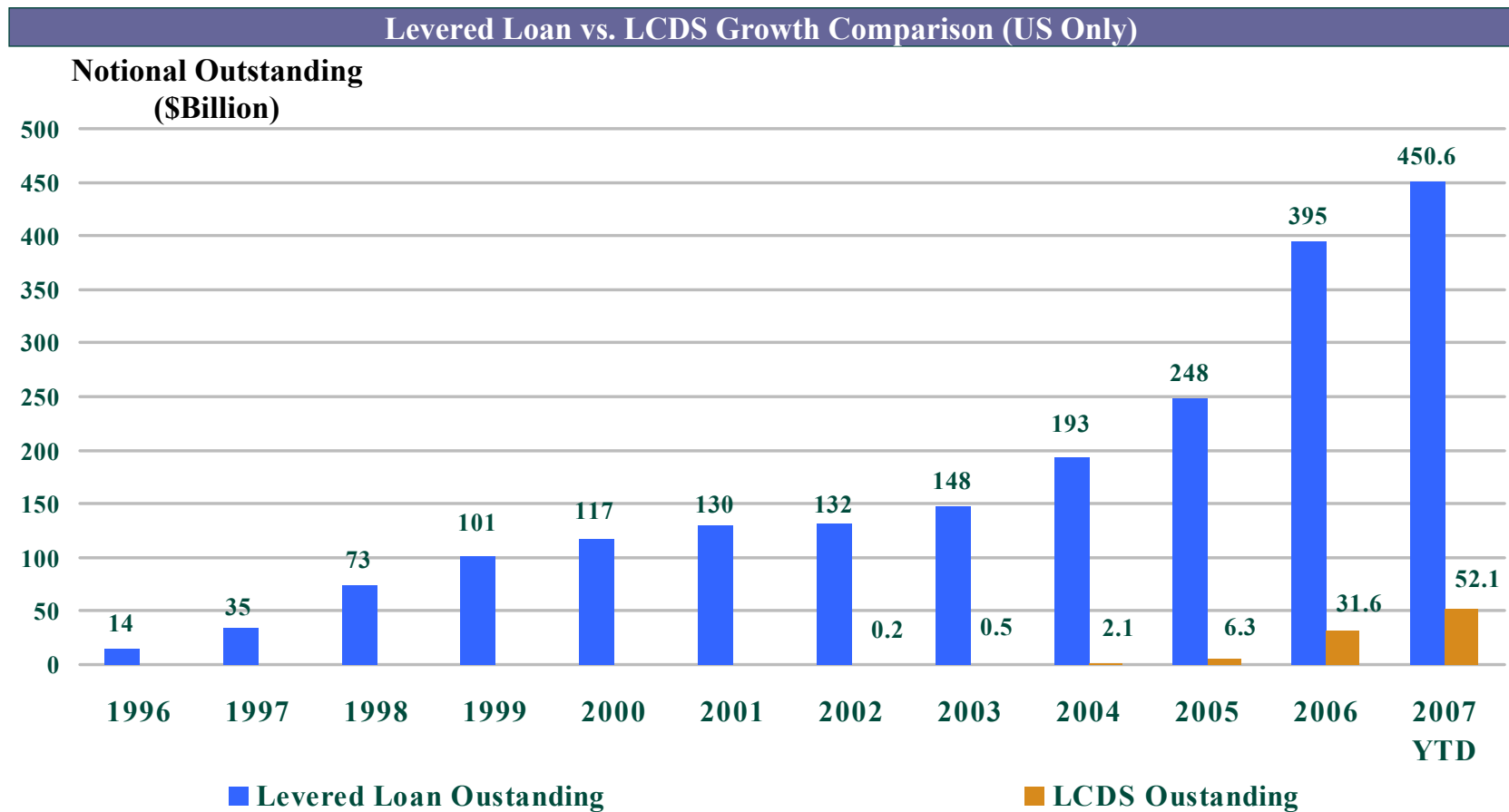*The historical performance shown is for illustrative purposes only and is not meant to forecast, imply or guarantee future performance.*

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Market Overview

Product Context

Levered Loan vs. LCDS Growth Comparison (US Only)

Notional Outstanding ($Billion)

Bar chart data:

Year	Levered Loan Outstanding	LCDS Outstanding
1996	14	
1997	35	
1998	73	
1999	101	
2000	117	
2001	130	
2002	132	0.2
2003	148	0.5
2004	193	2.1
2005	248	6.3
2006	395	31.6
2007 YTD	450.6	52.1

■ Levered Loan Oustanding   ■ LCDS Oustanding

Source: S&P / Loan Syndications and Trading Association (LSTA) Levered Loan Index, Lehman Brothers. 2007 YTD up to 3/31/07.
The historical performance shown is for illustrative purposes only and is not meant to forecast, imply or guarantee future performance.
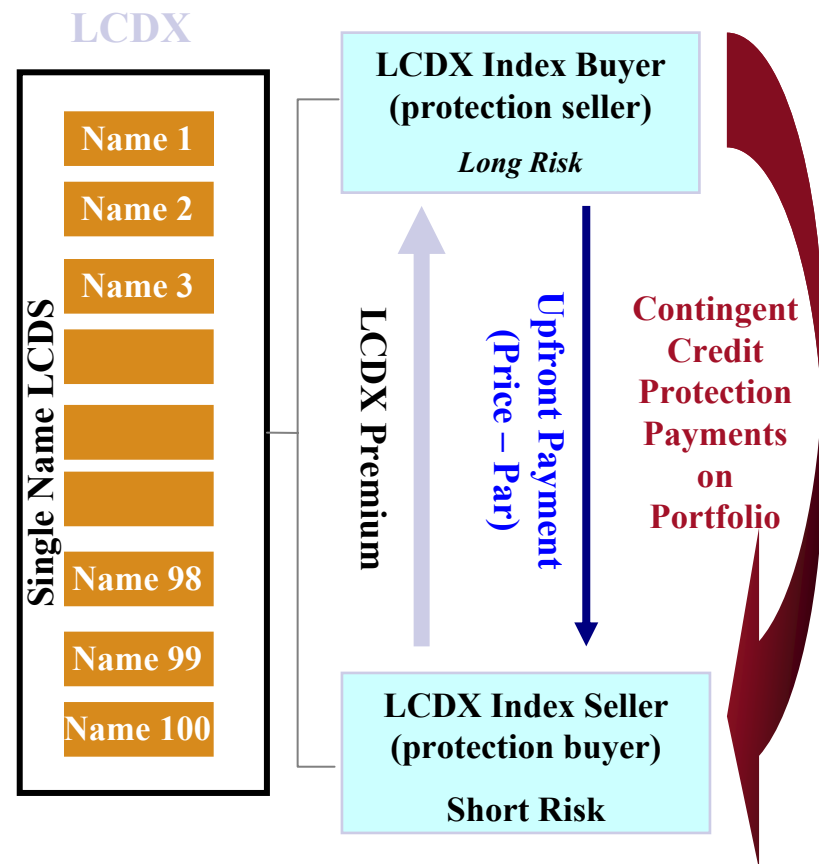
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LCDX Basics

What is the LCDX Index?

- The LCDX Index is a portfolio CDS product composed of 100 Loan Only CDS referencing Syndicated Secured 1st Lien Loans

  - Traded on price terms with fixed spread, like HY CDX
  - Coupon fixed at 120 bps
  - Initial maturity set to June 20th, 2012
  - Each of the 100 LCDS will initially be weighted equally at 1%
  - Subject to cash settlement in the event of default
  - Will trade on a factor if a credit is removed
  - Roll dates April 3rd and October 3rd

- All names in the LCDX must be on the Syndicated Secured List published by Markit Group and be 1st Lien in priority (see Markit website)

LCDX

Single Name LCDS

Name 1
Name 2
Name 3
Name 98
Name 99
Name 100

LCDX Index Buyer (protection seller)
Long Risk

LCDX Premium

Upfront Payment (Price – Par)

Contingent Credit Protection Payments on Portfolio

LCDX Index Seller (protection buyer)
Short Risk

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LCDX Cash Flow Example

LCDX Cash Flow on Default (shown on right)

- The LCDX Index Buyer will pay the LCDX Index Seller the protection payment (1-Recovery) for the defaulted credit
- The LCDX Index Seller will pay the LCDX Index Buyer the accrued interest on the LCDS of the defaulted credit
- The LCDS of the defaulted credit will be removed from the LCDX, which will now trade with one less name and a factored down notional, resulting in a lower coupon payment (fixed spread x notional) defaulted

LCDX Cash Flow on Name Removal

- If at the end of the 30 business days after a loan is paid down or its security falls away, if no replacement syndicated secured loan has been found, the LCDS will be cancelled
- LCDX Index Seller will pay accrued interest to the LCDX Index Buyer
- The LCDX will now trade with a factored down notional, resulting in a lower coupon payment (fixed spread x notional)
- There is no protection payment associated with a cancelled LCDS contract in single name LCDS or the LCDX
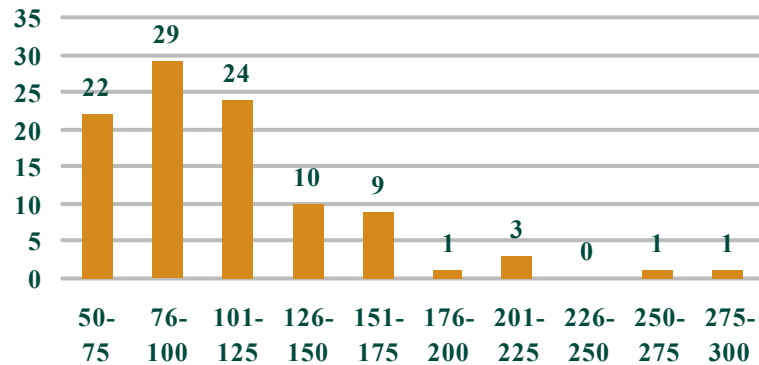
One Default at T = 1.3 years

Notional	$10,000,000
Opening Price	$100.50
Fixed Spread	120.0
Market Spread	107.5
Default Credit 1	Year 1.3
Recovery Credit 1	87.00%
Spread on Defaulted Name	120

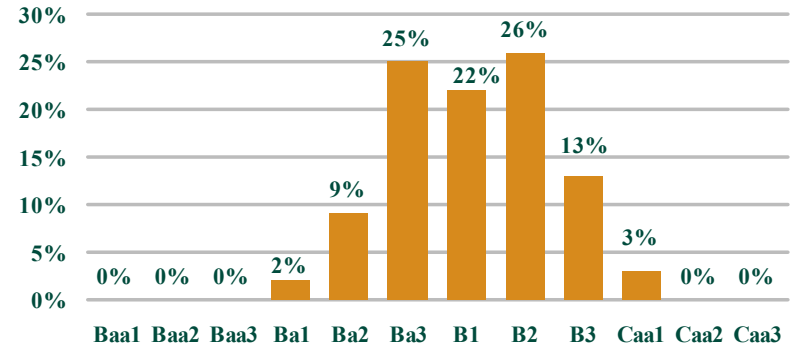| Date	Cash Flow Calculation	Protection Seller	Protection Buyer	
	Buy 10.0 mm LCDX at $100.50 to open			
0.0	(100.50 - 100)% x 10.0 mm	$ (50,000)	$ 50,000	upfront
1.0	1.0 x 120 bps x 10.0 mm	$ 120,000	$ (120,000)	premium
1.3	(1.3 - 1) x 120 bps x 100 k	$ 360	$ (360)	premium
1.3	(1 - R1) x 0.01 x 10.0 mm	$ (13,000)	$ 13,000	prot pmts
2.0	1.0 x 120 bps x 9.9 mm	$ 118,800	$ (118,800)	premium
3.0	1.0 x 120 bps x 9.9 mm	$ 118,800	$ (118,800)	premium
4.0	1.0 x 120 bps x 9.9 mm	$ 118,800	$ (118,800)	premium
5.0	1.0 x 120 bps x 9.9 mm	$ 118,800	$ (118,800)	premium

Note that CDX Premiums are actually paid quarterly, and not annually as is shown in this example. For illustrative purposes only.
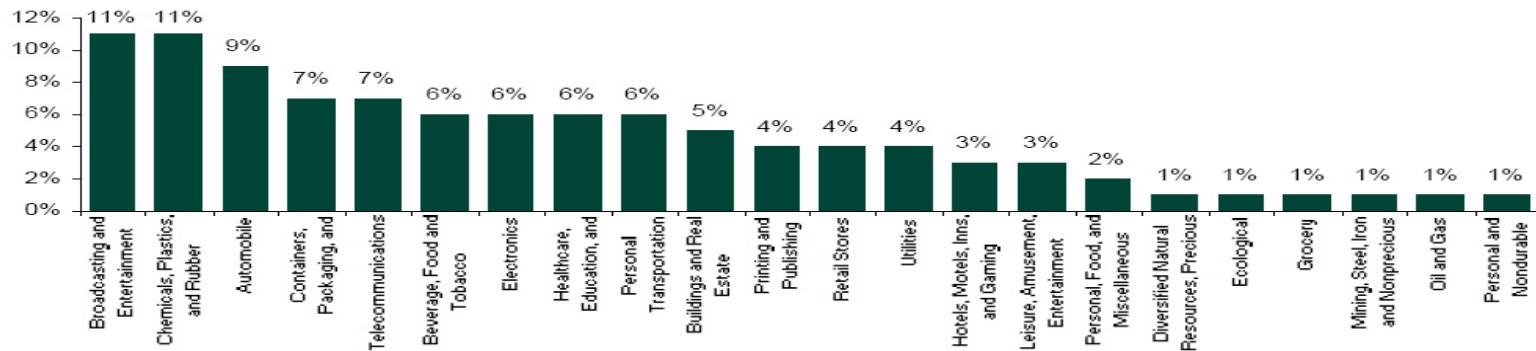
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Constituents from the LCDX Portfolio

LCDX Spread Histogram*

Values by bin:
- 50-75: 22
- 76-100: 29
- 101-125: 24
- 126-150: 10
- 151-175: 9
- 176-200: 1
- 201-225: 3
- 226-250: 0
- 250-275: 1
- 275-300: 1

LCDX Portfolio Distribution by Probability of Default Rating (PDR)

Values:
- Baa1: 0%
- Baa2: 0%
- Baa3: 0%
- Ba1: 2%
- Ba2: 9%
- Ba3: 25%
- B1: 22%
- B2: 26%
- B3: 13%
- Caa1: 3%
- Caa2: 0%
- Caa3: 0%

LCDX Industry Breakdown**

Values:
- Broadcasting and Entertainment: 11%
- Chemicals, Plastics, and Rubber: 11%
- Automobile: 9%
- Containers, Packaging, and: 7%
- Telecommunications: 7%
- Beverage, Food and Tobacco: 6%
- Electronics: 6%
- Healthcare, Education, and: 6%
- Personal Transportation: 6%
- Buildings and Real Estate: 5%
- Printing and Publishing: 4%
- Retail Stores: 4%
- Utilities: 4%
- Hotels, Motels, Inns, and Gaming: 3%
- Leisure, Amusement, Entertainment: 3%
- Personal, Food, and Miscellaneous: 2%
- Diversified Natural Resources, Precious: 1%
- Ecological: 1%
- Grocery: 1%
- Mining, Steel, Iron and Nonprecious: 1%
- Oil and Gas: 1%
- Personal and Nondurable: 1%

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Participants

- **Main Users of LCDX –**
  - Dealer Capital Markets
    - Hedge Residual New Issue and Forward Calendar Risk
    - Strong pipeline of committed issues – close to $130bn

  - Negative Basis
    - Average Negative Basis to Cash close to 80 bps
    - Index provides liquid tool to hedge a large diverse cash loan portfolio

  - Hedge Funds
    - Robust flow of debt for senior secured market – LCDX will be a key hedging tool for this flow
    - Easy access to market previously difficult to enter due to inability to short as well as documentation and new issue allocation issues
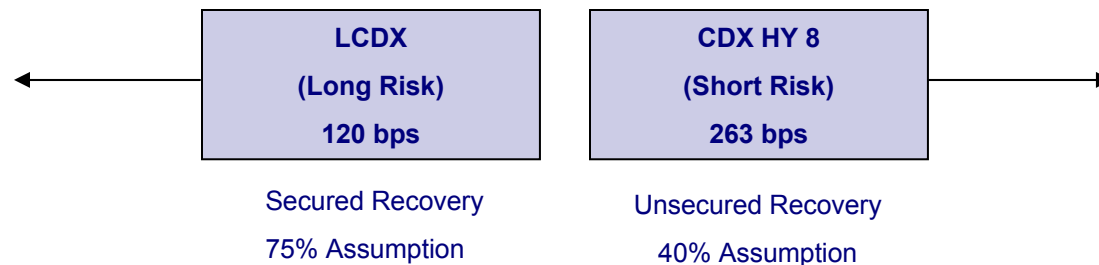
  - CLO Warehouse
    - Sub-prime issues have caused BBB CLO liabilities to widen from 140 to 250 bps, making it difficult to place BBB CLO Mezz Risk

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Trading Strategies

- ## Macro/Directional
  - Leverage up
  - LCDX can be used as funding for shorts in other parts of capital structure
    - Index vs single name LCDS and CDS
    - Index vs index eg HY8. 42% overlap in credits between LCDX and CDX HY 8
      - Further 23 names in LCDX not in CDX HY trade unsecured

- ## Example

LCDX	CDX HY 8
(Long Risk)	(Short Risk)
120 bps	263 bps

Secured Recovery

75% Assumption

Unsecured Recovery

40% Assumption

- ## Secured Spread vs Unsecured Spread = 45%
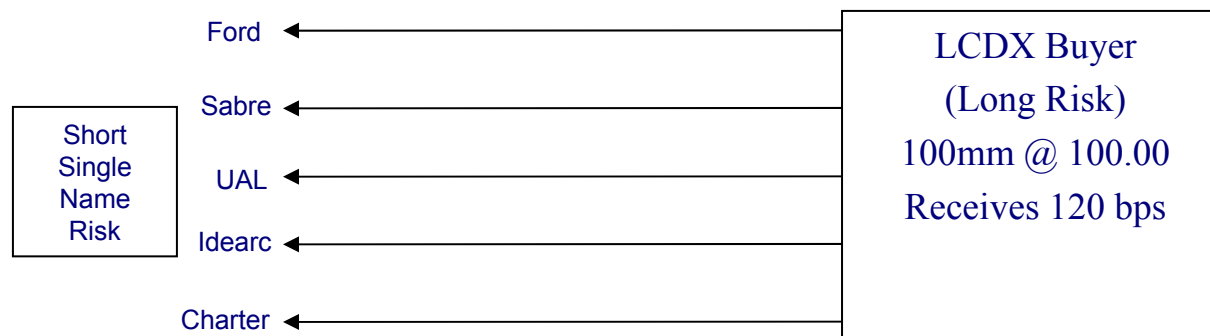
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Trading Strategies

- ## Outright Shorts
  - Increased leverage through recent wave of LBO funding
  - View that recovery assumption in 70's is high given 25% of index is covenant lite

- ## Liquidity and Notionals
  - 50 to 100mm markets expected
  - Injection of liquidity into market will increase price discovery on single names
  - Index vs LCDS single names becomes more attractive as liquidity in single names ramps up

- ## Example

Short Single Name Risk	Ford ←	←	LCDX Buyer (Long Risk) 100mm @ 100.00 Receives 120 bps

Ford ←

Sabre ←

Short Single Name Risk

UAL ←

Idearc ←

Charter ←

LCDX Buyer
(Long Risk)
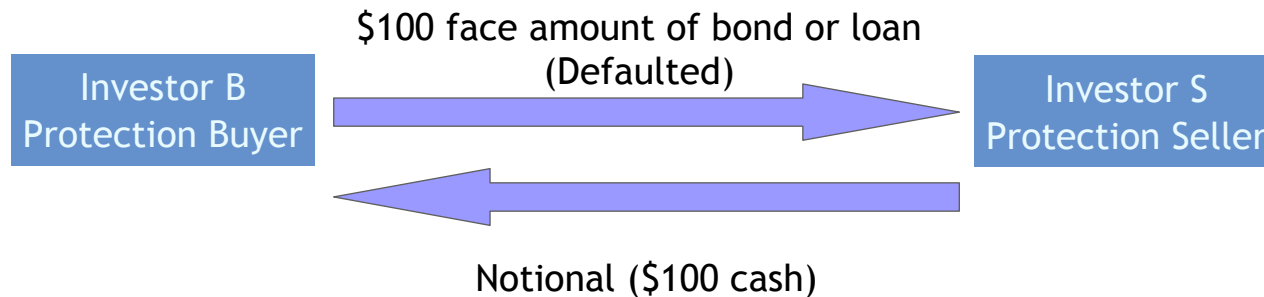100mm @ 100.00
Receives 120 bps

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Credit Events

- The two main credit events are:

    - Filing for bankruptcy
    - Failure to make a principal or coupon payment on any bond or loan

- If there is a credit event at the company, all CDS can be triggered
- CDS and LCDS traditionally have settled by physical settlement

    - CDS buyer delivers a bond or loan issued by the reference entity to the seller
    - Seller delivers the notional value of the CDS contract to the buyer in cash
    - Thus, the protection buyer earns $100 less the amount it costs to buy a bond or loan which is delivered to the seller. This amount is known as the recovery rate

$100 face amount of bond or loan
(Defaulted)

| Investor B Protection Buyer | → | Investor S Protection Seller |

Notional ($100 cash)

Source: JPMorgan

- However, the growth of the CDS market has made physical settlement less attractive, and settlement is expected to be via <u>credit event auctions</u> for credits that are part of LCDX

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Credit Event Auctions

- Motivation to seek an alternative settlement mechanism
  - CDS for liquid credits typically outstrip outstanding bonds
    - Scarcity of bonds to settle trades after credit event
    - Desire to avoid replicating issue in loan space
  - Index investors typically don't hold the cash underlying and have small notional exposure to each credit
    - Cash settlement desirable to avoid having to seek out and buy underlying obligation to deliver
    - Inefficient to settle trades where exposure to a given credit is small via physical settlement

- The International Swaps and Derivatives Association (ISDA), working with dealers and investors, have created an auction protocol to facilitate the settlement of CDS contracts
  - Originated from a fixings process designed by dealers, Markit and Creditex to fix iTraxx prices in Europe
  - Process developed further to be loosely based on a Dutch auction methodology to allow bond/loan trades in auction to tighten price link between auction result and underlying
  - To maximize transparency, all inputs and outputs are published at www.creditfixings.com
  - Auction has been reviewed and tweaked to account for possibility of loans trading above par post-default

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Credit Event Auctions

- The auction allows investors to:
  - Determine a Recovery Rate through an transparent auction process
  - Cash or physically settle LCDS contracts using this rate – investors have option to pick what suits them
    - Cash settlement results in protection seller compensating protection buyer par minus recovery

- Single name LCDS, CDS, CDX, CDX tranches, bespoke portfolios, and other contracts are expected to be settled through similar auction processes
  - Single name LCDS will settle at same price as LCDX

- To date, seven auctions have been run successfully for high-profile defaults – methodology now established in the unsecured market
  - Delphi Corporation
  - Collins and Aikman Products Co.
  - Dana Corporation
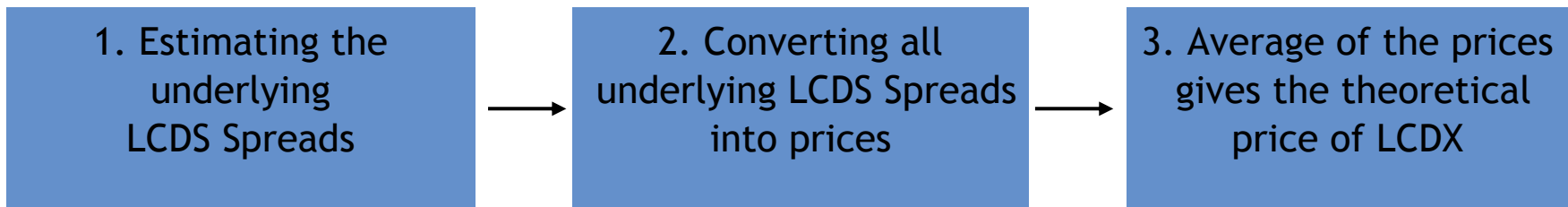 - Calpine Corporation

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LCDS - Cancellation

- LCDS contracts can be canceled if there are no loans outstanding to deliver into the contract
  - Cancellation feature introduced in recognition of loan repayment without issuing new loans being more common than for bonds
    - Would leave market without deliverable obligations
    - Credits moving from high-yield to investment grade typically close out loans without replacing them

- For the LCDX, a cancellation can be viewed as a default with a 100% recovery rate
  - The cancelable feature reduces the mark to market value of an LCDS/LCDX contract
    - Mark-to-market value of LCDS contract depends on time to maturity
    - Time to maturity of LCDS contract may be shorter than agreed contract if loans are repaid

- Any LCDX credits that repay loans without issuing new ones are removed from the index
  - Notional and number of names factors down
    - eg a $10m trade with 100 names becomes a $9.9m trade with 99 names. Coupon amortizes in line

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LCDX Theoretical Value

- Theoretical price of LCDX is the NAV of the underlying LCDS
- It can be calculated using a three step procedure as shown:

1. Estimating the underlying LCDS Spreads	→	2. Converting all underlying LCDS Spreads into prices	→	3. Average of the prices gives the theoretical price of LCDX

- Price for a given LCDX constituent can be estimated via
  - 100 + ((Index Coupon – Constituent Spread) * Duration)

- Similar to CDX, LCDX will not trade exactly at theoretical value
  - Supply and demand for LCDX will introduce a basis away from theoretical value
  - As LCDS credits become more and more liquid, basis may shrink

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Reference Obligations

- Reference Obligations for LCDS and LCDX contracts are listed on the Markit Syndicated Secured List (SSL)
  - Available on view basis to the public for free
  - XML Feed available for subscribers
  - No need to specify reference obligation in LCDS/LCDX confirms – refer to SSL

Reference Entity	Markit Ticker	Poll As Of Date	Poll Status	Responding Dealers	Number of Tranches				Feedback
					First	Second	Third	Failed	
ACCO Brands Corporation	ACCO	28 Sep 2006	C	6	5	0	0	0	✉
ACCURIDE CORPORATION	ACURID	28 Nov 2006	C	8	3	0	0	0	✉
ADVANCED MICRO DEVICES, INC.	AMD	10 Nov 2006	C	7	1	0	0	0	✉
Advanstar Communications Inc.	ADVANS	26 Oct 2006	C	2	0	0	0	2	✉
Affiliated Computer Services, Inc.	ACS	8 Sep 2006	C	8	4	0	0	0	✉
Aleris International, Inc.	ARS	8 May 2007	C	10	3	0	0	0	✉
Allegheny Energy Supply Company, LLC	AYE-EnergySupp	26 Oct 2006	C	4	2	0	0	0	✉
Alliance Imaging, Inc.	AIQ	28 Sep 2006	C	7	2	0	0	0	✉

- Markit Syndicated Secured List identifies -
  - Designated Priority of Loan (eg 1st Lien) based on dealer polling
  - Issuers and guarantors of loans extracted from credit agreements
  - Key static information to identify loan

- The Syndicated Secured List is a part of Markit's RED Loans
  - Legal verification of relationship between issuers, guarantors and loans from source legal documentation
  - RED ID's available for issuers, and issuer/obligation pairs
    - RED ID's will set standard for identification of LCDS trades
    - Will facilitate matching of LCDS trades on DTCC
  - RED ID also available for the index for settling on DTCC : 5F199GAA5

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Appendix

- LCDX Pricing, Confirmation, Standard Terms, Annexes and other Information
  - www.markit.com

- Credit Event Auctions
  - www.creditfixings.com

- Previous Credit Event Protocols
  - www.isda.org

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