Fourth-generation CDO structures: credit trading via the managed synthetic CDO

FOW London 21 June 2002

Moorad Choudhry

Agenda

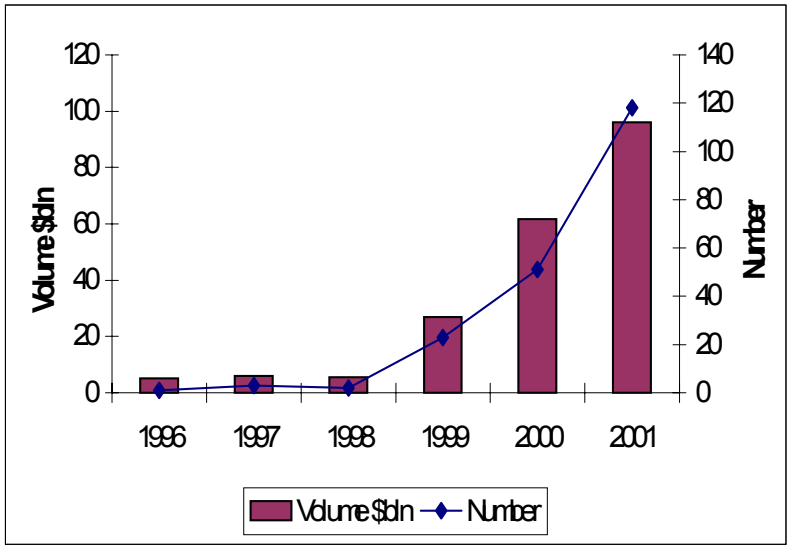
- Collateralised Debt Obligations
- Credit Derivatives
- Synthetic CDOs
- Managed synthetic CDOs or CSO
- Case study

Introduction to CDOs

- **Collateralised Debt Obligations** (CDOs) are a major asset class in the securitisation and credit derivatives markets.
- CDOs provide **banks** and **portfolio managers** with a mechanism to outsource risk and optimise economic and regulatory capital management. For **investors** they are a tool by which to diversify portfolios without recourse to the underlying assets.
- CDOs split into two main types: **balance sheet** and **arbitrage**. Within these categories they may be either **cashflow** or **synthetic**.
- In a cashflow CDO the physical assets are sold to a special purpose vehicle (SPV) and the underlying cash flows used to back the principal and interest liabilities of the issued overlying notes.
- In a synthetic securitisation, **credit derivatives** are employed in the structure and assets usually retained on the balance sheet.

Background

- CDOs involve transfer of a portfolio of loans **(CLO)** or bonds **(CBO)** or a mix of these (CDO), and issuance of a tranche of notes, splitting risk levels to suit different investors.
- **Balance sheet CDO:** originator manages its own balance sheet by freeing up economic or regulatory capital.
- **Arbitrage CDO:** asset manager expands assets under management, and/or exploits differences in funding costs of assets and liabilities; and meets investors' demand for specific tranche of risk.



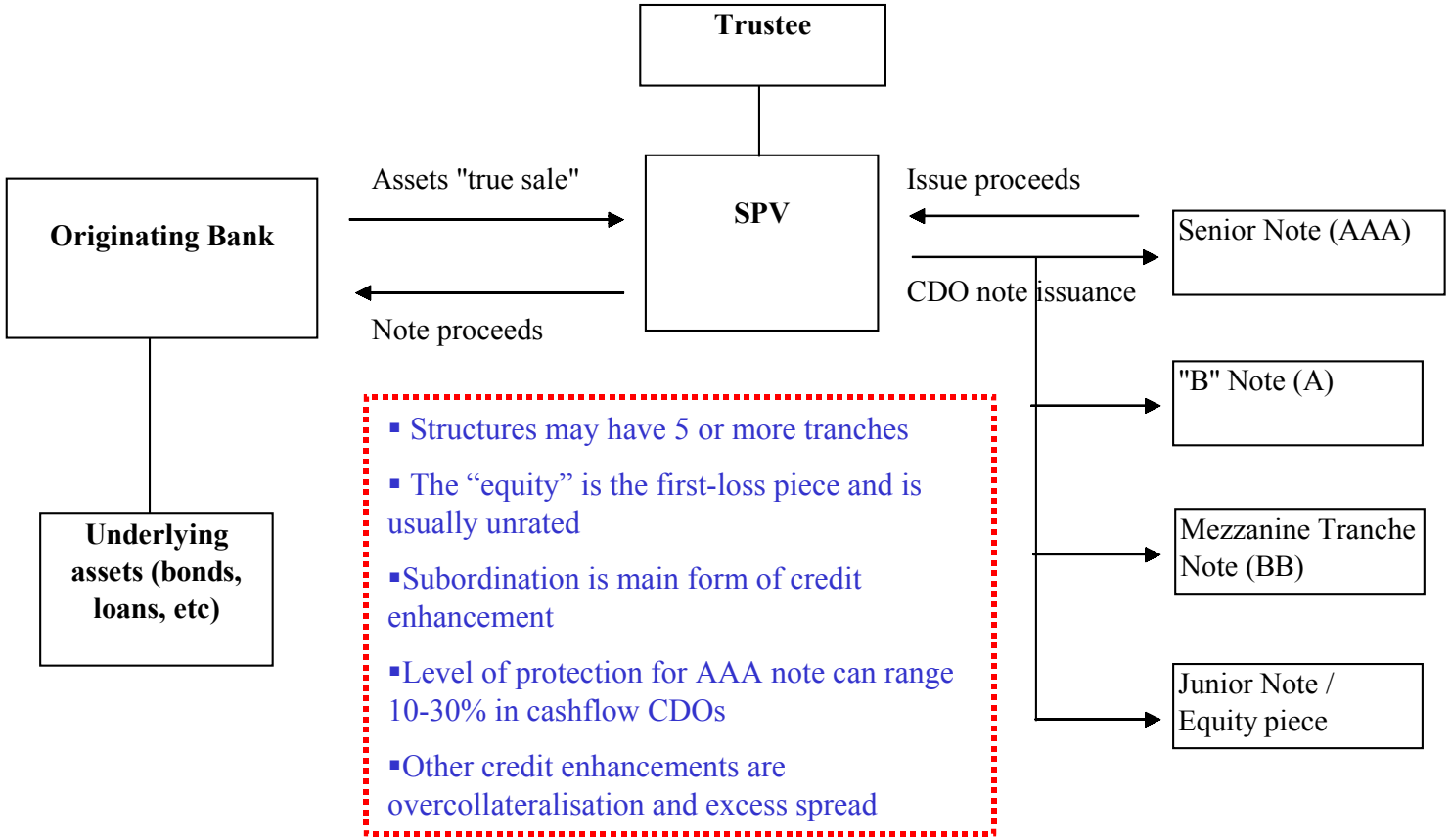
Growth of European CDO market ($ bln)

(Source: Moodys)

Getting to the starting point

- **Some CDO basics…**
- Collateralised Loan Obligations: collective term for structured vehicles employed in the securitisation of bonds (“CBO”), loans (“CLO”) or a mixture of these assets
- The first CDOs were conceptually very similar to ABS products, with liabilities split into tranched note structure, with subordinated note the highest risk piece for investors
- Underlying assets can comprise
  - Bonds: investment/sub-investment grade, emerging market, sovereign, etc
  - Loans: term revolving, secured/unsecured, bilateral, distressed/NPL, etc
- Commonly the senior tranche comprises the majority the structure, with junior pieces making up about 5%-20%

Generic cashflow CDO structure



Factors behind CDO origination

Balance sheet CDO

- Originators include commercial banks with assets (loans, mortgages) that can be securitised
- Objective is to reduce regulatory capital requirements, reduce credit risk exposure and/or achieve funding
- Assets: investment-grade and sub-investment grade term loans, revolving credit lines, etc
- Assets transferred to issuing vehicle; originator often holds most junior note

Arbitrage CDO

- Originators include portfolio managers and insurance / re-insurance companies
- Investors aim to achieve a leveraged return between yield on assets and the financing cost of notes (spread between these is the funding gap or “arbitrage”)
- Objective to increase assets under management, increase ROA
- Assets: high-yield or emerging market bonds, ABS/MBS
- Assets are purchased in the market over a period pre-close (“warehousing”) and after close (“ramp-up”)

CDO credit structure arrangement

Cashflow CDO

- Static asset pool, or limited trading undertaken (10-20% of total)
- Assets in portfolio are not marked-to-market
- Credit enhancement measured by principal and interest coverage tests
- Losses result in senior notes being paid off as cashflow is redirected from junior tranches
- Focus on credit quality (collateral quality tests)
- Leverage determined at inception

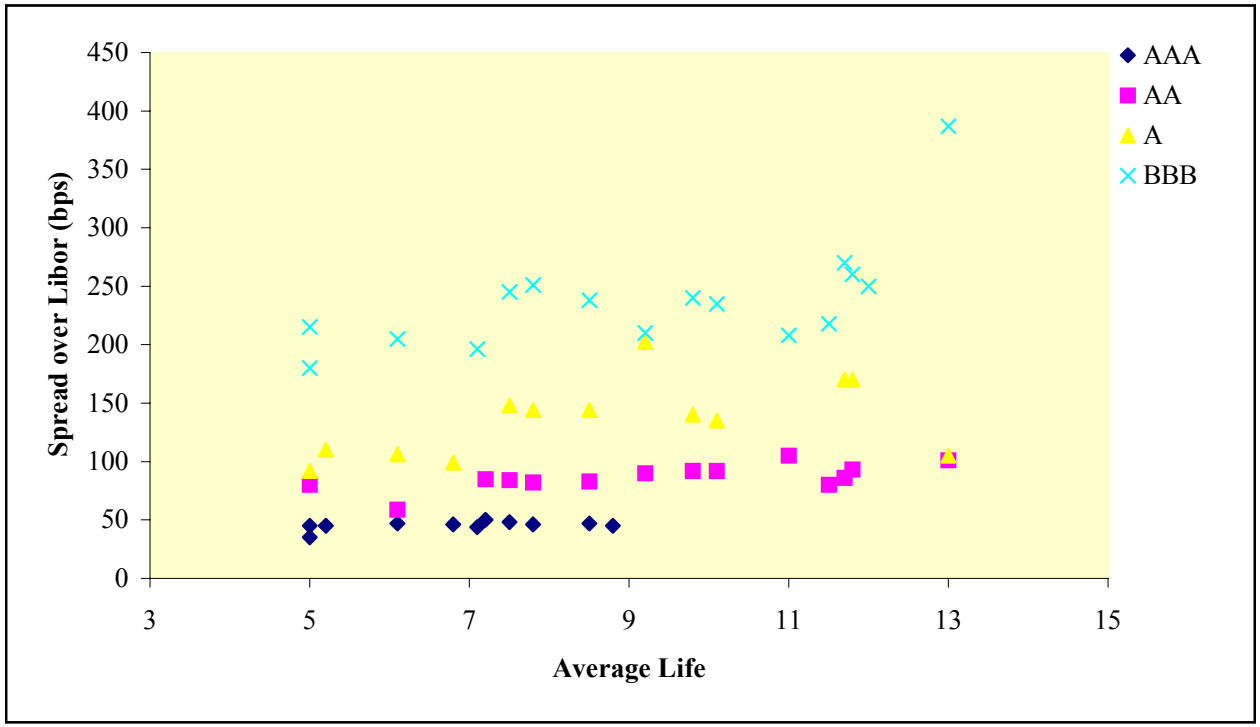
Market Value CDO

- Actively traded portfolio, assets are marked-to-market daily
- Credit enhancement measured by m-t-m overcollateralisation tests; “haircut” value of assets is compared with par value of note tranches
- Decrease in haircut level can lead to liquidation of assets and note liabilities being redeemed
- Dynamic leverage through mtm performance
- Fewer limits on trading

Investor interest

- Investment factors….consider
  - Underlying asset class; bonds, loans, ABS, credit derivatives
  - Portfolio features: rating, average life, source of portfolio
  - Average life, credit ratings, interest spread
  - Cashflow or market value?
  - Distinct features: multi-currency underlying and/or overlying
- Variation in risk/return profile
  - Access to portfolio manager's expertise and infrastructure
  - Senior note: relative value vs. other AAA assets; asset class diversification;
  - Subordinated notes: leverage; diversification
  - Equity piece: expected returns; leverage; callability

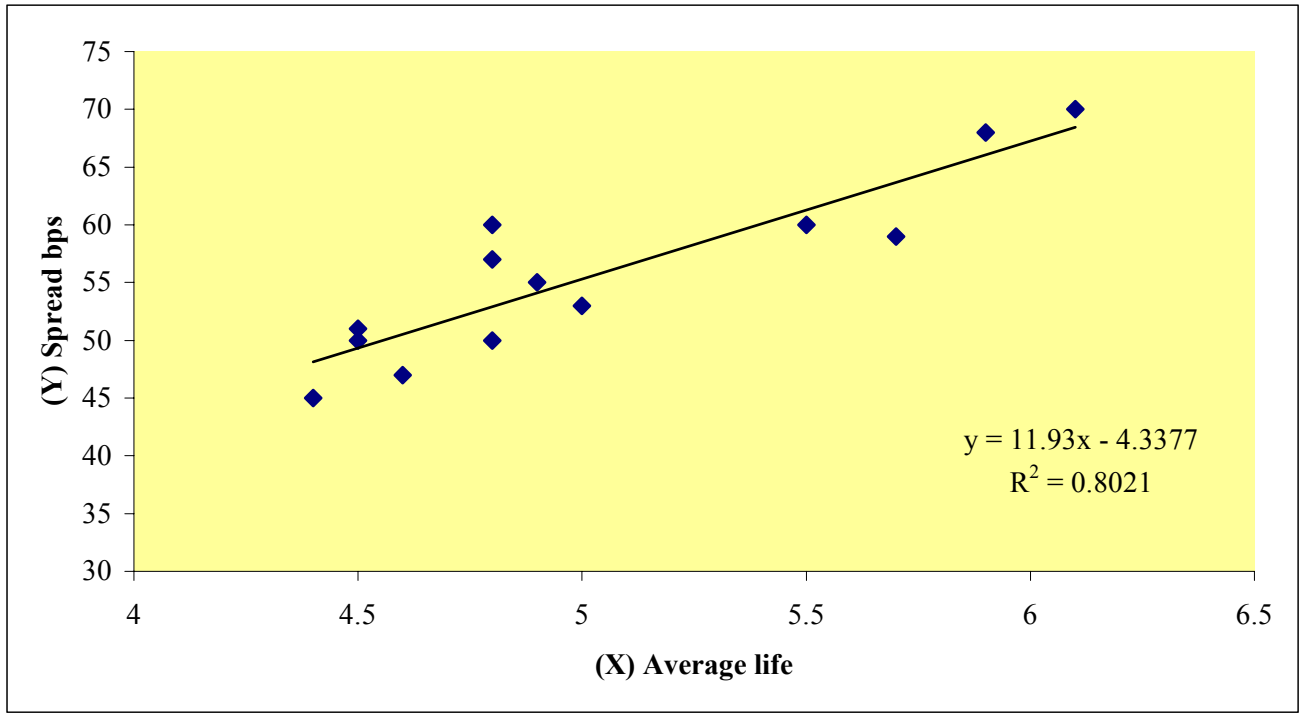
Spread variation (Dec-01): AAA to BBB notes



(Source: JPMorgan)

AAA spreads

(Robeco, Jazz, Marylebone, North Street, Brooklands, Blue Chip "A" note spread at issue)

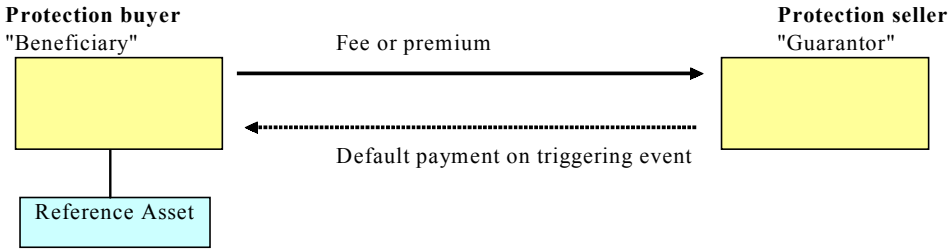


Credit Derivatives

- **Credit derivatives** are bilateral OTC contracts designed to reduce or eliminate credit risk exposure and enable credit risk to be taken on or reduced synthetically.
- Payout under a credit contract is dependent on the occurrence of a pre-defined **credit event.**
- In a **single-name** credit derivative, the reference entity is a single obligor
- Multiple-name credit derivatives (known as **basket** or **portfolio** products) are referenced to more than one obligor.
- For portfolio managers, **benefits** of using credit derivatives include:
  - Can be tailor-made to meet specific needs (eg., don't need to match terms)
  - Can be "sold short", which is not possible with say, a bank loan
  - A bank can off-load credit risk without taking the loan off balance sheet, thus preserving client relationships
  - As they isolate credit, enable this to be valued as an asset class in its own right, and thereby create a credit term structure
  - They are OBS instruments, with greater flexibility and reduced administrative burden for a similar type of exposure as cash assets

Credit derivative instruments

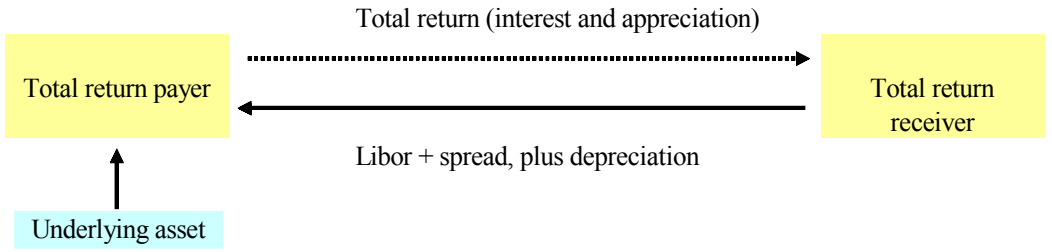
- With a credit derivative one is transferring credit risk of specified asset(s) to a 3rd party while keeping the asset(s) on the balance sheet – so not a “true sale” but use of loss definitions
- In a credit derivative contract the buyer of protection pays a premium to the seller of protection, who is obliged to pay out on occurrence of a credit event
- **Credit default swap**



- The “trigger event” is the credit event as defined in the legal documentation for the contract
- A credit default swap is deemed to be an unfunded credit derivative, because the protection buyer is exposed to counterparty risk from bankruptcy of protection seller

Credit derivatives

- **Total return swap:** Like a credit default swap, a bilateral contract, but where the protection buyer exchanges the economic performance ("total return") achieved by the reference asset in return for periodic payment that is usually a spread over Libor. Similar to asset swaps, allowing the total return receiver to create a synthetic leveraged position in the reference asset



- **Credit-linked note:** A bond containing an embedded credit derivative, linked to the credit quality of the issuer *and* of the underlying reference credit. The investor – the protection seller – receives an increased coupon payment, as well as par value of the note on maturity assuming no credit event occurs. CLNs are funded credit derivatives since the issuer (protection buyer) receives payment upfront for the note and so has no counterparty risk exposure.

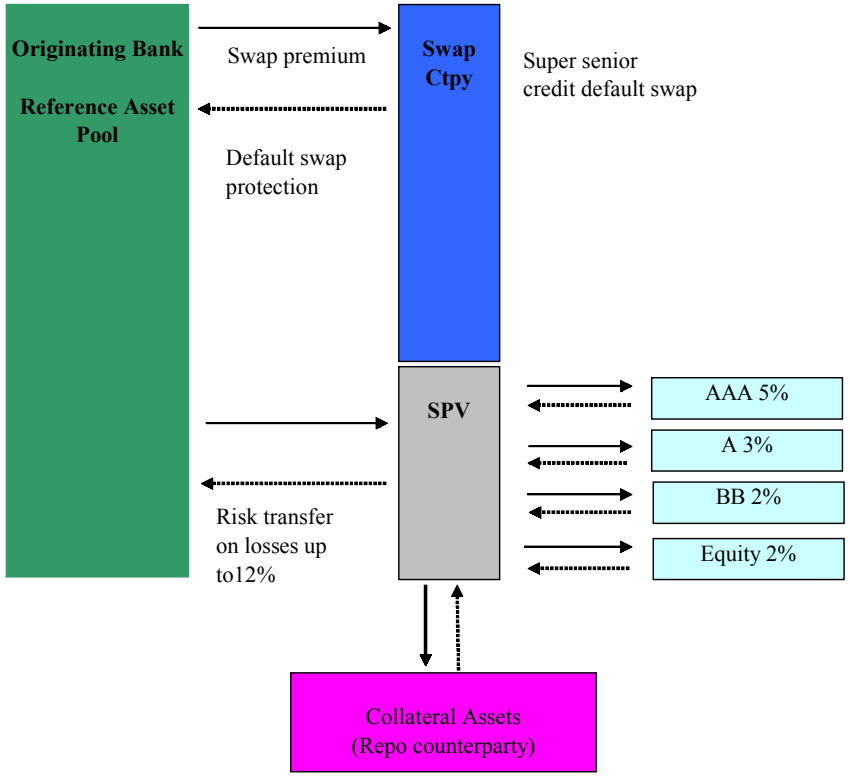
Using credit derivatives in securitisation

- **True sale versus synthetics: a true sale via SPV**
  - has higher costs
  - less flexibility
  - takes longer to bring to market
  - is more difficult across multiple legal and regulatory regimes
- **Unified documentation (ISDA)**
- **Flexibility to create customised exposure**
- **Enables separation of funding and credit risk management**
- **Synthetic CDOs**
  - "Second generation" CDO use CDS and/or CLN or SPV; unfunded, partially funded / fully funded
  - Third and fourth generation CDOs: Hybrid CDO mixing elements of synthetic CDO with cash assets (eg., Deutsche Bank "Jazz")
  - Managed synthetic or "CSO" (Robeco III)

Synthetic CDOs…

- Synthetic CDOs combine securitisation techniques with credit derivatives and were introduced in Europe in 1998.
- A vehicle used to transfer credit risk via credit derivatives, rather than via a “true sale” of receivables to an SPV. The variations include:
  - Funded synthetic, where liabilities are solely credit-linked notes
  - Unfunded, where liabilities are solely credit default swaps
  - Partially funded: both credit-linked notes and credit default swaps
- The originator transfers the credit risk of a pool of reference assets via **credit default swaps**, or transfers the total return profile of the assets via a **total return swap**.
- Typically an SPV issues one or more tranches of securities which are the **credit-linked notes**, whose return is linked to the performance of the reference assets.
- Proceeds of note issuance form the first-loss protection reserve and are usually invested in liquid AAA-rated collateral.
- Synthetic CDOs have evolved into a number of forms (static, dynamic, managed)

Generalised partially funded synthetic CDO



- The majority of the credit risk is transferred by the "super senior" credit default swap
- The riskier element is transferred via the SPV which issues default swaps (unfunded) or credit-linked notes (funded)
- The first-loss piece is the unrated equity note.
- Each note has a different risk/return profile

Motivation behind synthetic CDOs

- The primary motivation for entering into an arbitrage CDO is to exploit the yield mismatch between a pool of assets and the CDO liabilities.
- Motivation behind a balance sheet CDO is to manage regulatory risk capital and engineer more efficient capital usage
- **Advantages of a synthetic structure**

  Typically the reference assets are not actually removed from the sponsoring firm's balance sheet. For this reason:

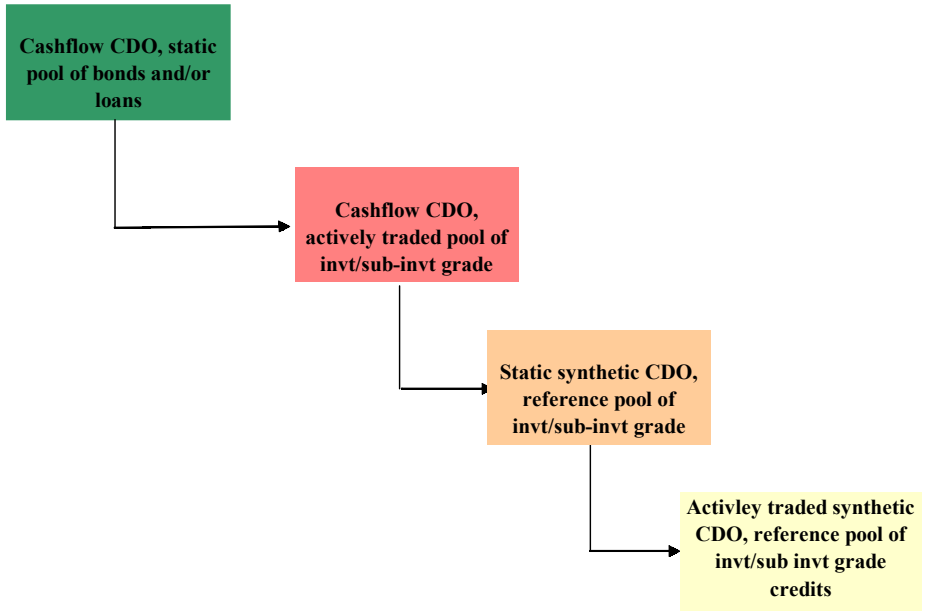
  - **synthetic CDOs are easier to execute than cash structures:** the legal documentation and other administrative requirements are less burdensome
  - **there is better ability to transfer credit risk:** especially partial claims on a specific credit reference asset
  - **risk transfer achieved at lower cost:** the amount of issuance is small relative to the reference portfolio. In a "partially funded" structure, funding is mainly provided by the sponsoring financial institution at lower cost than fully funded structures.
  - **Lower risk weightings:** eg., 100% corporate loan vs. 0% on funded portion

Managed synthetic CDOs or “CSO”

- Essentially a managed synthetic CDO or CSO is an arrangement designed to provide investors with high return on a portfolio of investment grade credits
- Structured to have a higher average rating quality and shorter maturity than traditional high yield cashflow CDOs
- The portfolio manager actively trades in and out of credits according to its view,
  - Buying protection with swap counterparties, entering into offsetting swap
  - Selling protection
  - Each new default swap traded must meet portfolio tests (“covenants”) established by rating agency and confirmed by Trustee
- The structure is designed to generate higher zero-default expected return than cashflow CDO, typically 7-9% higher, with risk-adjusted return (historical default statistics) around 5-6% higher

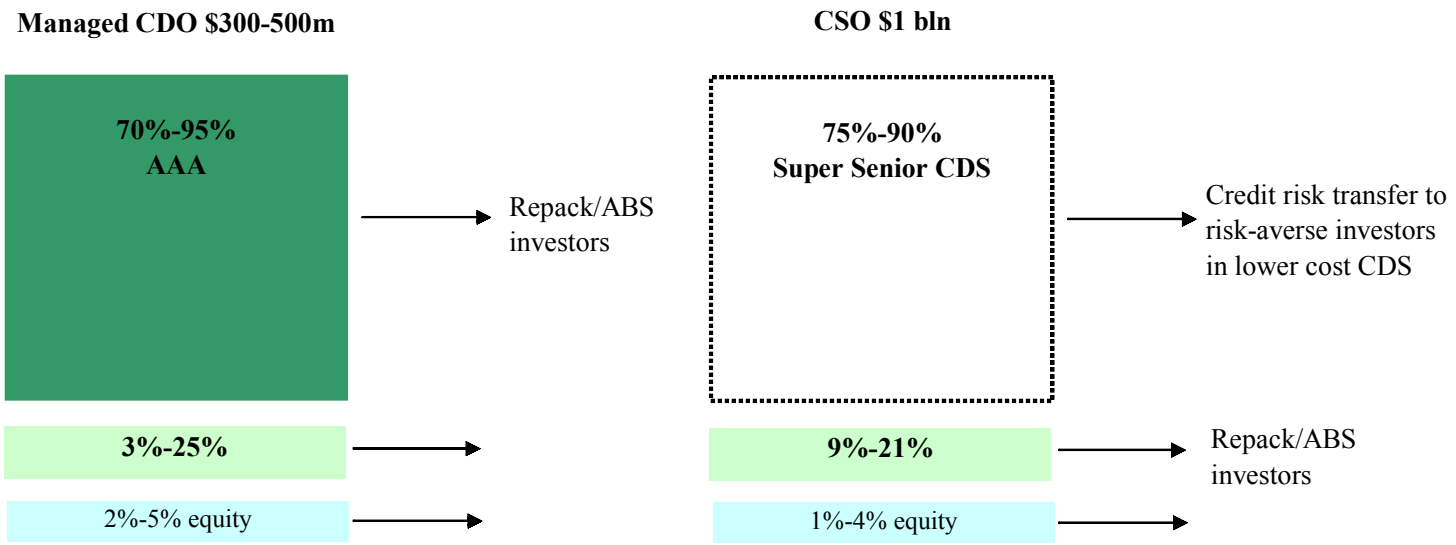
CSO structures: the "4th generation"

- Collateralised synthetic obligations (CSO) enable portfolio managers to leverage their credit expertise via the CDS market
- Use of securitisation methods to increase arbitrage returns
- Essentially, a wider range of credits than in cash market



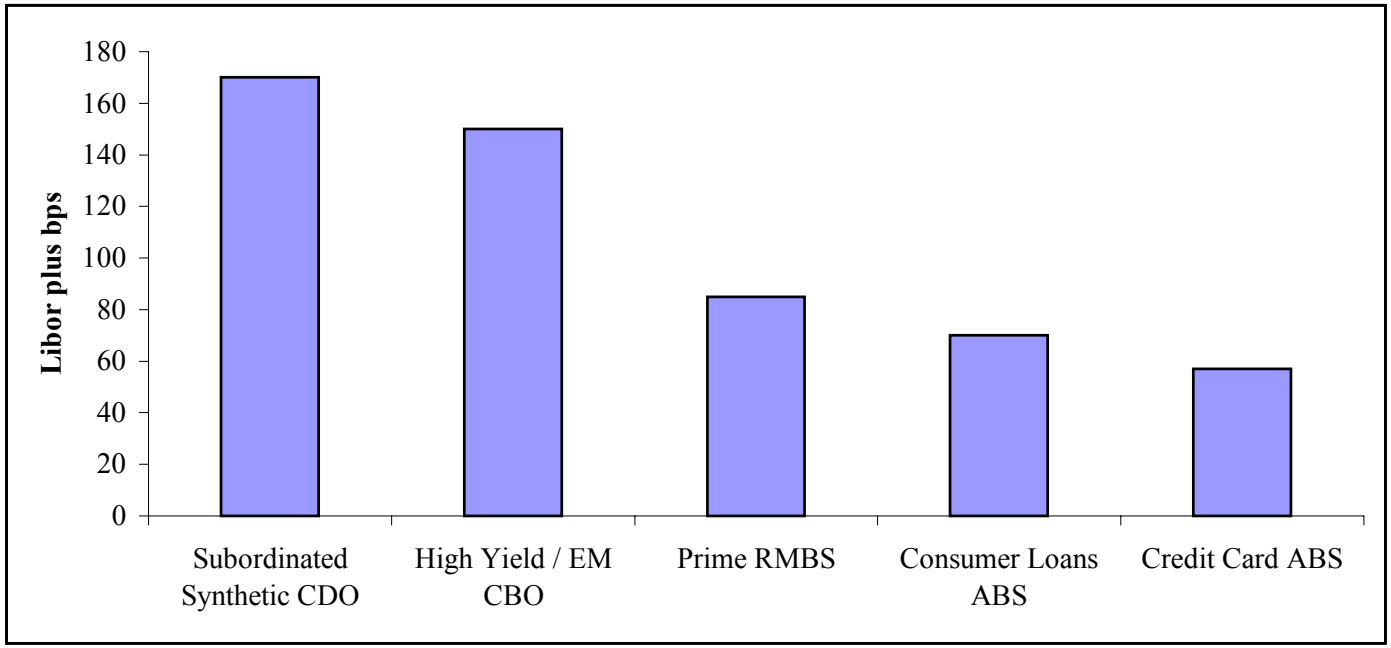
CSO structures: funding difference

- A rise in yield spreads has diminished potential for arbitrage funding gain in traditional CDO market
- Employing synthetic structures via unfunded credit derivatives has enabled the portfolio manager to generate trading gains while preserving target rating for investors
- The lower funding level required means that managed synthetics are larger deals



Yield spread differences

Average spreads over Libor as at February 2002



(Source: Bloomberg)

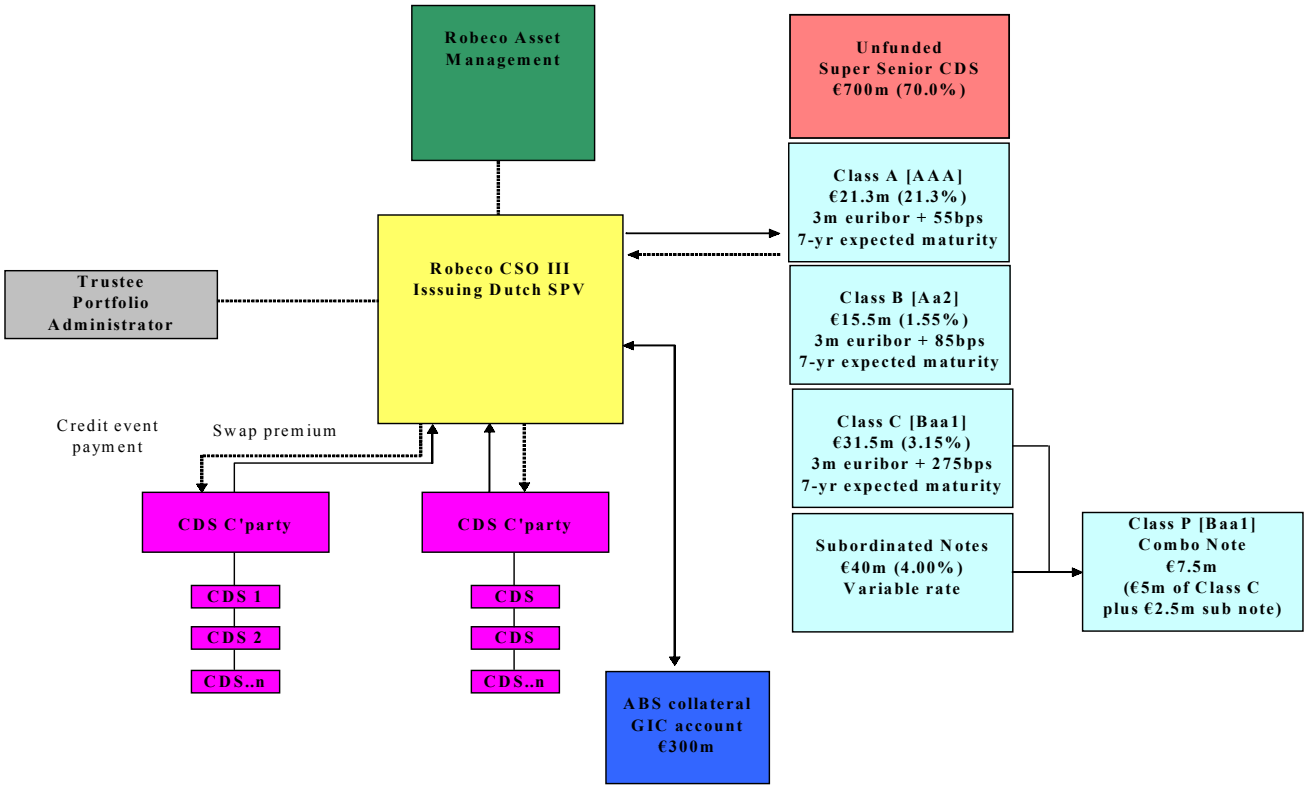
CASE STUDY: ROBECO CSO III B.V.

- Issuer: Robeco CSO III B.V.
- Originator: Robeco International Asset Management
- Arrangers: JPMorgan Securities Ltd and Robeco Alternative Investments
- Trustee: JPMorgan Chase Bank
- Portfolio Administrator: JPMorgan Chase Bank
- GIC account: Rabobank

Robeco CSO III B.V.

- Originator is Robeco Institutional Asset Management, issuer is Robeco CSO III B.V., bankruptcy-remote vehicle incorporated in Netherlands.
- Structure is €1bln of reference pool assets, partially funded managed synthetic CDO, with €300m issued in five classes of notes, collateralised by ABS bond (MBNA credit card issue, AAA rated) and GIC account
- The issuer enters into credit default swaps with specified list of counterparties. The portfolio of CDS is dynamic, as the portfolio manager can enter into new CDS or offset existing CDS by purchasing protection on the same entity.
- Trading CDS means that differences in spread levels at time of trade will lead to trading gains and losses.
- In the case of Robeco CSO, manager can purchase protection only to close out an existing sale of protection

Robeco III structure diagram



Credit Default Swaps

- The Issuer takes a view on particular reference assets and sells protection via credit default swaps
- The terms of the CDS are:
  - Regular premium paid by counterparty to Robeco CSO III B.V.
  - On occurrence of pre-defined credit event on any of the reference assets in the reference pool, the calculation agent will determine the difference between the nominal value of the reference asset and its market value. This amount paid by Robeco CSO III B.V. to the counterparty (cash-settled CDS)
  - During life of transaction the Issuer may buy protection on any asset to close out an existing (sold protection) CDS
- Credit events are defined as: failure to pay, restructuring, bankruptcy, repudiation and moratorium, and obligation acceleration
- Structure rated by Moody's

Collateralisation

- The structure is collateralised by the ABS note and funds deposited in the GIC account
- The proceeds of the note issue are split €220m ABS security account and remainder GIC account
- On occurrence of credit event or trading losses, the Issuer funds these from cash in collateral account, from cash in the GIC account and by selling part or all of the collateral ABS security
- The ABS security has scheduled maturity date of September 2008 (in line with issued notes); in the event of amortisation and early prepayment, the proceeds are placed in a GIC account
- The collateral is held in custody by the Custodian and cash account provider, JPMorgan Chase Bank

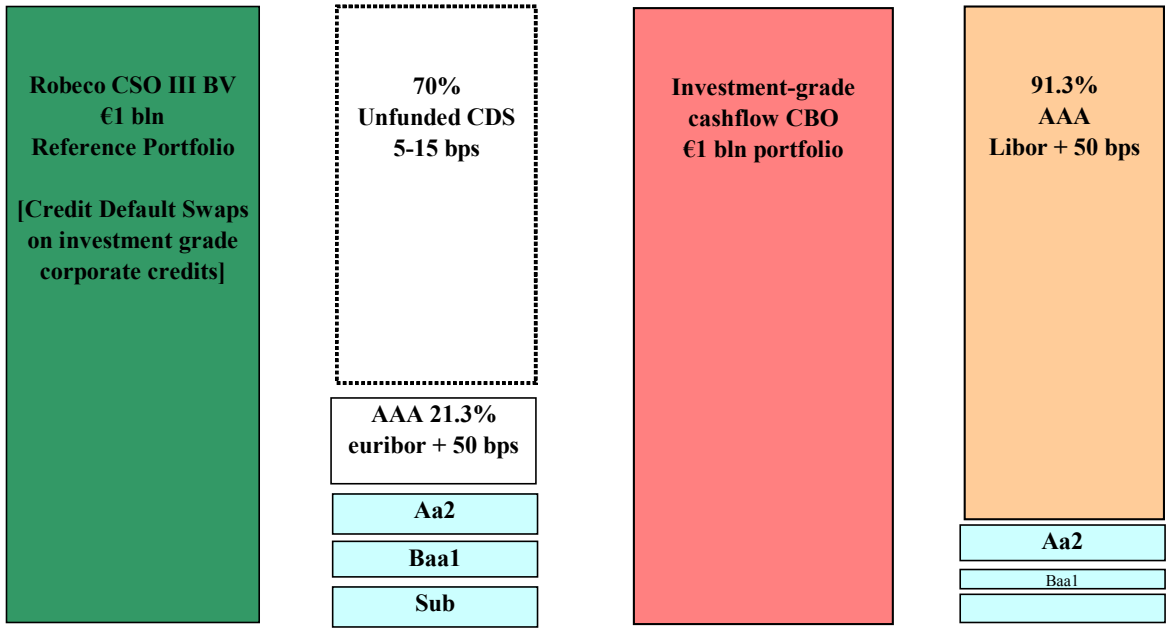
Innovative structure

- Robeco III is the first managed synthetic deal in Europe, a multiple-dealer stand-alone structure
- The transaction is 70% unfunded and 30% funded. The unfunded part comprises 100-130 reference assets, of which 95% are investment grade, with Baa2 maximum weighted average rating.
- This rating is above average compared to most CDOs due to the liquidity of the CDS market – more names can be traded in this market compared to the cash market
- The portfolio manager is able to undertake credit trading on European corporate and other credits in the more liquid credit derivatives market, where they may be liquidity problems in the cash market
- There is therefore a dynamic, active pool of assets (compared to previous static pool) whose credit can be traded with up to seven CDS counterparties

Investor return

- The note issue will be of interest to investors who wish to hold credits but where opportunities are limited because of liquidity issues, or lack of market intelligence / expertise in analysis of high yield debt.
- The class A, B and C notes pay from 55 bps to 275 bps over 3m euribor, (2008 expected maturity, so 7-year paper). The sub notes pay a variable return reflecting trading activity, as credit-linked notes.
- The structure design is similar in concept to an entity with 30% capitalisation. As this is collateralised with AAA security, this is effectively Tier 1 capital with 0% risk weighting.
- The zero-default expected return is 20.1%, while expected return based on historical default rates of the reference assets is 16.7% (source: RISK). This is higher than expected returns on equivalent investment-grade cashflow CDO

Return comparison



Zero-default return 20.1%
Risk-adjusted return 16.7%
(Source: RISK)

Zero-default return 11.9%
Risk-adjusted return 8.6%

Portfolio Administration

- Calculation of cashflow waterfall report: expenses; interest and principal priority of payments
- Monthly report on status and quality of asset pool, including:
  - Aggregate principal balance outstanding of collateral debt securities
  - Balance of cash in collection account and collateral account
  - Valuation, and principal and interest on collateral securities
  - Diversity score, weighted average rating, weighted average spread, etc and tests as determined by rating agency (“compliance tests”)
  - Loss amounts
- Quarterly report
- Credit default swap administration, cashflow settlement and credit event confirmation agent