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

- 借錢
  - 依據審核結果，看銀行要給多少credit給customer in what amount, at what interest rate, and with what terms
  - The process up to closing the actual deal is called "origination" (發行) and the loan becomes part of bank's portfolio
  - 此時要如何管理此投資組合

    目標：minimize the risk/return ratio of the portfolio

    方法：
      1. Sell the loan to another bank
      2. 將loan資產證券化
      3. 發行新的loan來diversify or concentrate the portfolio

- 回收

- 催收 (collections)
  - collections department又稱為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

■ 幫助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。