Chapter 16
Introduction to Credit Risk
Sources of Credit Risk

- 何時發生credit-related losses
  - 交易對手沒還loan
  - option到期不履約
  - 交易對手之credit rating ↓，雖未破產，但造成持有的debt security價值↓
  - 市場對於market risk price改變(都保持BB-rating，但此級距之價格↓，但通常此項看成market risk)

★ Changes in value due to defaults and downgrades are considered to be credit risk
★ Changes in value due to changes in the risk-free interest-rate or changes in credit spread for a given grade are considered to be market risk
The Credit Life Cycle

- The credit-risk management alone the life cycle of a single loan
  - 審核 (and assigns a credit grade)
    - 個人看 income，個人徵信 (美國是 Equifax, TRW, and Experian，台灣是 JGJC 聯合徵信中心)
    - 企業看資產與負債，credit-rating agency 包括
      - Standard & Poor’s
      - Moody’s
      - Fitch IBCA
      - Dunn and Bradstreet (special for middle company)

* base on subjective judgments and objective models，客觀模型主要是考慮 balance sheet 與 profitability
* 除此之外，Moody’s KMV 還加入 equity price 之 volatility 來衡量公司風險
借款

- 依据审核结果，看银行要给多少credit给customer in what amount, at what interest rate, and with what terms
- The process up to closing the actual deal is called “origination” (发行) and the loan becomes part of bank’s portfolio
- 此时要如何管理此投资组合

目标：minimize the risk/return ratio of the portfolio

方法：
1. Sell the loan to another bank
2. 将loan资产证券化
3. 发行新的loan来diversify or concentrate the portfolio

回收

催收 (collections)

- collections department 又称为workout group or special assets group
Credit Approvals for Trading Counterparties

- 對於交易對手的credit risk，兩種limits (停損限制)
  - total exposure with one counterparty
  - daily settlement limit: which is the amount that the bank is prepared to exchange with the counterparty on any given day (怕當天本行匯錢過去，而對方中途違約，造成損失→Herstatt risk)
Why Measure Credit Risk

• 為什麼要measure credit risk？
  ■ 幫助origination decisions：
    ◆ 對為數眾多的retail customers, given the (measured) risk and “fixed” price，決定是否要借或要借多少
    ◆ 對公司：given the (measured) risk，決定要用多高之rate借出
  ■ 幫助portfolio optimization：
    ◆ 考慮資產間correlation, minimize the ratio of credit risk to return of portfolio by diversification (credit-portfolio model)
Why Measure Credit Risk

**Capital management:**

- Given the (measured) risk, 可決定維持一定 rating 所需之 EC
- 制定 provision，應付 average (expected) loss
  制定 reverses，應付 unusual bad year (1/20 之機率)
  制定 capital，應付 extraordinarily bad year (1/1000 之機率)
- 如果可以導出 probability-density function for the portfolio-loss rate，就可以據此計算出 provision, reverses, capital。這也是之後幾章要講的重點。