Corporate Issuers

22 ORGANIZATIONAL FORMS, CORPORATE ISSUER FEATURES, AND OWNERSHIP

Module 22.1: Features of Corporate Issuers

LOS 22.a: Organizational Forms of Businesses

- **Key Features of Organizational Forms:**
  - Separate legal identity or not.
  - Owners vs. operators distinction.
  - Liability: limited vs. unlimited.
  - Tax treatment of profits/losses.
  - Access to capital and risk distribution.

Feature	**Sole Proprietorship**	**General Partnership**	**Limited Partnership**	**Corporation (Ltd./Inc.)**
Legal Entity	Not separate from owner	Not separate from owners	Separate for limited partners only	Fully separate legal entity
Liability	Unlimited (personal assets at risk)	Unlimited for all partners	Unlimited (general partners), Limited (limited partners)	Limited to shareholder investment
Taxation	Profits taxed as personal income	Profits taxed as personal income of partners	Same as general partnership	Subject to corporate tax; dividends taxed again (double taxation possible)
Capital Access	Limited to owner's resources	Limited to partners' resources	Higher than general partnership	High (equity + debt financing)
Management	Owner-managed	Managed jointly by partners	Managed by general partners	Managed by board-appointed managers
Scale	Small	Small to medium	Medium to large	Large, common for multinational firms

Table 1: Comparison of Business Structures

Examples:

- *Sole Proprietorship* - A freelance consultant earns €80,000. All profits taxed as personal income; unlimited liability.

- *Limited Partnership* - A real estate project with one general partner (developer) and five limited partners (€5M investment). Limited partners risk only their contributions.
- *Corporation* - Apple Inc. shareholders cannot lose more than the value of their shares.

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LOS 22.b: Key Features of Corporate Issuers

- Corporations = **separate legal entity**.
- Rights: hire, borrow/lend, contract, sue/be sued.
- Shares issued → raise large capital, easily transferable.
- Shareholders elect **board of directors** → board hires management.
- Profits reinvested or distributed as dividends.
- Double taxation possible.

Example: Double Taxation of Dividends

(a) **100% payout:** Effective tax rate = 40%.

(b) **40% payout:** Effective tax rate = 31%.

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LOS 22.c: Public vs. Private Corporate Issuers

- **Public Companies:**
  - Listed on exchanges, transparent pricing.
  - Heavy reporting requirements (quarterly/annual).
  - Free float = shares available for public trading.
- **Private Companies:**
  - Shares not traded, illiquid, valuation difficult.
  - Light regulation, less disclosure.
  - Equity via private placements to accredited investors.

Feature	**Public Company**	**Private Company**
Ownership	Widely held, incl. retail + institutions	Few shareholders, often founders
Share Trading	Exchange-listed, liquid	Not exchange-listed, illiquid
Valuation	Market-determined	Negotiated privately
Regulation	Heavy compliance	Light compliance
Capital Raising	IPOs, secondary offerings, bonds	Private placements, VC, PE
Time Horizon	Short-term due to market pressure	Long-term focus possible

Table 2: Public vs. Private Corporations

Methods of Going Public / Private

- **IPO** – New shares issued, underwritten, raises fresh capital.
- **Direct Listing** – Existing shares listed, no new capital, quicker.
- **SPAC** – Blank-check company IPO → acquires target later.
- **Going Private** – Buyout + delisting to reduce compliance costs.

23 INVESTORS AND OTHER STAKEHOLDERS

Module 23.1: Stakeholders and ESG Factors

LOS 23.a: Financial Claims and Motivations of Lenders vs. Shareholders

- **Debtholders (Lenders):**
  - Legal, contractual claim on **interest + principal**.
  - Higher claim priority than equity holders.
  - Lower risk → lower required return.
  - Limited liability: losses cannot exceed invested amount.
  - No upside beyond contractual payments.
- **Equity Holders (Shareholders):**
  - Residual claim on company's net assets after all liabilities.
  - Unlimited upside potential if company grows.
  - Limited liability (max loss = investment).
  - Dilution risk if new equity is issued.
- **Company Value Relation:**

$$V_{\text{Company}} = V_{\text{Debt}} + V_{\text{Equity}}$$

  - If $V_{\text{Company}} > V_{\text{Debt}} \Rightarrow$ Equity increases with company value.
  - If $V_{\text{Company}} < V_{\text{Debt}} \Rightarrow$ Equity = 0; Debt value falls.

Example: Leverage and ROE

- Revenues = \$1,000; Expenses = \$800; Assets = \$1,000.
- Financing:

(a) **100% Equity:**

$$\text{Net Income} = 200, \quad \text{Equity} = 1,000$$

$$ROE = \frac{200}{1,000} = 20\%$$

(b) **50/50 Debt + Equity (Debt = 500, Equity = 500, Interest = 10% of 500 = 50):**

$$\text{Net Income} = 200 - 50 = 150, \quad \text{Equity} = 500$$

$$ROE = \frac{150}{500} = 30\%$$

Interpretation: Leverage increases ROE as long as return on assets (200/1000 = 20%) > cost of debt (10%).

Example: Impact of 15% Revenue Decrease

- New Revenues = \$850, Expenses = \$800.
- EBIT = \$50.

(a) **100% Equity:**

$$\text{Net Income} = 50, \quad ROE = \frac{50}{1,000} = 5\%$$

(b) **50/50 Debt + Equity:**

$$\text{Interest} = 50, \quad \text{Net Income} = 0, \quad ROE = 0\%$$

Conflict of Interest:

- Shareholders may prefer risky projects (potential upside).
- Debtholders prefer safety (default risk reduces their value).
- Covenants (e.g., max leverage, min interest coverage) restrict management to protect debtholders.

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LOS 23.b: Stakeholder Groups and Their Interests

- **Shareholder Theory:** Focus on maximizing equity value (owners vs. managers conflict).
- **Stakeholder Theory:** Broader view → conflicts among many groups.

Stakeholder	Role / Interests	Notes / Conflicts
Shareholders	Residual claimants, voting rights, want profitability & growth	Interested in maximizing share value, potential conflict with debt investors and managers
Lenders	Provide debt capital (public bonds, private loans)	Concerned with repayment, prefer lower risk; protected by covenants
Board of Directors	Protect shareholder interests, hire/fire managers, set strategy	One-tier (U.S., U.K.) vs. Two-tier (continental Europe) structures
Managers (Executives)	Run operations, compensated with salary + bonuses + perks	Incentives linked to firm performance; may pursue personal goals
Employees	Provide labor and skills, want pay, training, career growth	Can align via stock options or stock participation plans
Suppliers	Provide goods/services, want stability and solvency	Short-term creditors; sensitive to firm liquidity
Customers	Demand quality goods/services at fair price, after-sale support	Increasing interest in ESG (environment, ethics, sustainability)
Governments/Regulators	Collect taxes, ensure compliance, promote employment & social welfare	Impose laws/regulations, may conflict with shareholders

Table 3: Corporate Stakeholder Groups and Interests

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LOS 23.c: ESG Factors Considered by Investors

Why ESG matters:

1. Governments prioritize climate/social issues via regulation.
2. ESG factors can materially impact results (loss of goodwill, fines, governance failures).
3. Younger investors increasingly demand ESG-aligned investments.

Key ESG Factors:

- **Environmental:**
  - Climate change, carbon footprint, pollution, deforestation, water scarcity.
  - **Risks:** physical (weather events), transition (regulations), stranded assets.
  - Example: Oil spill → penalties, cleanup, litigation, reputation loss.
- **Social:**
  - Customer privacy, employee engagement, diversity & inclusion, labor relations, community ties.
  - Strong social practices → lower turnover, higher productivity, brand loyalty.
- **Governance:**
  - Board structure, independence, audit committee, executive compensation, anti-corruption, lobbying.

- Adequate governance ensures managers act ethically, lawfully, and in shareholder interests.

Evaluation of ESG Risks:

- Analysts must assess ESG impact on future cash flows.
- **Equity investors:** Most exposed (residual claimants).
- **Debt investors:** Less exposed unless ESG issues threaten solvency.
- Long-term debtholders ⇒ more exposed than short-term debtholders (e.g., stranded coal plant).

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24 CORPORATE GOVERNANCE: CONFLICTS, MECHANISMS, RISKS, AND BENEFITS

Module 24.1: Corporate Governance

LOS 24.a: Principal-Agent Relationship and Conflicts

- **Principal–Agent Relationship:**
  - Principal hires agent to act in their interest.
  - Conflict arises when agent's incentives ≠ principal's goals.
  - **Agency Costs:**
    - Direct costs: monitoring agents (auditors, compliance staff).
    - Indirect costs: lost opportunities, inefficient decisions.
- **Example: Insurance Agent Conflict**
  - Agent earns commission ⇒ incentive to write risky policies.
  - Principal (insurance company) wants only good risks.
  - Mitigation: underwriting standards + termination of bad agents.
- **Shareholders vs. Managers/Directors**
  - Shareholders = principals (want growth, can diversify).
  - Managers/Directors = agents (prefer lower risk, job security, perks).
  - **Information asymmetry:** managers know more than shareholders, making monitoring difficult.
- **Common Principal-Agent Conflicts:**

  - Insufficient managerial effort → poor investments.
  - Compensation misalignment:
    * Options → managers may take excessive risk (no downside for them).
    * Cash-based pay → managers too risk-averse.
  - Empire building (value-destroying acquisitions to grow size).
  - Entrenchment (protecting own position, copying competitors).
  - Self-dealing (using company resources for personal gain).

- **Conflicts Between Shareholders:**
  - Controlling shareholders vs. minority shareholders:
    * Controlling block may push diversification to reduce personal wealth risk.
    * Minority shareholders prefer efficient capital allocation.
  - Dual-class shares (different voting rights) can entrench founders.
  - CFA Institute **opposes dual-class structures**.

- **Conflicts Between Creditors and Shareholders:**
  - Shareholders prefer higher risk (potential upside).
  - Creditors have fixed upside (interest) but face higher default risk.
  - Management actions against creditors:
    * Issuing new debt (raising leverage).
    * Paying out higher dividends (reducing collateral).
  - Conflict is worse for long-term debtholders.

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LOS 24.b: Corporate Governance and Mechanisms to Manage Stakeholder Relationships

- **Corporate Governance:** System of internal controls and procedures to align interests and minimize conflicts.
- **Stakeholder Management:** Effective communication, transparency, and fair treatment of all stakeholders.
- **Transparency in Reporting:**
  - Public companies disclose in annual reports, proxy statements, notices.
  - Information includes financial performance, related-party transactions, executive pay, governance.
  - Improves monitoring by reducing information asymmetry.

Stakeholder Mechanisms:

Mechanism	Description	Examples / Notes
Annual General Meeting (AGM)	Management reports audited results, strategy, answers Qs. Shareholders vote.	Ordinary resolutions = simple majority (auditors, directors). Extraordinary = mergers, takeovers, liquidation.
Proxy Voting	Shareholders delegate voting rights.	Proxy can specify instructions or give discretion.
Activist Shareholders	Push for changes to improve shareholder value.	Lawsuits, board representation, proxy contests, tender offers.
Hostile Takeovers	Unfriendly acquisitions pressure boards to align with shareholder interests.	Defense: staggered boards, poison pills.
Creditors	Bond indentures define covenants; may form committees in distress.	Covenants: restrictions on leverage, collateral requirements.
Board Committees	Specialized groups oversee governance.	Audit, Compensation, Governance, Risk, Investment.
Employees/Customers/Suppliers	Labor laws, unions, ESOPs, contracts, social media influence.	Employees may have board representation in some countries.
Governments/Regulators	Enforce laws, listing requirements, governance codes.	Workplace safety, environmental regulation, stock exchange rules.

Table 4: Mechanisms of Corporate Governance and Stakeholder Management

Board Committees (examples):

- Audit Committee: financial reporting, internal controls, external auditors.
- Nominating/Governance Committee: board elections, code of ethics, compliance.
- Compensation Committee: exec/director pay (independent directors only).
- Risk Committee (banks): risk tolerance, enterprise-wide risk.
- Investment Committee (insurance): capital management, prudent investment policies.

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LOS 24.c: Risks of Poor Governance and Benefits of Effective Governance

- **Risks of Poor Governance:**
  - Weak audits/board oversight → fraud, poor recordkeeping.
  - Managers pursue self-interest (risk avoidance, empire building, self-dealing).
  - Misaligned executive compensation.
  - Related-party transactions benefiting insiders.
  - Poor compliance → legal and reputational risks.
  - Violating stakeholder rights → lawsuits, defaults, bankruptcy.
- **Benefits of Effective Governance:**
  - Aligns management incentives with shareholder interests.

- Improves efficiency and monitoring.
- Reduces legal/regulatory risks.
- Formal conflict-of-interest policies improve performance.
- Better creditor protection → lower cost of debt financing.
- Strong governance ⇒ higher company valuation.

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25 WORKING CAPITAL AND LIQUIDITY

Module 25.1: Liquidity Measures and Management

LOS 25.a: Cash Conversion Cycle (CCC)

- **Definition:** Measures efficiency of cash flow management:

$$\begin{aligned} CCC = &\text{ Days of Inventory on Hand (DOH)} \\ &+ \text{Days Sales Outstanding (DSO)} \\ &- \text{Days Payables Outstanding (DPO)} \end{aligned}$$

- Represents time taken to turn investments in inventory into cash inflows.
- Lower CCC ⇒ faster cash generation, higher efficiency.
- High CCC ⇒ slower conversion, potential liquidity issues.

Management of CCC:

- Reduce DOH (inventory) → risk of shortages.
- Reduce DSO (receivables) → risk of lost sales.
- Increase DPO (payables) → implicit supplier financing, but may strain supplier relations.

Supplier Financing Terms:

- Terms: a/b net c = discount a if paid within b days; otherwise full payment due in c days.
- Effective Annual Rate (EAR) of supplier financing:

$$EAR = \left(1 + \frac{a}{1-a}\right)^{\frac{365}{c-b}} - 1$$

Example: EAR of Supplier Financing

- Terms: 2/10 net 30.
- Financing period $= 30 - 10 = 20$ days.

$$EAR = \left(1 + \frac{0.02}{0.98}\right)^{\frac{365}{20}} - 1 = 44.6\%$$

- Compare with bank loan at 8% $\rightarrow$ cheaper to borrow from bank to pay early.

Industry Comparison:

- Pharma: long CCC (large, expensive inventories).
- Airlines: short CCC (prepaid sales, minimal inventory).
- Compare CCC **within industries**.

Working Capital:

$$\text{Net Working Capital} = \text{Operating Current Assets} - \text{Operating Current Liabilities}$$

- Expressed relative to sales for comparability across companies.
- Closely linked with CCC.

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LOS 25.b: Liquidity and Issuer Liquidity Levels

- **Liquidity of Assets:** Nearness to cash.
  - Cash & marketable securities = highly liquid.
  - AR less liquid; Inventory least liquid.
- **Liquidity of Issuer:** Ability to meet short-term obligations.

Primary Liquidity Sources:

- Cash & marketable securities.
- Bank borrowings.
- Operating cash flow.

Secondary Liquidity Sources:

- Suspend dividends.
- Delay/reduce capex.
- Sell assets.

- Issue equity.
- Restructure debt.
- Bankruptcy protection (last resort).

Example: Cost of Liquidity

- Drake Corp sells $600k assets for $480k immediate cash.
- Cost of liquidity = $120k = 20%.
- Interpretation: forced sale at discount = liquidity cost.

Factors Affecting Liquidity:

- **Drags** = delayed inflows (slow AR collections, obsolete inventory).
- **Pulls** = accelerated outflows (suppliers reduce credit, demand faster payment).

Liquidity Ratios:

$$\text{Current Ratio} = \frac{CA}{CL}, \quad \text{Quick Ratio} = \frac{CA - Inventory}{CL}, \quad \text{Cash Ratio} = \frac{\text{Cash \& Equivalents}}{CL}$$

Example: Drake Corp Liquidity Ratios

Ratio	**20X1**	**20X2**
Current Ratio	1.99	1.73
Quick Ratio	1.00	0.58
Cash Ratio	0.45	0.19

Table 5: Liquidity Ratios for Drake Corporation

Interpretation: Declining across the board → worsening liquidity.

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LOS 25.c: Working Capital and Liquidity Management

- **Objective:** Balance profitability with sufficient liquidity to operate and meet obligations.
- **Trade-off:**
  - More ST assets = safety but lower returns.
  - ST financing = cheaper but riskier than LT debt.

Working Capital Approaches:

Approach	Description	Benefits / Risks
Conservative	Hold high ST assets, financed by LT debt/equity.	Safer (less rollover risk), flexibility, higher costs, lower profitability.
Aggressive	Low ST assets, financed by ST debt.	Lower cost, higher risk of liquidity shortfalls, vulnerable to disruptions.
Moderate	Match permanent assets with LT financing; seasonal with ST financing.	Balanced cost and risk.

Table 6: Working Capital Management Approaches

Short-Term Liquidity Sources:

- Factors influencing access:
  - Company size (small firms = limited options).
  - Creditworthiness (affects rates and covenants).
  - Legal system protections for lenders.
  - Regulatory environment (restrictions in banking/utilities).
  - Available collateral (underlying assets).

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26 CAPITAL INVESTMENTS AND CAPITAL ALLOCATION

Module 26.1: Capital Investments and Project Measures

LOS 26.a: Types of Capital Investments

- **Going Concern Projects:**
  - Maintain business operations or reduce costs.
  - Examples: replacing obsolete equipment, efficiency improvements.
  - Financing approach: match-funding (finance with capital sources consistent with project life).
  - Analysts often approximate by annual depreciation expense.
- **Regulatory / Compliance Projects:**
  - Required by government or insurers (e.g., safety, environmental).
  - Generate little to no revenue; focus on compliance alternatives.
- **Expansion Projects:**

  - Grow the business: enter new markets, new products.
  - Require detailed forecasting of revenues/expenses.
- **Other Projects:**
  - Outside current business lines (startups, new tech, acquisitions).
  - High uncertainty and risk (e.g., risk of overpaying in acquisitions).

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LOS 26.b: Capital Allocation Process and Project Measures

Capital Allocation Steps:

1. Idea generation (sources: mgmt, employees, external).
2. Analyze proposals (forecast expected cash flows).
3. Create firm-wide capital budget (prioritize projects by strategy and resources).
4. Monitor and post-audit (compare actual vs. forecasted results, improve forecasting).

Net Present Value (NPV):

$$NPV = \sum_{t=1}^{T} \frac{CF_t}{(1+r)^t} - C_0$$

- CF_t = incremental after-tax cash flow.
- r = discount rate (cost of capital).
- C_0 = initial investment.
- Decision rule: Accept if NPV > 0.

Example: NPV Calculation

- Assume $C_0 = 1,000$, cash inflows = 400 per year for 3 years, cost of capital = 9%.

$$NPV = \frac{400}{1.09} + \frac{400}{1.09^2} + \frac{400}{1.09^3} - 1,000 = 34.6 \text{ (positive, accept project)}$$

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Internal Rate of Return (IRR):

$$NPV = 0 \quad \Rightarrow \quad \sum_{t=1}^{T} \frac{CF_t}{(1+IRR)^t} = C_0$$

- IRR = discount rate that makes NPV = 0.

- Decision rule: Accept if IRR > required rate of return.
- Required rate of return = usually cost of capital (adjusted for project risk).
- Hurdle rate = minimum acceptable IRR.

Example: IRR Calculation

- Same cash flows as NPV example.
- IRR = 19.4% (calculated with calculator/Excel).
- Since IRR (19.4%) > required rate (9%) ⇒ accept project.

Cash Flow Patterns:

- Conventional: one sign change (outflow → inflows).
- Unconventional: multiple sign changes (may produce multiple IRRs).

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NPV vs. IRR — Comparison

Method	Advantages	Disadvantages
NPV	Direct measure of value added to shareholders; theoretically best.	Requires cost of capital; less intuitive to non-financial managers.
IRR	Intuitive % return measure; shows margin of safety.	Assumes reinvestment at IRR; multiple IRRs possible with unconventional flows; may conflict with NPV.

Table 7: NPV vs. IRR Comparison

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Return on Invested Capital (ROIC):

$$ROIC = \frac{NOPAT}{\text{Average Total Capital}} = \frac{\text{After-tax Operating Profit}}{\text{Debt + Equity}}$$

- $NOPAT$ = Net Operating Profit After Tax = Net Income + After-tax Interest.
- Measures return to all capital providers (debt + equity).
- Decomposition:

$$ROIC = \text{Operating Margin After-tax} \times \text{Capital Turnover}$$

- Compare ROIC to cost of capital:
  - ROIC > cost of capital ⇒ value creation.
  - ROIC < cost of capital ⇒ value destruction.

Attractions of ROIC:

- Based on accounting data (available to outsiders).
- Firm-wide measure (not project-specific).
- Useful for investors who can't access internal project details.

Limitations of ROIC:

- Not comparable across firms due to accounting differences.
- Backward-looking, volatile year-to-year.
- Firm-wide measure may mask bad projects within good performance.

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LOS 26.c (Implied): Contrast of Measures in Capital Allocation

- **NPV:** Best theoretical measure, absolute dollar impact on firm value.
- **IRR:** Useful as
- **ROIC:** Firm-wide accounting-based measure, useful for external investors.

Metric	What it Measures	Strengths	Weaknesses
NPV	Dollar value added	Direct impact on shareholder wealth; best decision criterion	Needs cost of capital, less intuitive
IRR	Percentage return	Easy to communicate; shows margin of safety	Assumes reinvestment at IRR; multiple IRRs possible
ROIC	Firm-wide return on capital employed	Accounting data available to outsiders; compares firm return to cost of capital	Backward-looking; may mask poor projects; non-comparable across firms

Table 8: Comparison of NPV, IRR, and ROIC

Module 26.2: Capital Allocation Principles and Real Options

LOS 26.c: Principles of Capital Allocation and Common Pitfalls

Principles of Capital Allocation:

- **Decisions based on after-tax cash flows, not accounting income.**
  - Accounting income uses accruals ⇒ ignores timing.
  - Taxes reduce firm value ⇒ include tax effects and tax shields.
  - Non-cash deductions (depreciation, amortization) provide tax savings and must be included.

- **Only incremental cash flows matter.**
  - **Sunk costs:** irrecoverable costs (e.g., past consulting fees) should be ignored.
  - **Cannibalization:** negative impact on existing product sales (e.g., diet soda reduces regular soda sales).
  - **Positive externalities:** complementary effects (e.g., iPhone boosts MacBook sales).
- **Timing of cash flows is important.**
  - Time value of money (earlier cash flows = more valuable).
  - Projects with identical totals but earlier inflows are better.

Common Mistakes in Capital Allocation:

- **Cognitive Errors (calculation errors):**
  - Poor forecasting (misallocating overhead, ignoring competitor reactions).
  - Ignoring cost of internal funds (retained earnings $\neq$ free).
  - Inflation misaccounting (nominal vs. real mismatch).
- **Behavioral Biases (judgment errors):**
  - Pet projects of senior management (optimistic projections, low scrutiny).
  - Inertia in capital budgets (anchoring to last year rather than new opportunities).
  - EPS/ROE focus (rejecting good NPV projects if short-term EPS/ROE falls).
  - Failure to generate alternatives (settling for the first "good" project).

Category	Examples	Consequences
Cognitive Errors	Ignoring competitor response; not adjusting for inflation; ignoring cost of equity	Misleading projections, poor project selection
Behavioral Biases	Pet projects; static budgets; EPS/ROE myopia; lack of alternatives	Biased decisions, inefficient allocation, shareholder value destruction

Table 9: Common Pitfalls in Capital Allocation

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LOS 26.d: Real Options in Capital Investments

Definition:

- Real options = flexibility embedded in projects.
- Similar to financial options: right (not obligation) to take future action.

- Options never have negative value (if worthless, simply not exercised).

Types of Real Options:

- **Timing Options:** Delay investment until better information is available. *Example:* A firm postpones building a factory until demand forecasts improve.
- **Abandonment Options:** Exit if losses exceed benefits. *Example:* A mining project abandoned if commodity prices fall below break-even.
- **Expansion (Growth) Options:** Invest further if project is successful. *Example:* Build additional data centers if cloud demand grows.
- **Flexibility Options:** Adjust operations dynamically.
  - **Price-setting:** Raise prices when demand is strong.
  - **Production-flexibility:** Use different materials, overtime, or adjust product mix.
- **Fundamental Options:** Project itself behaves like an option on underlying asset. *Example:* A copper mine is valuable only if copper prices are high (option to open/close).

Incorporating Real Options into Valuation:

- Estimate value of options and add to base NPV (subtract cost of option).
- Tools: option pricing models, decision trees.
- NPV without options = minimum project value.

Option Type	Description	Example
Timing	Delay investment until uncertainty resolves	Pharmaceutical firm delays R&D until regulatory clarity
Abandonment	Exit project if future cash flows < salvage value	Close factory if losses persist
Expansion	Increase scale if successful	Add new stores if pilot store is profitable
Flexibility	Adjust operations (pricing, production)	Raise price or switch input materials
Fundamental	Project linked to underlying asset price	Copper mine depends on copper spot price

Table 10: Types of Real Options in Capital Investments

27 CAPITAL STRUCTURE

Module 27.1: Weighted-Average Cost of Capital (WACC)

LOS 27.a: Calculate and Interpret WACC

Definition:

- WACC = blended cost of debt and equity financing.
- Reflects a firm's opportunity cost of capital for new projects.

$$\text{WACC} = \left[w_d \times r_d \times (1 - T)\right] + \left[w_e \times r_e\right]$$

Where:

- w_d = weight of debt
- r_d = pretax cost of debt
- T = corporate tax rate
- w_e = weight of equity
- r_e = cost of equity

Key Notes:

- Cost of debt $<$ cost of equity (due to priority of claims and tax deductibility).
- After-tax adjustment: interest expense is tax deductible.
- Weights may be based on:
  - **Target weights** (management's intended capital structure).
  - **Market value weights** (reflect current opportunity cost of capital, preferred for valuation).

Example: ABC Inc.

- Capital structure: 50% debt, 50% equity
- Cost of debt = 8%
- Cost of equity = 11%
- Corporate tax rate = 30%

$$\text{WACC} = (0.50 \times 0.08 \times (1 - 0.30)) + (0.50 \times 0.11) = 0.083 = 8.3\%$$

Input	**Value**	**Contribution to WACC**
Debt weight (w_d)	0.50	$0.50 \times 0.08 \times (1 - 0.30) = 0.028$
Equity weight (w_e)	0.50	$0.50 \times 0.11 = 0.055$
Total WACC	–	**0.083 = 8.3%**

Table 11: Example: WACC for ABC Inc.

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LOS 27.b: Factors Affecting Capital Structure and WACC

Objective:

- Firms target a capital structure that minimizes WACC.
- Consider the **capacity to service debt**.

Internal Factors:

- **Revenue growth & stability:** More stable ⇒ higher debt capacity.
- **Cash flow predictability:** Stable/growing ⇒ more debt support.
- **Business risk:** Higher risk ⇒ lower debt capacity.
- **Asset base:** Tangible/liquid assets ⇒ better collateral, cheaper debt.

External Factors:

- Market conditions (credit spreads, investor appetite).
- Business cycle phase (recession ⇒ higher spreads).
- Regulation & industry norms.

Firm-Specific Characteristics:

- High existing leverage ⇒ lower additional debt capacity.
- Volatile revenues/earnings ⇒ less ability to borrow.
- Leverage and coverage ratios (e.g., Interest Coverage = $\frac{\text{EBIT}}{\text{Interest Expense}}$) measure debt service capacity.

Impact of Life Cycle Stages:

1. **Start-up:**
   - Sales/cash flow low or negative.
   - High business risk, limited collateral.
   - Mostly equity financing; may use *convertible debt* or *leasing*.
2. **Growth:**
   - Rising revenue/cash flow, reduced business risk.
   - Conservative use of debt (secured by assets/receivables).
3. **Mature:**
   - Slowing growth, stable cash flows.

- Greater access to low-cost debt, including unsecured.

Stage	Characteristics	Debt Capacity	Financing Sources
Start-up	Low/negative CF, high risk, little collateral	Very low	Equity, convertible debt, leasing
Growth	Rising CF, reduced risk	Moderate (secured debt possible)	Equity + secured loans
Mature	Stable CF, low risk	High (unsecured debt available)	Debt + retained earnings

Table 12: Life Cycle Stages and Capital Structure

Top-Down (Macroeconomic) Factors:

- Benchmark interest rates (e.g., U.S. Treasury).
- Credit spreads (wider in downturns).
- Inflation, GDP growth, monetary policy, FX rates.
- Cyclical industries more affected than non-cyclical.

Industry-Specific Examples:

- Oil sector: profitability linked to oil prices. Credit spreads narrow when oil prices rise.
- Subscription-based firms (e.g., SaaS): high debt capacity due to stable revenues.
- Cyclical manufacturers: lower debt tolerance due to volatile demand.

27.2 Capital Structure Theories

- **MM Proposition I (No Taxes): Capital Structure Irrelevance**
  - Assumptions:
    - Perfect capital markets: no taxes, transaction costs, or bankruptcy costs.
    - Homogeneous expectations of investors.
    - Risk-free borrowing/lending possible.
    - No agency costs (no conflict between managers and shareholders).
    - Investment decisions independent of financing decisions.
  - Key Idea: Firm value does not depend on how it is financed ("the size of the pie is constant regardless of how sliced").
  - Explanation:
    - In an all-equity firm, value = PV of EBIT discounted at cost of equity.
    - In a levered firm, EBIT is split between debt and equity holders, but total value = same as all-equity case.

- **MM Proposition II (No Taxes): Cost of Equity and Leverage**
  - As leverage (D/E ratio) increases:
    * Cost of equity rises linearly due to higher risk of residual claims.
    * Cost of debt remains lower than cost of equity (priority claims).
    * WACC remains constant (benefit of cheaper debt is offset by higher cost of equity).
  - Formula:
$$k_e = k_0 + (k_0 - k_d)\frac{D}{E}$$
    where:
    * k_e = cost of equity
    * k_0 = cost of capital of unlevered firm
    * k_d = cost of debt
- **MM With Taxes: Debt Creates Value**
  - Interest expense is tax-deductible, creating a **tax shield**.
  - Value of a levered firm:
$$V_L = V_U + (t \times D)$$
    where t is corporate tax rate.
  - WACC declines with leverage since after-tax debt is cheaper:
$$WACC = \frac{E}{V}k_e + \frac{D}{V}k_d(1-t)$$
  - Implication: Value maximized at 100% debt (theoretically).
  - Example: If tax rate = 30%, Debt = 100m, tax shield = 0.30×100 = 30m increase in firm value.
- **Costs of Financial Distress**
  - **Direct costs**: Legal + administrative fees during bankruptcy.
  - **Indirect costs**: Lost customers, suppliers, reputation, and investment opportunities.
  - **Agency costs of debt**: Conflicts between equity holders and debtholders during distress.
  - Higher leverage $\Rightarrow$ higher probability of distress.
- **Static Tradeoff Theory**
  - Balances:
$$V_L = V_U + (t \times D) - PV(\text{costs of financial distress})$$

  - Firm value initially rises with leverage (tax shield), but beyond a point expected costs of distress dominate.
  - Optimal capital structure = point where WACC is minimized and firm value is maximized.

- **Target Capital Structure**
  - Firms choose a long-run average mix of debt and equity to maximize value.
  - Approaches to estimate:
    * Use firm's current structure (market-value based).
    * Use industry averages.
    * Incorporate observed trends in leverage.

- **Agency Costs of Equity**
  - Conflicts of interest between managers and shareholders.
  - Components:
    1. Monitoring costs: supervising management, board costs.
    2. Bonding costs: commitments, insurance, non-competes.
    3. Residual losses: costs that persist despite monitoring/bonding.
  - **Free Cash Flow Hypothesis**: More debt reduces excess free cash, forcing managers to act more efficiently.

- **Pecking Order Theory (Asymmetric Information)**
  - Firms prefer financing options in this order:
    1. Internal funds (no negative signals).
    2. Debt (moderate signals).
    3. Equity (often negative signal, managers may issue when overvalued).
  - Result: Capital structure is an outcome of sequential financing choices, not a pre-set optimal ratio.

Table 13: Summary of Capital Structure Theories

Theory	**Key Idea**	**Implications**
MM I (No Taxes)	Firm value independent of capital structure.	Financing choice irrelevant for value.
MM II (No Taxes)	Cost of equity rises with leverage; WACC constant.	No advantage to debt or equity.
MM with Taxes	Tax shield of debt increases firm value.	Value maximized at 100% debt.
Static Tradeoff	Tradeoff between tax shield and distress costs.	Optimal leverage exists where WACC minimized.
Pecking Order	Financing choice follows hierarchy (internal → debt → equity).	Capital structure is path-dependent, not fixed.
Agency Costs	Conflicts between managers vs. shareholders and debt vs. equity holders.	More debt can discipline managers (reduce free cash flow misuse).

28 BUSINESS MODELS

Module 28.1: Business Model Features and Types

LOS 28.a: Key Features of Business Models

- **Definition:** A business model explains how a firm creates, delivers, and captures value. It answers **who, what, how, where, and how much**.
- **Who (Customers):**
  - Identify potential customers and segment them (e.g., geographic, demographic, or niche groups).
  - Analyze cost of customer acquisition and methods to monitor satisfaction.
  - **Example:** A dog-food startup may define its market as "urban dog owners aged 20–40."
- **How (Assets and Suppliers):**
  - Key assets: patents, proprietary software, strong brand, or skilled employees.
  - Key suppliers: battery suppliers for Tesla, lithium miners for battery makers.
- **What (Products/Services):**
  - Define differentiation: low price, premium quality, or unique features.
  - **Example:** Apple differentiates via design + ecosystem integration.
- **Where (Channels):**

  - Direct vs. intermediaries (wholesalers, franchisees).
  - Omnichannel strategies = digital + physical integration.
  - B2B vs. B2C business distinctions.

- **How Much (Pricing Strategy):** Pricing depends on industry competition and differentiation.

Pricing Strategies and Models

Model	Explanation	Example
Price Takers	Firms in commodity industries must accept market price.	Oil producers, home loans.
Pricing Power	Firms with unique products/oligopolies can charge premiums.	Patented drugs, luxury goods.
Price Discrimination	Different prices for different segments.	Airlines: off-peak vs. peak tickets.
Bundling	Multiple complementary products sold together.	Telecom: internet + TV package.
Razors-and-Blades	Low-margin equipment, high-margin consumables.	Printers and ink cartridges.
Add-on Pricing	Extra options with high margins.	Car upgrades (GPS, leather seats).
Penetration Pricing	Low price initially to gain scale.	Netflix's early subscription model.
Freemium	Free base, paid premium features.	Spotify free vs. premium.
Hidden Revenue	Free product, revenue via ads/data.	Google Search, Facebook.
Subscription	Pay recurring fee for access.	Microsoft Office 365.
Licensing / Franchising	Rights sold to third parties.	McDonald's franchises, biotech licensing.

Table 14: Common Pricing Models and Examples

Value Proposition and Value Chain

- **Value Proposition:** Why customers buy the product (quality, price, innovation).
- **Value Chain:** How the firm executes value creation (Michael Porter's 5 activities):
  1. Inbound logistics
  2. Operations
  3. Outbound logistics

4. Marketing
5. Sales and service

- **Example:** Amazon's value chain integrates warehousing (logistics), Prime subscription (marketing), and fast delivery (operations).

LOS 28.b: Types of Business Models

- **Conventional Models:** Industry-specific (manufacturers, retailers, banks, brokers, software firms).
- **Private Label / Contract Manufacturing:** Firms produce goods for other brands. **Example:** Costco's Kirkland brand.
- **Licensing Agreements:** Brand used by others for a fee. **Example:** Marvel characters on toys.
- **Value-Added Resellers:** Add services/customization to existing products. **Example:** IT resellers adding installation + support.
- **Innovative Models:**
  - **SaaS:** Subscription-based software (e.g., Salesforce).
  - **Ultra-Low-Cost Airlines:** Ryanair, AirAsia.
  - **Discount Brokers:** Robinhood, Trade Republic.
- **Network Effects:** Value rises with more users. **Examples:** WhatsApp, Facebook, Airbnb.
- **Crowdsourcing Models:** Rely on user contributions. **Examples:** Wikipedia, Waze, Open-source software.