

## CREDIT RISK of SWAPS

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### Credit Risk Issues Arise

- ☞ The swap curve indicates what a dealer would pay / receive in a swap with a AAA or AA counterparty
- ☞ A puzzle:
  - spreads for lower quality counterparties are about the same
- ☞ How important is credit risk?
  - » Some argue that credit risk is underpriced in the swaps market, since swap spreads are much lower than corporate credit spreads.
  - » However, swaps have many special features, which substantially reduce their credit risk.

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## Loans

- ☞ Full principal at risk
- ☞ Full interest payments at risk
- ☞ Defaults always matter
- ☞ Covenants apply

## Swaps

- ☞ No principal at risk
- ☞ Only a spread payment at risk
- ☞ Default matters only if in the money
- ☞ Contracts often have rating-related unwind/settlement triggers and advanced credit enhancement and collateralization features

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## **Credit Enhancement**

- ☞ The most "matured" setting can be found on organized exchanges
- ☞ The OTC market provides
  - » a variety of standard (ISDA master agreement) and
  - » asset -specific / counterparty -specific additions

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## Credit Enhancement: Exchanges

- ☞ Options and futures **margin** requirements
  - » margin serves as a collateral
- ☞ Daily **mark-to-market** and possible **liquidation of a position**
  - » margin is proportional to avg. vol
  - » margin may be related to the nature of the trade (hedging or speculative)
- ☞ **Position limits** vis-a-vis each counterparty helps diversify default risk
- ☞ Cross-clearing agreements
  
- ☞ *The system is, however, not fool-proof*  
*(e.g., the case of Barings)*

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## Credit Enhancement: OTC Derivatives

- ☞ **Netting Arrangements**
  - » bilateral close-out is now standard in the ISDA master swap agreement
- ☞ **Position Limits**
  - » RM group monitors the "exposure profile" for each counterparty
  - » each trade is considered for its portfolio effect
- ☞ **Margins and Collateral**
  - » common to require dynamic margining

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## Credit Enhancement: OTC Derivatives

*Continued*

### ☞ Derivative Product Companies

- » dynamically capitalized
- » AAA-rated SPVs
- » Often a requirement of sovereigns

### ☞ Recouping

- » periodic change of coupon + payment to bring the transaction to market

### ☞ Credit Triggers

- » if a counterparty falls below investment grade, the other counterparty may require an immediate cash settlement (of questionable effectiveness)
- » common for long-dated swaps

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## Credit Exposure

### Key factors

- ☞ Current fair value
- ☞ Potential exposure
- ☞ Effect of netting, collateral and margin
- ☞ Probability of default
- ☞ The pecking order of various claimants
- ☞ Recovery rate

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## OTC Derivatives: “Current Exposure”

- ☞ “Risk based capital requirements” provide a common framework for the credit exposure for e.g. a swap
- ☞ Current exposure
  - $\text{MAX}[ 0 , V_t ]$
- ☞ due to an immediate default
  - » the current exposure is zero if you owe money on the swap (swap is out of the money).
  - » If in the money, you are exposed to the counterparty’s default

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## OTC Derivatives: “Potential Exposure”

- ☞ Potential exposure
  - $\text{MAX}[ 0 , V_t + \Delta V_{t,t+T} ]$
- ☞ ...OTM swap may be ITM upon default
- ➔ strong dependence on vol of underlying

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