- Fundamentals of Credit Analysis

Fundamentals of Credit Analysis

Risks

- Default risk 违约风险
- Valuation risk 估值风险
    - Credit migration, market liquidity

Credit risk

- Risk associated with the loss stemming from the failure of a borrower to make timely and full payments of interest or principal

Credit Risk Calculation

- Default risk
    - Probability of default
- Loss severity (LGD)
    - The value will lose if the issuer defaults
    - Can be monetary amount or as percentage of bond's value (principal and unpaid interest)
- recovery rate
    - percentage of a bond's value an investor will receive if the issuer defaults
    - $\text{recovery rate} = 1 - \text{loss severity in percentage}$
- Expected loss
    - $\text{expected loss} = \text{defualt risk } \times \text{loss severity}$

Spread risk

- yield spread
    - difference in **yield** between risky bond and risk-free bond
    - bond prices are **inversely** related to spread
- spread reflects
    - the **creditworthiness** of issuer
    - the **liquidity** of market
- spread risk
    - the possibility that a bond's spread will widen due to credit migration risk and market liquidity risk
- **credit migration risk / downgrade risk**
    - the spread will **increase** because the issuer has become less creditworthy
- **market liquidity risk**
    - the risk of receiving less than market value when selling a bond
    - it is reflected in the size of bid-ask spreads

Seniority and Priority

- priority of claims
    - a category of debt is ranked according to priority of claims in the event of **default**
- seniority ranking

    - a bond's priority of claims to the issuer's assets and cash flows
- secured debt (collateral, specific claim) > unsecured or **debentures** (general claim)
- secured debt
    - first lien or first mortgage (specific asset is pledged)
    - senior secured debt
    - junior secured debt
- unsecured debt (**senior** and **subordinated** (senior, normal, junior))
    - senior **unsecured**
    - **senior** subordinated
    - subordinated
    - **junior** subordinated
- pari passu / **same** priority of claims
    - all debt within the same category, on an equal footing
- seniority
    - more senior -> **higher** recover rate, **less** credit risk, **lower** yield
- **strict** priority of claim
    - not always applied in practice
- bankruptcies can be **costly** and **time**-consuming
    - during the time, assets can deteriorate
    - avoid unnecessary delays, **negotiation and compromise** among claimholders can result in a reorganization plan that does not **strictly** conform to original priority of claims

issuer and issue credit ratings

- corporate family rating (CFR) - issuer
    - assigned to issuer
    - based on their **senior unsecured** debt
    - S&P and Fitch
- corporate credit rating (CCR) - issue
    - assigned to issue
    - based on **creditworthiness** of the company
    - Moody
- grades
    - Investment grade: Rating > BBB-/Baa3
    - Non-investment grade: rating <= BB+/Ba1
- **Cross default provision**
    - A company's default on one bond **triggers** default on remaining issues
- **Notching**
    - Assign **different** ratings to bonds of the same issuer
    - Based on seniority, covenants, and recovery rate
    - More common to **lower-rated** issuers because of high default risks lead to significant differences between recovery rates of debt
- **Structural subordination** (parent < subsidiary)
    - Subsidiary's debt covenants restrict transfer of cash or assets "upstream"
    - Subsidiary bonds have a **priority** claim to its cash flows
    - Parent bond < subsidiary's bond

Rating Risks - Credit Rating Agencies

- Ratings are **dynamic**
  - Change over time
  - High credit ratings tend to be more stable
- Agencies are not **prefect**
  - Ratings mistakes occur
- Event risk is **difficult** to **assess**
  - Specific to a company or industry are difficult to predict and incorporate into credit rating
- Credit ratings **lag** market pricing
  - **Market prices and credit spreads** change much faster than credit ratings

Credit analysis

- Capacity
  - Industry structure 行业结构
    - Porter's five forces: threat of entry, power of suppliers, power of buyers, threat of substitution, rivalry among existing competitors
  - Industry fundamentals 行业基本面
    - Cyclicality 周期性
    - Growth prospects 增长
    - Published statistics
  - Company fundamentals 公司基本面
    - **Competitive** position 竞争
    - Operating history 经营历史
    - Management's strategy and execution 战略和执行
    - **Ratios** and ratio analysis 比例分析
- Collateral
  - **Intangible** assets 无形资产
    - **Patents** are high quality
    - **Goodwill is low quality**
  - **Depreciation 折旧**
    - High depreciation relative to capex -> not investing sufficiently
    - Quality of assets are poor -> high loss
  - Equity market capitalization 市值
    - A stock trades below book value -> assets of low quality
  - Human and intellectual capital 人力
- Covenants
  - Affirmative and negative covenants
- Character
  - Soundness of strategy
  - Track record
  - Accounting policies and tax strategies
  - Fraud and malfeasance record 欺诈
  - Prior treatment to bondholders
    - Debt-financed acquisitions, special dividend

Financial ratios

- Part of capacity analysis
- **Leverage** ratios and **coverage** ratios
- **Profits and cash flows**
    - EBITDA
        - Not adjusted for working capital and capex
    - Funds from operations (FFO)
        - FFO similar to CFO except that FFO excludes change in working capital
    - Free cash flow before dividends
        - NI + DA – change in working capital – capital expenditures
        - **CFO - capex**
    - Free cash flow after dividends
        - Free cash flow before dividends – dividend
        - CFO – capex - dividend
- **Leverage ratios**
    - Debt/capital
        - Lower -> lower risk
    - Debt/EBITDA
        - More volatile for cyclical or high operating leverage firms
    - FFO/debt
    - FCF after dividend/debt
- **Coverage** ratios
    - EBITDA/interest expense
        - More often than EBIT/interest
    - EBIT/interest expense
- Evaluate potential for upgrades and downgrades based on ratios relative to benchmarks

Yield Spread

- Yield = risk-free rate + expected inflation + credit spread + liquidity spread + maturity spread
- Yield spread = credit spread + liquidity spread

Spread Volatility Factors

- Credit cycle: widen as cycle deteriorates
- Economic conditions: widen as economy weakens
- Financial market performance: widen as weak-performing
- Broker-deal capital: widen as capital becomes scare
- General market demand and supply: widen as less demand and more supply

High Yield debt

- Pay more to **loss severity 损失严重性**
- Liquidity
    - Balance sheet cash
    - Working capital

    - Operating cash flow
    - Bank credit
    - Equity issued
    - Sales of asserts
- Financial projects
    - Future earnings and cash flows
- Debt structure 财务结构
    - Secured Bank debt > second lien debt > senior unsecured debt > **subordinated** debt > preferred stock
    - Subordinated debt may be converted to common shares
    - **Top heavy**
        - More secured bank debt
        - More likely to default and lower recovery rates for unsecured debt
- corporate structure 公司结构
    - holding company
    - **structural coordination**
        - upstream dividend is subordinated to interest payments
- convents
    - change of control put
        - buy back debt in case of acquisition
    - restricted payments
        - limit amount paid to equity
    - limitations on liens
        - limit the amount of secured debt
    - restricted versus unrestricted subsidiaries

Sovereign Debt

- ability and willingness
    - willingness: no legal **recourse** if government default
- framework areas
    - institutional effectiveness
    - economic prospects
    - **international investment** position
    - **fiscal** flexibility
    - **monetary** flexibility
- local currency rating > foreign current rating
- can print money

Non-Sovereign Debt

- local government
- must balance their operating budgets

municipal bonds

- interests are often **tax exempt**
- General Obligation (GO)
    - backed by taxing power

    - analysis is similar to sovereign bonds
- Revenue Bonds
    - specific projects
    - **higher** risk than GO
    - analysis is similar to corporate bonds