



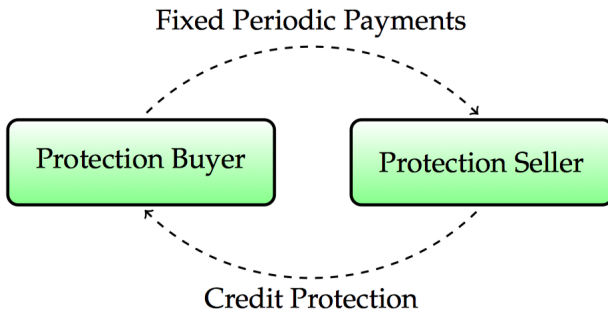
Handbook of Credit Risk Management: Chapter 20, Credit Derivatives

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- CDS Overview
- Settlement
- Accounting Treatment
- 3 Predominant Uses of CDS





- Most common form of a credit derivative is a credit default swap (CDS)
- CDS includes a protection buyer and protection seller
- In case of default of the reference entity, the protection seller pays the protection buyer
- Notional amount is the largest payment that could occur should default occur with no recovery
- The reference entity (RE) is typically not involved or even aware the transaction takes place
- Do not have to hold a bond to purchase CDS protection
- CDS is not an insurance product, it behaves more like an option



- Premium/spread is typically quoted annually and paid quarterly
- CDS transactions can be quoted as having an upfront plus a running spread
 - Upfront is an initial payment and then the running spread is the ongoing cost
 - **Example:** A CDS on a junk bond might be 10 percent upfront plus a 500bps running spread. This means 10 percent of notional would be due at inception of the CDS contract, with 125bps quarterly payments



Suppose a protection buyer purchases a CDS with the following terms:

- Five year tenor
- \$10 million notional
- No upfront premium
- 65bp per annum running spread with quarterly payments

What is the total annual payment for this contract? Describe the payment structure.



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The annual payment is 65,000. This breaks down into quarterly payments of 16,250.



- CDS payment is triggered by **credit events**
- Standard credit events that apply to most contracts:
 - ① Bankruptcy
 - ② Failure to pay
- If multiple credit events are defined in the contract, any one of them being met triggers the payment process
- International Swap and Derivatives Association (ISDA) has created five regional credit derivatives determinations committees (DCs), which decide on credit events and the resulting cash settlements

- Protection buyer delivers the bond/loan to the protection seller
- Protection seller pays the protection buyer the underlying par value
- Two disadvantages of physical CDS settlement:
 - 1 Bond squeeze effect
 - Protection buyers not holding the bond will need to buy it when a credit event occurs, causing inflated prices and decreased profit for protection buyers
 - 2 Other technical difficulties (e.g. need to deliver the bond of the appropriate contractual terms including the appropriate tenor)



- In cash settlement, upon a credit event, the CDS seller pays the CDS buyer a portion of the notional amount of the CDS equal to $(1 - \text{Recovery Rate})$ times the notional CDS amount
- **Example:** Consider a \$10 million notional loan with a 40% recovery rate.
 - The bondholder receives \$4 million back before any CDS payoff
 - Then the CDS pays off the remaining \$6 million
 - This is calculated as $(1 - 40\%) \cdot \$10 \text{ million} = \6 million



- US GAAP and IFRS require that CDS are marked to market (MTM), and that changes in their values are recognized in income for both the protection seller and protection buyer
- Corporations may avoid purchasing CDS because it could lead to earnings volatility
- MTM value of a CDS is the present value of the difference between the prevailing market price the day of the valuation and the transaction price
- One mathematical complication with computing MTM is that credit events result in termination of future premium payments
- Another complication is that buyer and sellers adjust MTM valuations (e.g. through CVA/DVA) of CDS positions based on the creditworthiness of themselves and their counterparties



You are given the following about a CDS contract:

- There is no upfront payment and all payments are running
- The initial contract for a CDS purchased previously was 100bps per annum
- Due to deteriorating credit conditions, CDS protection is currently selling at a market price of 150bps per annum
- Assume the notional is \$10 million
- Assume the relevant annuity factor for the remaining payments is 10

Determine the MTM value for the protection buyer and protection seller. You may assume there are no CVA or DVA adjustments made.



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Credit conditions worsened, so the protection buyer has an MTM gain.

$$\text{Protection Buyer MTM} = (1.5\% - 1\%) \cdot \$10 \text{ million} \cdot 10 = 500,000$$

The protection seller MTM is then -500,000.



- ① Protection of a Credit Exposure $\Rightarrow$ Buy CDS and Bond
- ② Investment in Credit: Long Credit $\Rightarrow$ Short CDS
- ③ Speculation In Credit: Shorting Credit $\Rightarrow$ Buy CDS



- Involves holding a bond and purchasing CDS for credit protection
- This was the original use of CDS – managing risk for existing bond exposures
- Disadvantages include income statement volatility and basis risk
- Basis risk captures the difference between the actual loss and the compensation received from the settlement

2. Investment in Credit: Long Credit



- Involves selling a stand-alone CDS with no underlying bond position
- Investment in credit by selling the CDS and earning a credit spread
- There is a theoretical equivalence that purchasing a US Treasury bond plus selling a CDS has similar risk exposures as corporate bonds
- Advantages of selling CDS:
 1. Allows one to take credit risk on a stand-alone basis (e.g. can just sell a CDS without holding a bond and carrying large interest rate risk)
 2. Selling a CDS does not require a cash investment
 - However, there may be collateral requirements
 - CDS positions are leveraged, and protection buyers want to ensure that protection sellers have adequate liquidity if a credit event occurs



3. Speculation In Credit: Shorting Credit

- Involves buying a stand-alone CDS with no underlying bond position
- Speculate that creditworthiness will get worse
- Naked CDS purchases can put liquidity strain on companies
- Three steps involved for implementing short credit trades:
 1. Fund manager identifies a reference entity where they believe financial conditions will deteriorate more aggressively than the overall market anticipates
 2. Buy CDS, often from multiple counterparties in order to reach a large notional
 3. After the significant credit deterioration occurs, the fund manager can either unwind or sell the position for a profit



You are given the following:

- Suppose a fund manager purchases CDS with 100 million notional, five year tenor, and 100bps per annum fee
- After two years, the credit quality of the reference entity deteriorates and the market price of CDS contracts is 300bps per annum
- Assume, for simplicity, you can use an annuity factor of 3 (which corresponds to the remaining tenor of the CDS)
- The CDS has no upfront cost and all premiums are running
- Assume no CVA/DVA adjustments

Suppose the fund manager unwinds the transaction today, terminating the future cash flows by settling the difference between the contractual terms and the prevailing market conditions. Compute the MTM gain/loss on the unwind of the CDS.



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$$(3\% - 1\%) \cdot 100 \text{ million} \cdot 3 = \boxed{6 \text{ million}}$$

Thus, the fund manager experiences a gain of 6 million.