

Credit Derivatives

Southeastern Actuaries Conference

Fall Meeting

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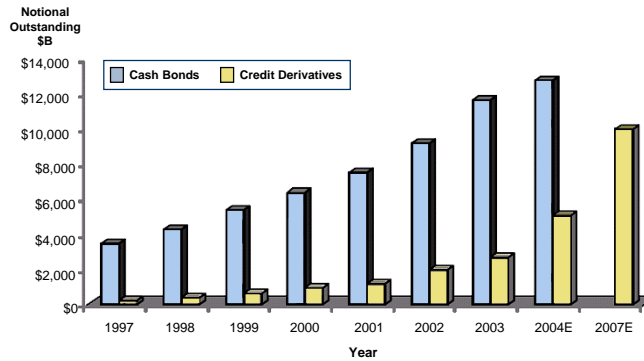
Credit Derivatives

- **What are they?**
- **How are they priced?**
- **Applications in risk management**
- **Potential uses**

Credit Derivatives

Credit derivatives are financial contracts that allow one to synthetically take or reduce default exposure to a corporate entity. Credit derivatives are quickly becoming integrated with credit trading and risk management at many firms.

The credit derivative market has grown rapidly and is an increasing portion of total debt outstanding.

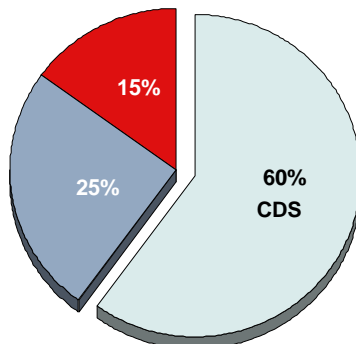


Source: British Banker's Association, Bank for International Settlements

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Credit Derivatives

Credit default Swaps (CDS) make up 60% of the credit derivatives market.



Single Name CDS
 Credit Index Products
 Other*

- Agreement between two parties to exchange the credit risk of an issuer (reference entity).
- No exchange of cash at time of transaction – may be exchanged in future based on market outcome.



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Credit Default Swap

- **Buyer of CDS pays a fee to purchase credit protection**
 - Short risk
 - Similar credit risk position to selling a bond short
 - Profit if reference entity has a credit event
- **Seller of CDS collects a periodic fee**
 - Long risk
 - Similar credit risk to owning a bond
 - Profit if the credit of the reference entity has no credit event
- **Fee = notional of swap * market price of CDS (spread)**
 - Quoted in basis points
 - Function of reference entity's credit risk



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Credit Default Swap

Settlement of CDS

- **No Credit Event** – CDS matures, no settlement, periodic payments from buyer to seller stop.
- **Credit Event** – settlement swap can be settled by physical or cash settlement.
- **Physical Settlement** – buyer delivers seller bonds with face value equal to notional amount of swap. Seller pays notional amount in cash to buyer.
- **Cash Settlement** – buyer and seller agree to unwind trade based on market price of defaulted bond. Notional- recovery rate.



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Credit Default Swap

The most common CDS applications are replication transactions. Replication involves the purchase of an underlying bond and the sale of a credit default swap.

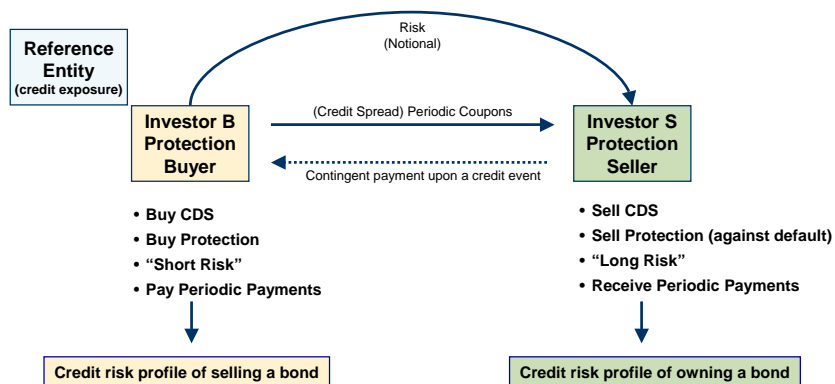
- **Cash is invested in the underlying asset**
- **CDS is attached to a host bond**
 - No upfront cash investment with CDS
 - Receive periodic payment
 - Similar credit risk to owning bond
- **Resulting yield is equivalent to holding a bond**
 - A function of underlying bond yield and CDS premium
 - Synthetically replicate a long bond position



Credit Default Swap Terminology/Mechanics

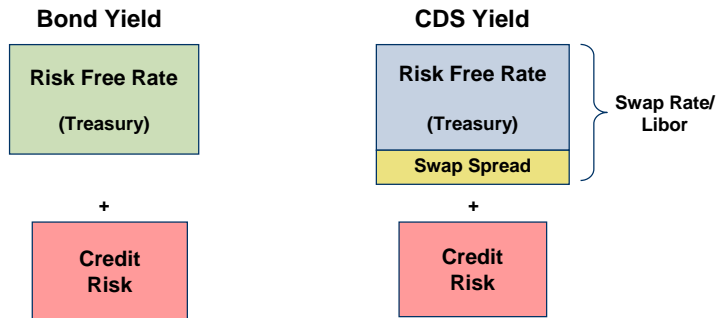
CDS market terminology can be confusing. Selling CDS has similar credit risk to buying a bond, while buying CDS is similar to selling a bond.

– No upfront cash investment with CDS –



Credit Default Swap – Pricing

Credit default swaps and bonds of the same credit both reflect the market's view of default risk, and should trade similarly.



- Compare bond spread to CDS spread to evaluate the relative value of CDS



Credit Default Swap - Pricing

*Bond price matters when comparing the economics of cash instrument and a CDS.
A long position in a bond and a CDS can trade at the same spread
but have a different loss profile in the case of a default.*

Bond		Credit Default Swap	
Par (notional)	\$100	Cash at risk (notional)	\$100
Bond price	\$110	CDS price	\$100
Ratio of par to price	0.9091		
Default recovery price	\$40	Default recovery price	\$40
Cash loss	(110-40) * 0.909 =	Cash loss	100 - 40 =
	\$63.64		\$60

- Premium bonds have more risk in the case of default.



Credit Default Swap - Pricing

The basis between a bond and CDS can signal trading opportunities.

- **Basis** refers to the difference, in basis points, between a CDS spread and a bond's par equivalent CDS spread
- **Negative basis:** CDS spread < bond spread
- **Positive basis:** CDS spread > bond spread

					Potential Trade	
Negative Basis	CDS Spread	-	Bond's Par Equivalent Spread	<	0	<div style="display: flex; justify-content: space-between;"> Buy Bonds (long risk) Buy Protection (short risk) </div>
					Potential Trade	
Positive Basis	CDS Spread	-	Bond's Par Equivalent Spread	>	0	<div style="display: flex; justify-content: space-between;"> Sell Protection (long risk) Sell Bonds (short risk) </div>



Application for Risk Management

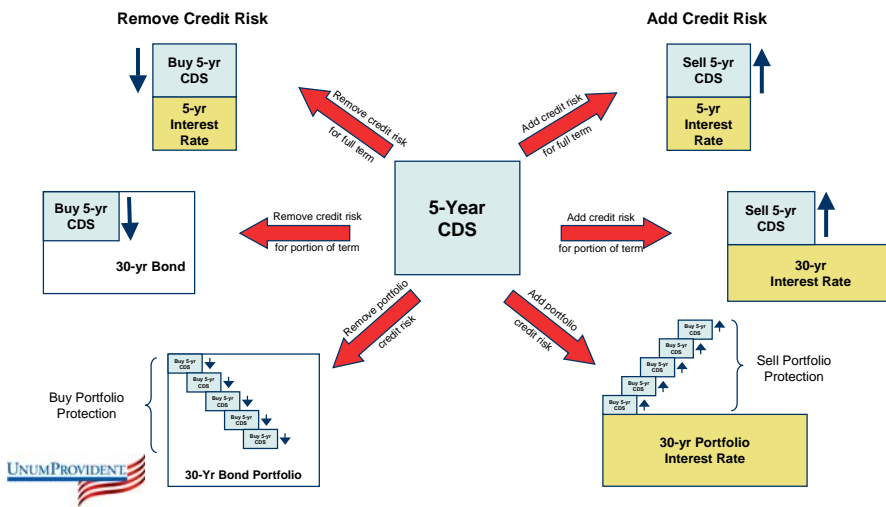
Credit derivatives produce a more flexible structure for managing risk than the cash market.

- **Means of separating the credit risk from interest rate risk**
- **Efficient mechanism for shorting a credit**
 - Synthetically trade without recognition of a capital gain (or loss) for accounting or tax purposes
 - Remove credit risk with minimal book yield impact
- **Provides ways to tailor credit investments**
 - Diversification of names
 - Assume exposure to credits that don't actively trade in the market
 - Variety of structures available



Flexibility of CDS Instrument

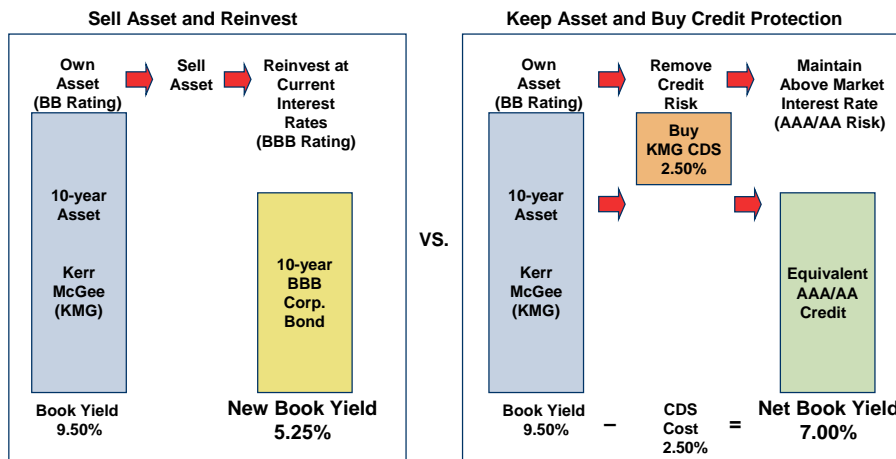
CDS provides opportunities to independently manage credit risk.



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Applications for Risk Management

Buying CDS protection offers alternative to selling high book yield asset and may result in higher yield/income than selling asset and reinvesting proceeds.



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Potential Uses of Credit Derivatives

Credit derivatives offer insurance companies the opportunity to increase the performance of their general account investment portfolios.

- **Operational Leverage Alternative**
 - Selling protection has low implicit costs. Provides attractive return on capital compared to other leverage opportunities.
- **Balance Sheet Management**
 - Synthetic trading with default swaps enables capital efficient repositioning of credit holdings without triggering gains/losses.
- **Relative Value Opportunities**
 - On an opportunistic basis, spreads in default swaps are sometimes wider than the cash bonds for particular names.
- **Diversification and Income Enhancement**
 - Robust liquidity and flexibility in the structured credit markets can create investment and yield profiles unavailable in the conventional cash markets.



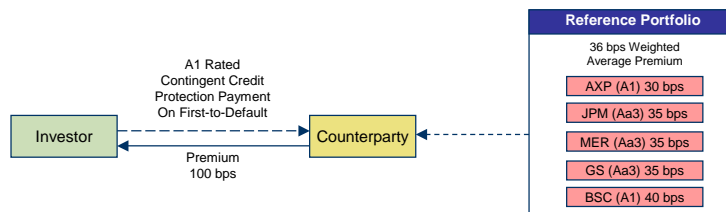
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Potential Uses of Credit Derivatives

Leveraged Credit Exposure

- A First To Default Basket exchanges fixed premium payments in return for a promise to make payment on the first credit in a specified portfolio to experience a credit event.

First-to-Default Basket Swap



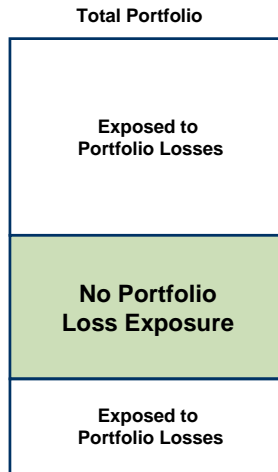
- **Strategic Rationale:** Enables insurance companies to diversify into higher quality names where they have little or no exposure. Increased yield in the higher quality names provided by investing in leveraged credit risk.



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Potential Uses of Credit Derivatives

Purchase of CDS insurance on a portfolio to provide a layer of credit protection over a specified time horizon (Credit Reinsurance).



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Potential Uses of Credit Derivatives

Second generation credit derivatives are creating further opportunities for risk management.

- **Take diversified long or short exposure to specific credit market**
 - Index position
- **Trade credit market volatility**
 - Credit default swap options
- **Trade on expected recovery rates**
 - Recovery swap
- **Trade on expected credit spread**
 - Constant maturity CDS
- **Take leveraged credit position**
 - First-to-default basket



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Benefits/Limitations of CDS

POSITIVES

- Separate credit from interest rate decision
- Credit spread pickup/improved earnings
- Liquidity – more names/diversification

NEGATIVES

- Explanation risk greater on non-hedging derivatives– not viewed like cash instruments
- Mark-to-market volatility for GAAP
 - Mitigated if long & short CDS
- Greater accounting scrutiny for derivatives