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Credit Derivatives 101

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Brain Teaser

There are 25 horses, each of which runs at a unique constant speed. With a 5-lane racing track, what is the minimum number of races you would need to find the 3 fastest horses in the set?

Solution: Brain Teaser

Answer: 7

A natural first step is to divide the horses into groups of 5, which yields the order within each group (n= 5). The last two from each is automatically eliminated. We can assume 1, 6, 11, 16, and 21 are fastest.

It can also be inferred that if the winners from any of the groups place fourth or the fifth in the full set of 25, they are eliminated. Similarly, if they place third, none of the four other horses can rank. If they place second, then one horse from the group may rank (and so on for first place).

Upon racing the five winners of each group, the three highest can be established (n=6). We can assume (in order) 1, 6, and 11, establishing the three highest.

However, per our earlier assumption, we need to confirm these results by racing horses, 2, 3, 6, 7, and 11 to finally verify which can be second or third (n=7).

Credit Default Swaps

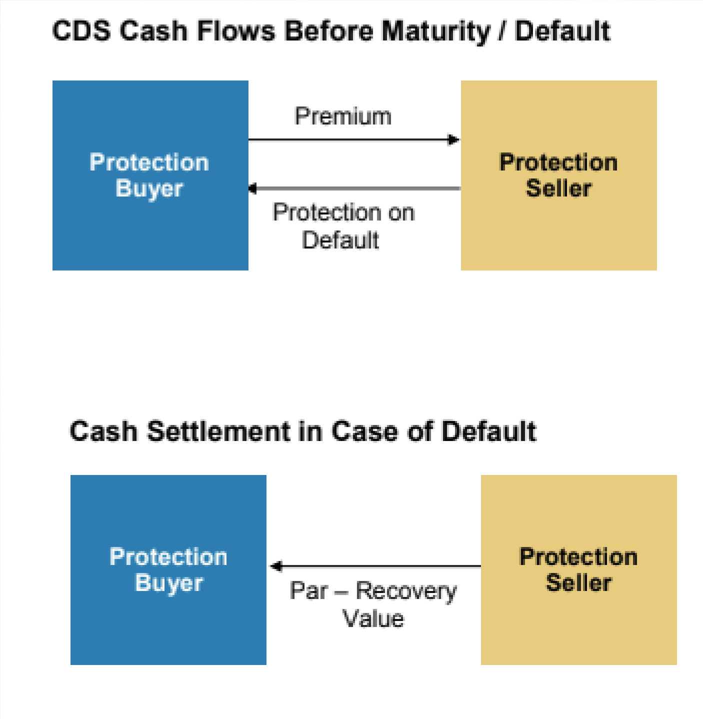
What is a CDS?

- Credit default swaps ("CDS") are a form of credit derivatives that can hedge an investor's exposure to the credit risk in a bond

- A CDS transaction involves two basic parties, each taking a separate view on risk:
  - **Protection Seller** – sells the swap, takes a bullish view of credit risk
  - **Protection Buyer** - buys the swap, takes a bearish view of credit risk

- CDS contracts can be used in a variety of trades, in addition to hedging bonds:
  - **Negative basis trade –** if CDS protection is cheap, and the corresponding bond price is low, then one can buy the bond and buy CDS together
  - **Index trading –** CDS contracts can be grouped into indices (CDX.IG, CDX.HY, iTraxx Crossover, etc.) and used as liquid expressions of credit risk

Basic CDS Transaction



CDS Triggers

- There are two basic types of credit events – ***hard*** and ***soft*** credit events:
  - **Hard** credit events: Automatically triggers CDS contracts (incl. bankruptcy, failure to pay, repudiation/moratorium, obligation acceleration, and obligation default)
  - **Soft** credit events: No automatic trigger of CDS (incl. "restructurings")

- Restructurings are a very nebulous trigger, which have proven to be problematic
  - The qualifying requirement for a restructuring credit event is that it must be ***binding on all holders,*** leaving voluntary restructurings as a gray area under the law
  - Two situations in which voluntary restructurings have been in focus are when sovereigns trigger their collective action clauses or when corporates engage in debt exchanges

- The treatment of restructurings has driven several modifications to CDS contracts:
  - **No R:** RX is not treated as a credit event
  - **Old R:** RX is a credit event (like bankruptcy or failure to pay)
  - **Mod-R/Mod-Mod R:** RX is a credit event (& deliverable bonds carry maturity limitations)

- Chapter 11 already covers the bankruptcy trigger for standard North American CDS
- Basel rules and the lack of an equivalent to Chapter 11 keep RX relevant in Europe

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CDS Auctions

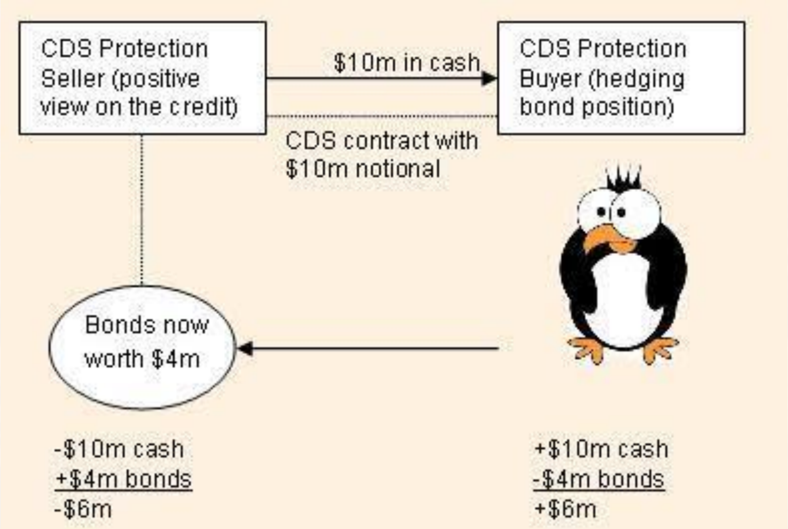
Physical vs. Cash Settlement

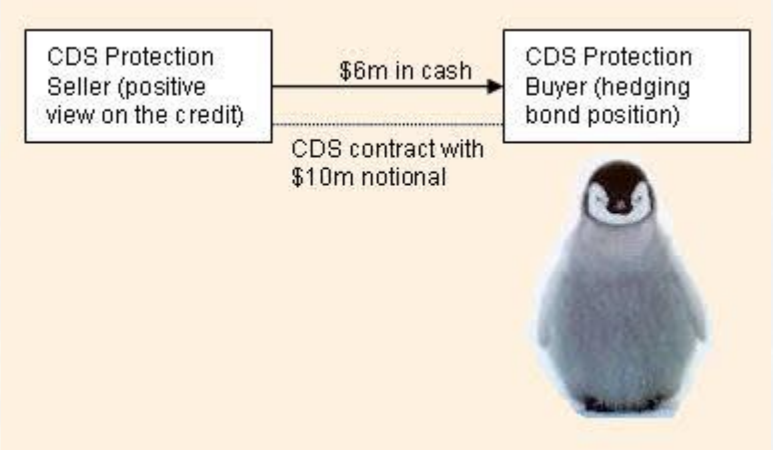
- There are two basic approaches to settling derivative contracts:
  - ***Physically*** settled – involves a transfer of the physical, underlying good (think: oil futures)
  - ***Cash*** settled – involves a transfer of cash between both parties (think: Treasury futures)

- Prior to the mid-2000s, CDS contracts were ***physically*** settled derivatives:
  - When CDS payouts were being determined, the CDS buyer would have to enter the market and physically purchase the underlying bond and transfer it to the CDS seller (say price, ***P***)
  - The CDS seller would, in return, pay out the net difference between P and par (i.e., ***100-P***)

- The rapid growth of CDS markets as independent of the physical cash bond market necessitated a shift towards cash settlement to avoid market imbalances:
  - In Delphi's restructuring, the outstanding volume of CDS contracts was a significant magnitude higher than the outstanding supply of deliverable bonds on the market
  - As a result, protection buyers bid up the prices of these bonds rapidly, creating a short squeeze in markets, as buyers needed to obtain the physical bonds to settle their positions

Physical vs. Cash Settlement





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Auction Structure

- A CDS auction is divided into two phases, each with a separate purpose:
  - Phase I – Establish an Initial Market Midpoint ("price") and Net Open Interest ("quantity + direction") from the bids submitted by market participants
  - Phase II – Establish an auction recovery price for CDS contracts to settle at

- **Phase I –** Establishes net open interest and an initial market midpoint
  - First dealers submit bids at a pre-specified spread and quantity into the auction
  - Bids and offers are then arranged with crossed markets being eliminated
  - The top half of the remaining bids is used to calculate the Initial Market Midpoint
  - Dealers' physical settlement requests (quantity + direction) are used to establish the NOI

- **Phase II –** Clears the net open interest by bidding to a final recovery price
  - Dealers' bids from the first round may be carried forward, however, some dealers may opt to submit additional bids into the market (known as "limit orders")
  - The price that clears the remainder of the net open interest is the final recovery price for CDS

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Illustrative Phase 1 – Dynegy

Dealer Initial Markets

Dealer	Bid	Offer	Dealer
Barclays Bank PLC	68.75	70.75	Barclays Bank PLC
BNP Paribas	67.625	69.625	BNP Paribas
Citigroup Global Markets Inc.	70.0	72.0	Citigroup Global Markets Inc.
Credit Suisse International	68.75	70.75	Credit Suisse International
Deutsche Bank AG	68.0	70.0	Deutsche Bank AG
Goldman Sachs & Co.	69.0	71.0	Goldman Sachs & Co.
J.P. Morgan Securities Inc.	68.5	70.5	J.P. Morgan Securities Inc.
Merrill Lynch Pierce, Fenner & Smith	68.5	70.5	Merrill Lynch Pierce, Fenner & Smith
MORGAN STANLEY & CO. LLC	69.5	71.5	MORGAN STANLEY & CO. LLC
Nomura International PLC	68.375	70.375	Nomura International PLC
Société Générale	68.75	70.75	Société Générale
The Royal Bank of Scotland PLC	29.5	31.5	The Royal Bank of Scotland PLC
UBS Securities LLC	68.125	70.125	UBS Securities LLC

Initial Market Midpoint: 69.5

Dealer	Bid	Offer	Dealer
~~Citigroup Global Markets Inc.~~	~~70~~	~~31.5~~	~~The Royal Bank of Scotland~~
MORGAN STANLEY & CO.	69.5	69.625	BNP Paribas
Goldman Sachs & Co.	69	70	Deutsche Bank AG
Société Générale	68.75	70.125	UBS Securities LLC
Credit Suisse International	68.75	70.375	Nomura International PLC
Barclays Bank PLC	68.75	70.5	Bank of America N.A.
J.P. Morgan Securities Inc.	68.5	70.5	J.P. Morgan Securities Inc.
Bank of America N.A.	68.5	70.75	Barclays Bank PLC
Nomura International PLC	68.375	70.75	Credit Suisse International
UBS Securities LLC	68.125	70.75	Société Générale
Deutsche Bank AG	68	71	Goldman Sachs & Co.
BNP Paribas	67.625	71.5	MORGAN STANLEY & CO.
The Royal Bank of Scotland	29.5	72	Citigroup Global Markets Inc.

Illustrative Phase 2 – Dynegy

Physical Settlement Requests

Dealer	Bid/Offer	Size
BNP Paribas	Offer	1.5
Deutsche Bank AG	Offer	40.0
J.P. Morgan Securities Inc.	Offer	0.0
Merrill Lynch Pierce, Fenner & Smith	Offer	2.0
Nomura International PLC	Offer	0.0
Société Générale	Offer	0.0
The Royal Bank of Scotland PLC	Offer	0.0
UBS Securities LLC	Offer	0.0
Barclays Bank PLC	Bid	1.8
Citigroup Global Markets Inc.	Bid	56.204
Credit Suisse International	Bid	4.0
Goldman Sachs & Co.	Bid	8.752
MORGAN STANLEY & CO. LLC	Bid	33.9

Net Open Interest: USD 61.156 million to buy

Sum of Buy Physical Requests	104.656m
Sum of Sell Physical Requests	43.5m
Sum of Physical Request Trades	43.5m
Sum of Limit Order Trades	61.156m

Limit Orders

Dealer	Offer	Size
The Royal Bank of Scotland PLC**	69.5*	5.0
BNP Paribas**	69.625*	5.0
Deutsche Bank AG**	70.0*	5.0
UBS Securities LLC**	70.125*	5.0
Nomura International PLC**	70.375*	5.0
J.P. Morgan Securities Inc.**	70.5*	5.0
Merrill Lynch Pierce, Fenner & Smith**	70.5*	5.0
Credit Suisse International**	70.75*	5.0
Barclays Bank PLC**	70.75*	5.0
Société Générale**	70.75*	5.0
Goldman Sachs & Co.**	71.0*	5.0
Barclays Bank PLC	71.0*	2.0
Deutsche Bank AG	71.25^	~~6.0~~
MORGAN STANLEY & CO. LLC**	71.5	5.0
BNP Paribas	71.5	1.0
Merrill Lynch Pierce, Fenner & Smith	71.625	5.0
Deutsche Bank AG	71.75	5.0
Citigroup Global Markets Inc.**	72.0	5.0
UBS Securities LLC	72.0	4.2
Barclays Bank PLC	72.0	4.0
BNP Paribas	72.0	4.0
Goldman Sachs & Co.	72.0	2.5
Deutsche Bank AG	72.25	10.0
Citigroup Global Markets Inc.	72.375	5.0
Merrill Lynch Pierce, Fenner & Smith	72.5	10.0
BNP Paribas	72.5	3.0
Barclays Bank PLC	72.875	4.0

From 31.5 to the IMM

All orders here filled by first round offers

All buy interest filled. This is the final price.

...

Etc, etc.

** Limit Orders that were derived from initial markets.

* Limit Orders that were filled.

^ Limit Orders that were partially filled.

Final Price: 71.25

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Fannie/Freddie (2008)

CDS Recoveries

Fannie Mae and Freddie Mac CDS Auctions, 6th October 2008

Fannie Mae Senior

Final Price: 91.51

Fannie Mae Subordinated

Final Price: 99.9

Freddie Mac Senior

Final Price: 94

Freddie Mac Subordinated

Final Price: 98

Characteristics of the Auction

- During their CDS auctions, Fannie and Freddie's relevant trigger was ***bankruptcy***, but the firms were not rendered insolvent, even though a credit event was triggered
  - Fannie and Freddie are known as "government-sponsored enterprises" and had a hybrid relationship with the government prior to the 2008 Financial Crisis
  - Fannie and Freddie were moved into the state of ***conservatorship***, where the US government essentially took them over, which triggered a credit event

- CDS auctions are held separately for senior and subordinated debts, but in the case of Fannie and Freddie, this produced a very interesting outcome
  - Conservatorship implied that recoveries on Fannie/Freddie debt would be high, as the US government would continue to support the balance sheets of the GSEs after the auction
  - Both the senior and the subordinated paper would likely be made whole by the govt

- As a result, in a highly unusual example, Fannie and Freddie's subordinated debt settled ***higher*** than its senior debt, despite both having the same conservatorship arrangement

Why This Occurred

- The auction was characterized by a severe imbalance between senior and subordinated obligations that were deliverable into their respective CDS auctions:
  - Many senior obligations in both Fannie and Freddie’s capital structure had unusual characteristics, such as small issues, making it difficult to find the cheapest to deliver bond
  - By contrast, there were only a few subordinated bonds outstanding in both firms
- In addition to the supply characteristics of both, the subordinated bonds also carried higher coupons than their senior counterparts, attracting investor interest
  - In the leadup to the auction, the subordinated bonds had lagged their more senior peers but subsequently became very attractive once government support was formalized
- The varied and diverse nature of CDS ownership in Fannie and Freddie, coupled with this being one of the first CDS auctions of its size, was also a complicating factor

Anglo-Irish (2010)

Characteristics of the Auction

- Anglo Irish's credit event was triggered by a change of terms on its 2017 sub notes:
  - Bondholders had been given the right to exchange their notes for 20% face value of a one-year, govt-guaranteed floating rate note, though the exchange itself was ***not*** the trigger
  - As part of the exchange, however, bondholders agreed to give the issuer the right to call all outstanding notes for EUR 0.01 for every EUR 1,000 of face value
  - This feature of the exchange was ***binding on all holders***, as enough bondholders tendered

- After the exchange, the only remaining sub bonds were the 2014 and 2016 issues, which were also subject to a similar exchange offer, creating several scenarios for the auction
  - If auctioned before the exchange, then both sub bonds would be deliverable, so the short maturity CDS contracts would recover as senior, while long maturity would recover at ~20
  - If auctioned after the exchange, there would be no outstanding sub bonds left in Anglo Irish's capital structure, so sub CDS contracts would recover as senior CDS contracts
  - If auctioned after the exchange but if one had been blocked, sub bonds would be deliverable, but the potential recovery outcomes for sub bonds would vary widely on exact circumstances

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The Response

- CDS buyers cared about the distinction between sub and senior bonds in the CDS auction due to the widely different market prices on both instruments:
  - The buyer would have to deliver senior bonds, which were trading at around ~76c, while sub bonds were trading at around ~18c, which was problematic for sub CDS buyers
  - The DC responded by creating an aggressive timeline for the auction itself

- The date of the exchange offer was pegged on Dec 20, 2010:
  - The DC found that the credit event occurred on **Nov-23** and the auction took place on **Dec-9**, which was accompanied by a significant tightening in sub bonds settlement
  - Failure to deliver sub bonds within the timeframe would mean CDS buyers would have to purchase senior bonds that traded at much higher prices

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Auction Outcomes

Anglo Irish Bank CDS Subordinated Bucket2

Final Price: 18.25

Anglo Irish Bank CDS Subordinated Bucket3

Final Price: 18

Anglo Irish Bank CDS SNR/SUB Bucket1

Final Price: 74.5

Anglo Irish Bank CDS Senior Bucket3

Final Price: 74.5

Anglo Irish Bank CDS Senior Bucket2

Final Price: 76

Sears – 2018

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Orphaning CDS

- In addition to distinctions between senior and sub bonds, the nature of the specific subsidiary that a CDS contract is referencing may also be relevant in CDS auctions
  - If a company has Subsidiary X that it regularly issues debt out of and CDS contracts referencing this entity, then consider that Subsidiary Y can raise debt and pay these debts
  - Conceptually, if a CDS contract is referencing Subsidiary X debt, and there is now no more Subsidiary X debt on the market, then there is no way for the company to default

- This is not only worth considering in situations where there is no debt left on Subsidiary X's balance sheet but also in situations where there is a partial amount leftover:
  - If there is only $100m of Subsidiary X debt left and >$1b of Subsidiary X CDS left, then the company can still theoretically default, but its auction mechanics will be affected

- In Sears' case, much of the CDS written on the company was linked to a specific subsidiary, Sears Roebuck Acceptance Corp ("SRAC") rather than Sears Holding:
  - SRAC had about ~$200m in leftover bonds available on its balance sheet, but there were several magnitudes higher of CDS written on SRAC itself, causing the bonds to trade higher
  - CDS buyers were concerned, as higher bond prices implied lower CDS payouts

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Sears' Intercompany Auction

- ❖ Uniquely, Sears discovered some intercompany loans worth ~$900m with significant consequences for the auction:
  - ❖ Normally, these intercompany loans are not a central part of market activity, as they represent amounts lent from one Sears entity to another Sears entity within its corporate structure
  - ❖ However, as these intercompany debts were now deliverable into the CDS auction per the ruling of the Determinations Committee, they were now suddenly in focus

- ❖ Capitalizing on the opportunity, Sears set up a separate auction for these SRAC debts, seeking to play on the conflict between CDS buyers and sellers to raise cash
  - ❖ This is nothing new – Codere (2013), Radioshack (2014), and McClatchy (2018)

- ❖ The auction became highly controversial, with both CDS buyers & sellers objecting:
  - ❖ Cyrus, a CDS seller on SRAC, had originally sought to block the auction from taking place, but this argument was rejected by the Court, which was skeptical of Cyrus' motives as a CDS seller
  - ❖ However, Cyrus subsequently submitted the highest bid in Sears' auction, which was conditional on Cyrus receiving all the relevant intercompany debts
  - ❖ This condition caught CDS buyers off-guard, who protested the validity of the auction

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Auction Outcome

Final Results of the Sears Roebuck Accep Corp CDS Auction, 17 January 2019

Final Price: 79.875

On 17 January 2019, 9 dealers submitted initial markets, physical settlement requests and limit orders to the Sears Roebuck Accep Corp auction administered by Creditex and Markit to settle trades across the market referencing Sears Roebuck Acceptance Corp. .

Relevant Currency
USD

Dealer Initial Markets

Dealer	Bid	Offer	Dealer
Barclays Bank PLC	56.0	61.0	Barclays Bank PLC
BNP Paribas SA	53.0	58.0	BNP Paribas SA
Citigroup Global Markets, Inc.	45.0	50.0	Citigroup Global Markets, Inc.
Credit Suisse	53.0	58.0	Credit Suisse
Goldman Sachs	54.0	59.0	Goldman Sachs
J.P. Morgan Securities LLC.	52.0	57.0	J.P. Morgan Securities LLC.
Merrill Lynch, Pierce, Fenner & Smith Inc.	50.0	55.0	Merrill Lynch, Pierce, Fenner & Smith Inc.
Morgan Stanley & Co. LLC	59.0	64.0	Morgan Stanley & Co. LLC
Societe Generale	53.5	58.5	Societe Generale

Initial Market Midpoint: 55.625

Physical Settlement Requests

Dealer	Bid/Offer	Size
BNP Paribas SA	Offer	0.0
Citigroup Global Markets, Inc.	Offer	0.0
Credit Suisse	Offer	22.138
J.P. Morgan Securities LLC.	Offer	3.0
Merrill Lynch, Pierce, Fenner & Smith Inc.	Offer	0.0
Societe Generale	Offer	0.0
Barclays Bank PLC	Bid	22.66
Goldman Sachs	Bid	5.604
Morgan Stanley & Co. LLC	Bid	41.81

Net Open Interest: USD 44.936 million to buy

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Europcar - 2021

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Auction Outcome

Final Results of the Europcar Mobility Group CDS Auction, 13 January 2021

Final Price: 100

On 13 January 2021, 9 dealers submitted initial markets, physical settlement requests and limit orders to the Europcar Mobility Group auction administered by Creditex and Markit to settle trades across the market referencing Europcar Mobility Group.

Auction Currency Rates	
EUR/EUR	1.00000

Dealer Initial Markets

Dealer	Bid	Offer	Dealer
Barclays Bank PLC	70.0	74.0	Barclays Bank PLC
BNP Paribas	73.0	77.0	BNP Paribas
Credit Suisse International	68.0	72.0	Credit Suisse International
Deutsche Bank Aktiengesellschaft	69.5	73.5	Deutsche Bank Aktiengesellschaft
Goldman Sachs International	72.0	76.0	Goldman Sachs International
J.P. Morgan Securities PLC	72.5	76.5	J.P. Morgan Securities PLC
Merrill Lynch International	71.0	75.0	Merrill Lynch International
Morgan Stanley & Co. International PLC	70.0	74.0	Morgan Stanley & Co. International PLC
Société Générale	72.0	76.0	Société Générale

Initial Market Midpoint: 73

Physical Settlement Requests

Dealer	Bid/Offer	Size
BNP Paribas	Offer	0.0
Credit Suisse International	Offer	0.0
Deutsche Bank Aktiengesellschaft	Offer	0.0
Goldman Sachs International	Offer	0.0
Merrill Lynch International	Offer	0.0
Morgan Stanley & Co. International PLC	Offer	0.0
Société Générale	Offer	0.0
Barclays Bank PLC	Bid	6.0
J.P. Morgan Securities PLC	Bid	37.3

Net Open Interest: 43.3 million to buy

Sum of Buy Physical Requests	43.3m
Sum of Sell Physical Requests	0.0m
Sum of Physical Request Trades	0.0m
Sum of Limit Order Trades	35.9m

Characteristics of the Auction

- If you are a CDS writer, influencing the supply conditions of bonds on the market may have a consequent effect on the resulting conditions of the CDS auction (like in Sears):
  - If you have $200m of CDS and $100m of debt outstanding, and CDS is expected to recover at 75%, it is cheaper for you to buy the $100m of debt than to pay out $150m on CDS
  - This is obviously quite difficult to execute, however, and so a CDS seller may specifically target a smaller issue, cheaper bond, forcing a higher cash price bond into the auction

- Uniquely for Europcar's auction, a loan from Credit Suisse from 2019 was deliverable into the auction, which was highly unusual:
  - Market participants expected the EUR 50m loan to carry a lower recovery than other bonds on the market, so they began purchasing this cheaper loan in the leadup to the restructuring
  - In theory, the loan would be treated the same as other subordinated bonds in Europcar's restructuring, namely being equitized and receiving a sweetener package of warrants
  - Its ownership became concentrated in the Cross-Holder Determinations Committee, made up of Anchorage, Attestor, Diameter, King Street, and Marathon (distressed hedge funds)

Auction Result

- In the first quirk, the deliverability of the loan came into question prior to the auction:
  - The Determinations Committee had ruled that the maturity profile of the Credit Suisse Facility did not match the auction eligibility criteria, prompting a last-minute change
  - The funds tried to resolve this by giving the loan a maximum maturity to render it eligible

- In the second, the restructuring terms had significant effects on liquidity in the auction:
  - Under the terms of the restructuring, the participants were legally restricted from transacting in Europcar's bonds, which prevented them from being active participants in the auction
  - This was especially true for the Cross-Holders Coordination Committee, which had been at the heart of the restructuring negotiations and held much of the loan from Credit Suisse

- The end result was a final price of par (100) in the resulting CDS auction:
  - If nobody who owns the bonds can sell them in the auction, then the bonds must settle at par (and the resulting CDS payout will be zero), which is what occurred in Europcar

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Get in Touch

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