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CFA二级培训项目

Corporate Finance



CFA 二级考试知识点及其比重

Session NO.	Content	Weightings
Study Session 1-2	Ethics & Professional Standards	10-15
Study Session 3	Quantitative Methods	5-10
Study Session 4	Economic Analysis	5-10
Study Session 5-7	Financial Statement Analysis	15-20
Study Session 8-9	Corporate Finance	5-15
Study Session 10-12	Equity Analysis	15-25
Study Session 13	Alternative Investments	5-10
Study Session 14-15	Fixed Income Analysis	10-20
Study Session 16-17	Derivative Investments	5-15
Study Session 18	Portfolio Management and Wealth Planning	5-10
	Total:	100

Review of Level I basics & Links with Level II

Corporate Finance

How to create wealth?

Investment decision

Invest in project – Capital budgeting (R25)
Invest in company – M&A (R29)

How to fund the investment?

Financing decision

Debt or equity finance – Capital structure (R26)

How to distribute the wealth?

Dividend decision

Distribute or retain – Dividend and share repurchase (R27)

Review of Level I basics & Links with Level II

➤ The main objective of an entity is shareholders wealth maximization

● Shareholders wealth includes two elements:

✓ Capital gain = $P_1 - P_0$

✓ Dividend income = D_1

✓ Holding period yield (HPY) =
$$\frac{P_1 - P_0 + D_1}{P_0}$$

Framework of Corporate Finance

SS 8

- R22: Capital Budgeting
- R23: Capital Structure
- R24: Dividends and Share Repurchases

SS 9

- R25: Corporate Performance, Governance, and Business Ethics
- R26: Corporate Governance
- R27: Mergers and Acquisitions *

Introduction to Capital Budgeting

➤ Capital Budgeting

- Capital budgeting project evaluation
- Inflation effects on capital budgeting
- Mutually exclusive projects with different lives
- Project risk analysis
- Using the CAPM in capital budgeting
- Evaluating projects with real options
- Common capital budgeting pitfalls
- Alternative measures of income and valuation models
- Other valuation models

Cash flow projection

➤ Capital projects can be classified as

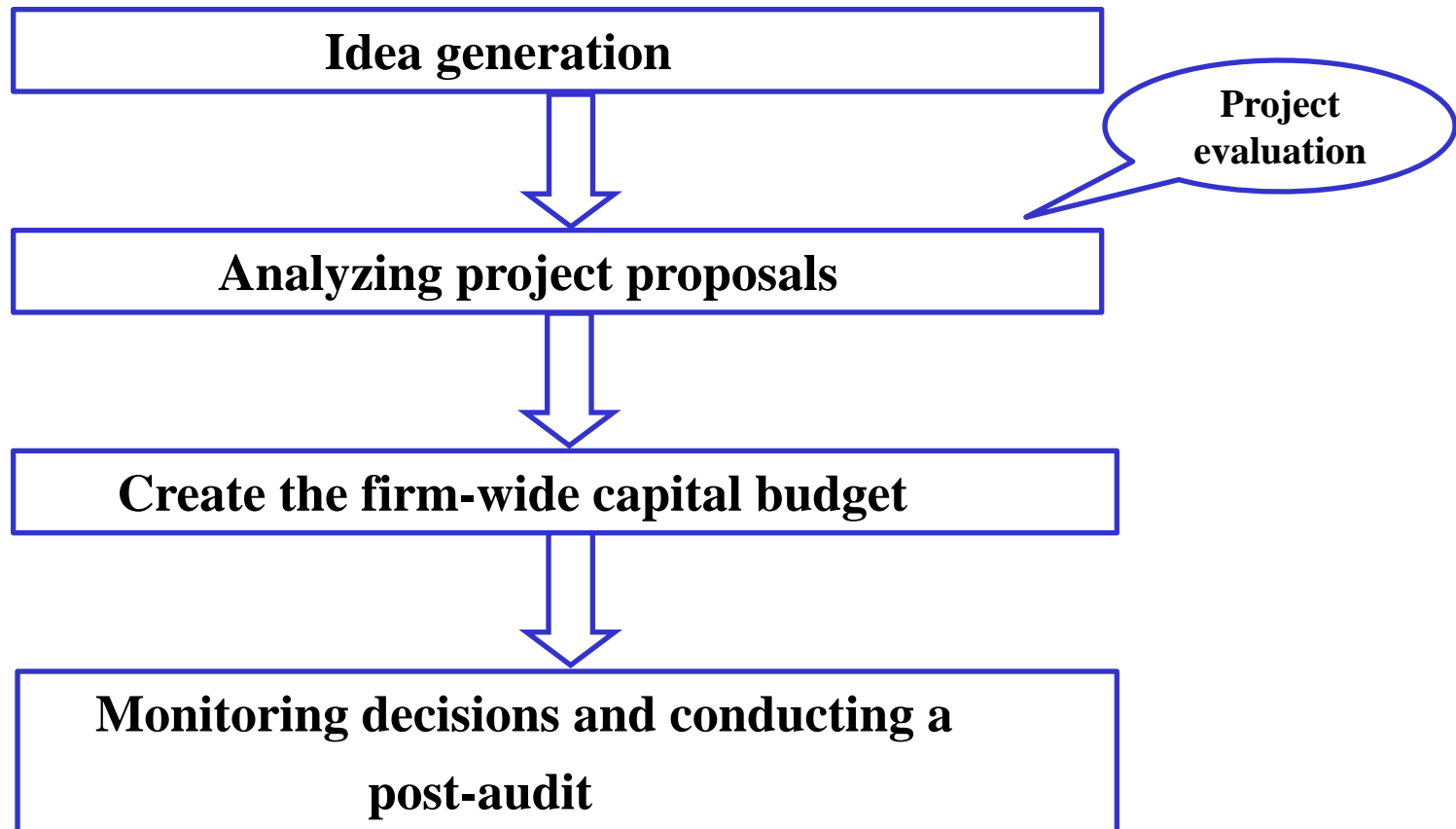
- Replacement projects to maintain the business
- Replacement projects for cost reduction
- Expansion projects
- New product or market
- Mandatory investment
- Other projects

➤ Principles of capital budgeting

- Decision are based on CF (incremental), not accounting income
 - ✓ Sunk costs (not included) & Externalities (included)
- Cash flow are based on opportunity costs
- The timing of cash flows is important
- Cash flow are analyzed on an after tax basis
- Financing costs are reflected in the project's required rate of return

The capital budgeting process

Capital budgeting is the process of selecting and determining the most profitable long-term projects



The categories of capital budgeting projects

➤ Capital budgeting projects can be classified as

- Replacement projects

- ✓ Replacement decision to maintain the business

- ✓ Replacement decision for cost reduction purpose

Detailed analysis
required

The best way is
NPV

- Expansion projects

- ✓ Expansion projects for existing product

- ✓ Expansion projects for new product

- Mandatory investment: regulatory, safety, and environmental project

- Other projects: projects are not easily analyzed through the capital budgeting process

MACRS

- The half-year convention under MACRS assumes that the asset is placed in service in the middle of the first year.
- The depreciable basis = purchase price + shipping or handling and installation costs. The basis is not adjusted for salvage value regardless of whether the accelerated or straight-line method is used.

**Depreciation methods affect capital budgeting decisions
because they affect after-tax cash flow.**

**In general,
accelerated depreciation methods (MACRS) lead to
higher after-tax cash flows and a higher project NPV.**

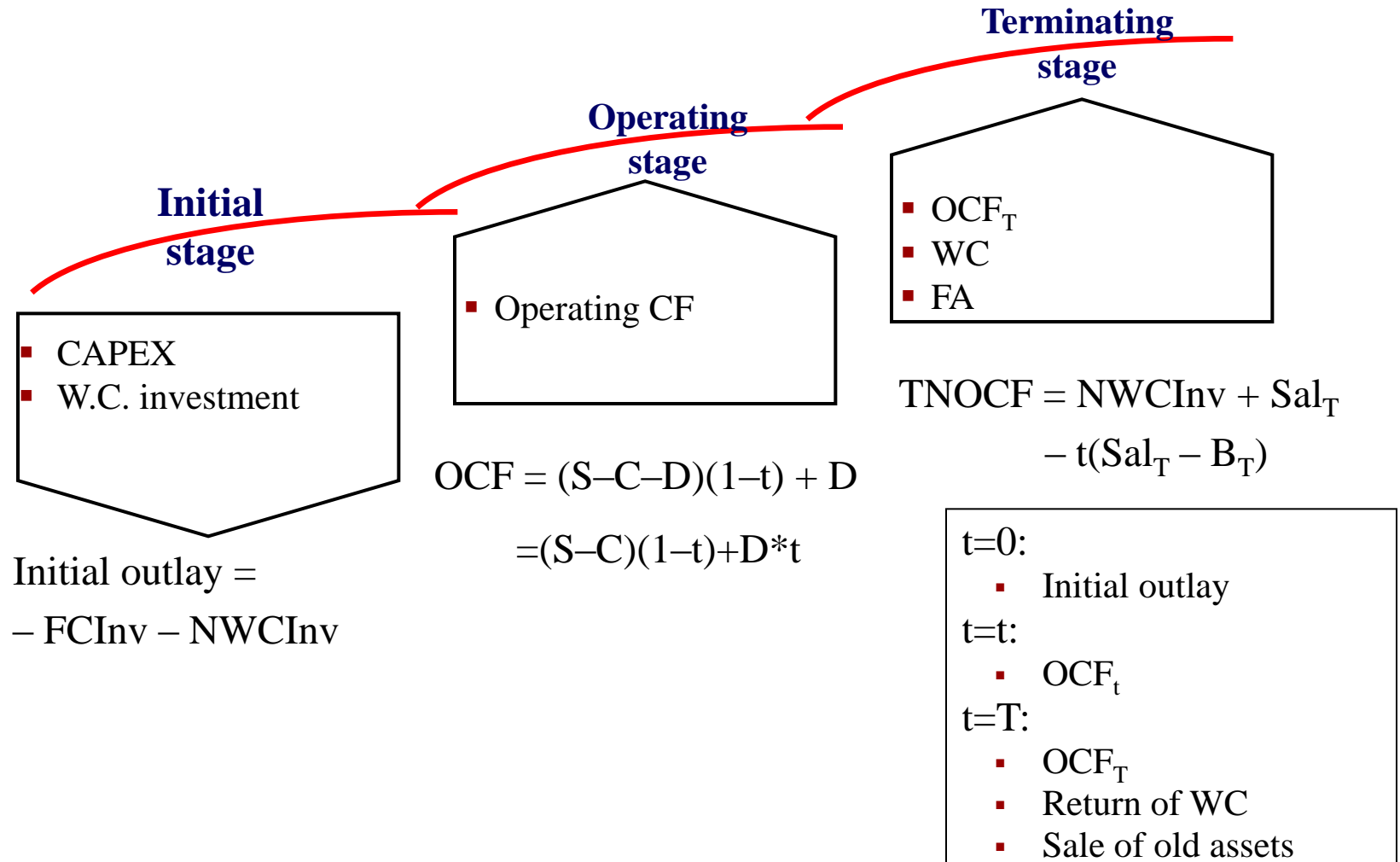
MACRS

Ownership Year	Class of Investment			
	3-Year	5-Year	7-Year	10-Year
1	33%	20%	14%	10%
2	45	32	25	18
3	15	19	17	14
4	7	12	13	12
5		11	9	9
6		6	9	7
7			9	7
8			4	7
9				7
10				6
11				3
	100%	100%	100%	100%

Buildings are 39-year assets: 1.3% in years 1 and 40 and $100/39 = 2.6\%$ in the other years.

Cash flow projection – Expansion project

➤ Expansion project



Replacement capital project

➤ For a **Replacement project**, the cash flow are the same as expansion project except:

- Current after-tax salvage value of the old assets reduces the initial outlay.

$$\text{Initial outlay} = -\text{FCInv} - \text{NWCInv} + [\text{Sal}_0 - (\text{Sal}_0 - \text{B}_0) * t]$$

- The cash flows relevant to an investing decision are the **incremental cash flows (ΔCF)**: the cash flows the company realizes with the investment compared to the cash flows the company would realize without the investment.

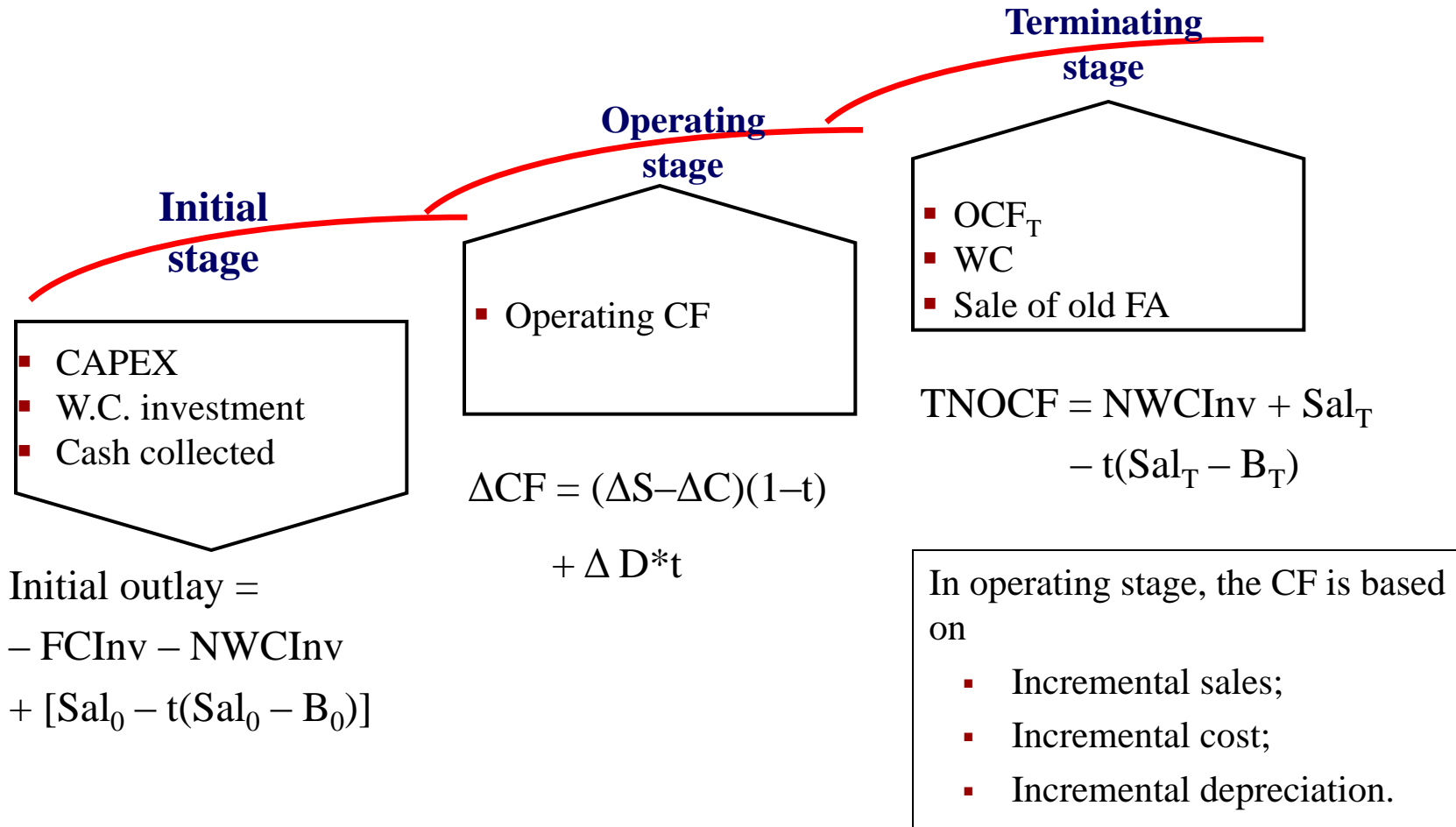
$$\Delta CF = (\Delta S - \Delta C)(1 - t) + \Delta D \times t$$

➤ Assumption:

- Same useful life of old and new assets.

Cash flow projection – Replacement project

➤ Replacement project



Cash flow projection

➤ Special topics:

● Replacement project

- ✓ Current after-tax salvage value of the old assets reduces the initial outlay;
- ✓ Depreciation is the change in depreciation if the project is accepted compared to the depreciation on the old machine.

● Depreciation schedules

- ✓ It affects capital budgeting decisions because they affect after-tax cash flow.
- ✓ In general, accelerated depreciation methods lead to higher after-tax cash flows and a higher project NPV.
- ✓ Interest is not included in operating cash flows for capital budgeting purposes because it is incorporated into the project's cost of capital.
- ✓ US IRC adopts MACRS system for tax deduction with depreciation.

Inflation effects on capital budgeting

- Inflation is a factor that must be considered as part of the capital budgeting process:
- Nominal cash flows must be discounted at the nominal interest rate, and real cash flows must be discounted at the real interest rate.
 - If inflation is higher than expected,
 - ✓ the profitability of the investment is lower than expected.
 - ✓ reduces the real tax savings from depreciation. → NPV underestimated
 - ✓ increases the corporation's real taxes because it reduces the value of the depreciation tax shelter
 - ✓ decreases the value of fixed payments to bondholders.
 - Inflation affects costs and revenues differently.

Mutually exclusive projects with different lives

- The issue:
 - Can NOT assess directly by comparing with the NPV of 2 projects with different lives;
 - Assume that the 2 projects are repeated over the time horizon
- Two methods to compare projects with unequal lives that are expected to be repeated indefinitely:
 - Least common multiple of lives approach
 - ✓ Extends the lives of the projects so that the lives divide equally into the chosen time horizon.
 - Equivalent annual annuity (EAA) approach
 - ✓ EAA is the annuity payment each project year that has a present value (discounted at the WACC) equal to the NPV of the project.
 - ✓ choose the investment chain that has the highest EAA.
- The two approaches are logically equivalent and will result in the same decision.

Capital rationing

Capital rationing

- Capital rationing is the allocation of a fixed amount of capital among the set of available projects that will maximize shareholder wealth.
 - Hard capital rationing
 - ✓ occurs when the funds allocated to managers under the capital budget cannot be increased
 - Soft capital rationing
 - ✓ occurs when managers are allowed to increase their allocated capital budget if they can justify that the additional funds will create shareholder value.
- A firm with less capital than profitable (positive NPV) projects should choose the combination of projects they can afford to fund that has the greatest total NPV.

Risk Analysis—Stand-Alone Methods

➤ Risk analysis techniques include:

- **Sensitivity analysis** involves varying an independent variable to see how much the dependent variable changes, all other things held constant. The key to sensitivity analysis is to only change one variable at a time.
- **Scenario analysis** considers the sensitivity of the dependent variable to simultaneous changes in all of the independent variables. Worst case, best case, and base case.
- **Simulation analysis (or Monte Carlo simulation)** uses repeated random draws from the assumed probability distributions of each input variable to generate a simulated distribution of NPV.

Example: Base case

Base case	
Unit price	\$5.00
Annual unit sales	40,000
Variable cost per unit	\$1.50
Investment in fixed capital	\$300,000
Investment in working capital	\$50,000
Project life	6years
Depreciation (straight line)	\$50,000 p.a.
Expected salvage value	\$60,000
Tax rate	40%
Required rate of return	12%
NPV	\$121,157

**Independent
variables
or
Inputs**

**Dependent
variabl
or
Outputs**

Example: Sensitivity analysis

Sensitivity analysis			
	Base value	Low value	High value
Unit price	\$5.00	\$4.50	\$5.50
Annual unit sales	40,000	35,000	45,000
Variable cost per unit	\$1.50	\$1.40	\$1.60
Expected salvage value	\$60,000	\$30,000	\$80,000
Tax rate	40%	38%	42%
Required rate of return	12%	10%	14%

Example: Sensitivity analysis

Projected NPV				
Variable	Base case	With Low estimate	With High estimate	Range of estimate
Unit price	121,157	71,820	170,494	98,674
Annual unit sales	121,157	77,987	164,326	86,339
Cost per unit	121,157	131,024	111,289	19,735
Salvage value	121,157	112,037	127,236	15,199
Tax rate	121,157	129,165	113,148	16,017
Required return	121,157	151,492	93,602	57,890

Most sensitive

Treat independent for low and high estimate

Example: Scenario analysis

Scenario analysis			
Variable	Pessimistic	Most likely	Optimistic
Unit price	\$4.50	\$5.00	\$5.50
Annual unit sales	35,000	40,000	45,000
Variable cost per unit	\$1.60	\$1.50	\$1.40
Investment in fixed capital	\$320,000	\$300,000	\$280,000
Investment in working capital	\$50,000	\$50,000	\$50,000
Project life	6years	6years	6years
Depreciation	\$53,333	\$50,000	\$46,667
Salvage value	\$40,000	\$60,000	\$80,000
Tax rate	40%	40%	40%
Required rate of return	13%	12%	11%
NPV	-\$5,725	\$121,157	\$269,685
IRR	12.49%	22.60%	34.24%

Treat
together

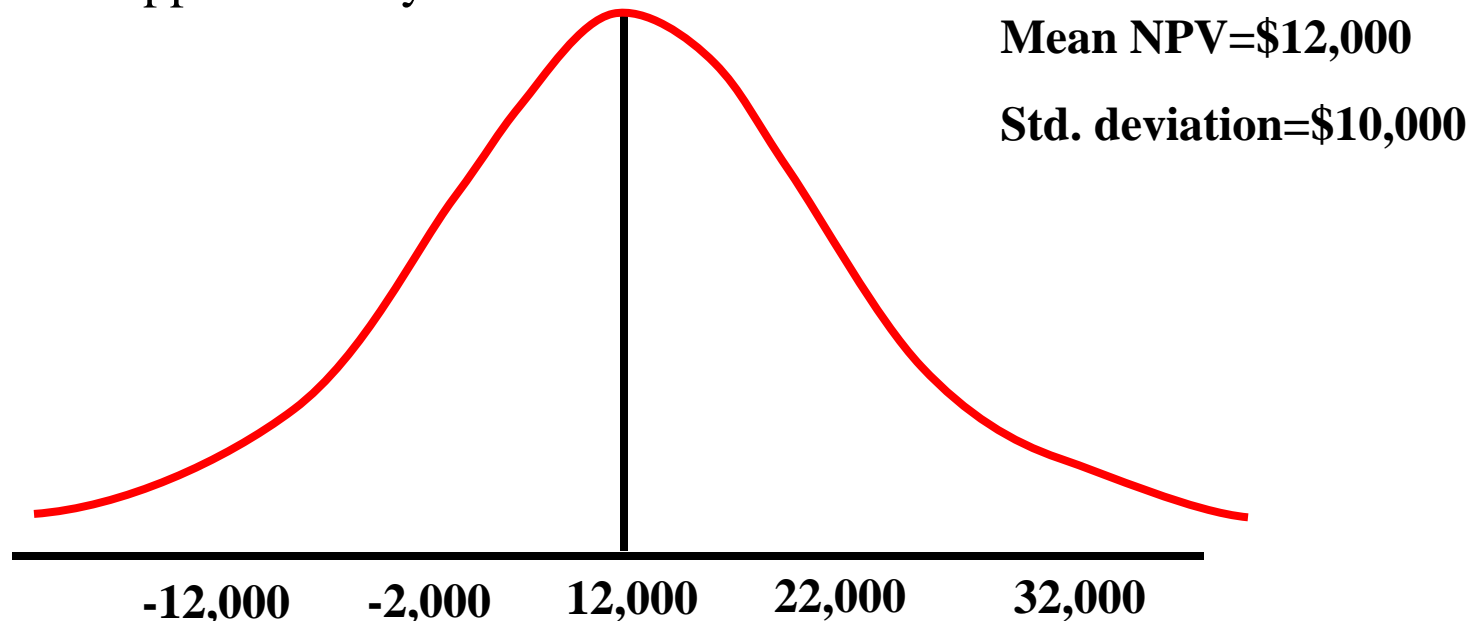
Simulation analysis/ Monte Carlo analysis

➤ Steps in simulation analysis:

1. Assume a specific probability distribution for each input variable. For example, we might assume that unit sales are normally distributed with a mean of 100,000 and a standard deviation of 15,000, unit prices are normally distributed with a mean of \$40 and a standard deviation of \$5, and so on for each input variable. We don't have to assume a normal distribution for each variable.
2. Simulate a random draw from the assumed distribution of each input variable. That results in a single value for each input. For example, our first draw might be unit sales of 85,000, a unit price of \$42.00, and so on.
3. Given each of the inputs from Step 2, calculate the project NPV.
4. Repeat Step 2 and Step 3 10,000 times.
5. Calculate the mean NPV, the standard deviation of the NPV, and the correlation of NPV with each input variable.
6. Graph the resulting 10,000 NPV outcomes as a probability distribution.

Simulation analysis/ Monte Carlo analysis

- Simulation analysis (or Monte Carlo simulation) results in a probability distribution of project NPV outcomes, rather than just a limited number of outcomes as with sensitivity or scenario analysis (e.g., base case, best case, worst case).
- The probability distribution is not symmetrical or necessarily perfectly normal. Although with a large number of observations, the distribution is likely to be approximately normal.



Risk Analysis—Market Risk Methods

- The discount rate in capital budgeting is the risk-adjusted rate rather than WACC.
 - The discount rate should reflect the risk of project to be evaluated;
 - WACC reflects the risk of whole company.
- The CAPM can be used to determine the appropriate discount rate for a project based on risk.
 - The project beta is used as a measure of the systematic risk of the project and the security market line (SML) estimates the required return:
- When the risk of a project is different from the overall company, using WACC will:
$$R_{project} = R_f + \beta_{project}[E(R_M) - R_f]$$
 - overestimate the NPV, if project's risk > company's risk
 - underestimate the NPV, if Project's risk < company's risk

Evaluating projects with real options

- A critical assumption of traditional capital budgeting tools is that the investment decision is made now, with no flexibility considered in future decisions.
- Real options allow managers to make decisions in the future that alter the value of capital budgeting investment decision today.
 - Similar to financial call and put options.
 - Real options are based on real assets rather than financial assets and are contingent on future events.
 - Real options offer managers flexibility that can improve the NPV estimates for individual projects.
- Types of real options include:
 - Timing options
 - Sizing options
 - Flexibility options
 - Fundamental options

Evaluating projects with real options

- **Timing options:** allow the company to delay investing.
- **Sizing options**
 - Abandonment option: Similar to put options. Allow management to abandon a project if the CF from abandoning exceeds the PV of the CF from continuing the project.
 - Expansion option: Similar to call options. Allow a company to make additional investments in a project if doing so creates value.
- **Flexibility options:** give managers choices regarding the operational aspects of a project.
 - Price-setting options: By increasing prices, benefit from the excess demand, which it cannot do by increasing production.
 - Production flexibility options: The company can profit from working overtime or from adding additional shifts.
- **Fundamental options**
 - The payoffs from the investment are contingent on an underlying asset, just like most financial options.
 - ✓ High oil prices, drill a well.

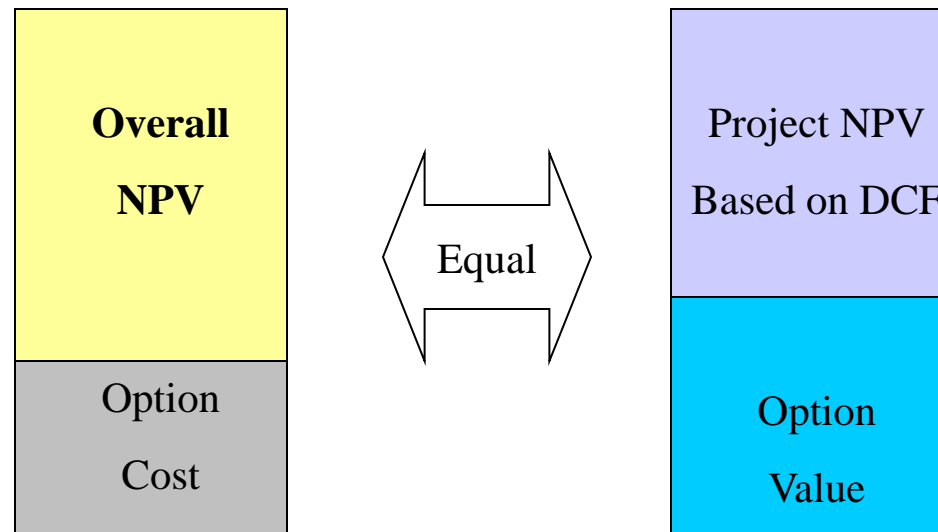
Evaluating projects with real options

➤ **Four common sense approaches** to real options analysis:

1. Use DCF analysis without considering options
2. Calculate the project NPV without the option and add the estimated value of the real option.

$$\begin{aligned} \text{overall NPV} = & \text{project NPV (based on DCF)} \\ & + \text{option value} - \text{option cost} \end{aligned}$$

3. Use decision trees
4. Use option pricing models



Common capital budgeting pitfalls

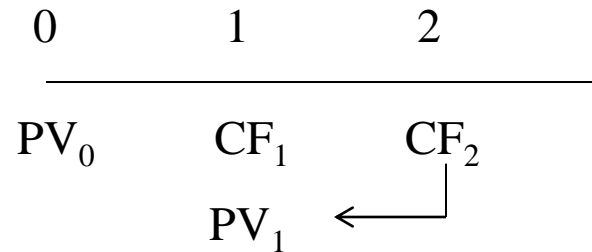
- Common mistakes in the capital budgeting process include:
- Failing to incorporate economic response into the analysis.
 - Misusing standardized project evaluation templates.
 - Pet projects of senior management.
 - Basing long-term investment decisions on EPS, NI or ROE.
 - Using the IRR criterion for project decisions.
 - Poor cash flow estimation.
 - Mis-estimation of overhead costs.
 - Not using the appropriate risk-adjusted discount rate.
 - Politics involved with spending the entire capital budget.
 - Failure to generate alternative investment ideas.
 - Improper handling of sunk and opportunity costs.

Economic and accounting income

- **Economic income** is equal to the after-tax cash flow plus the change in the project's market value.
 - economic income
= cash flow - economic depreciation
= cash flow + (ending market value - beginning market value)
economic depreciation = beginning market value - ending market value
- **Accounting income** is equal to the revenues minus costs of the project.
 - Accounting depreciation is based on the original cost (not market value) of the investment.
 - Financing costs (e.g., interest expense) are considered as a separate line item and subtracted out to arrive at net income. In capital budgeting, financing costs are reflected in the WACC.

Economic and accounting income

➤ How to understand economic income.



➤ $PV_0 = (PV_1 + CF_1) / (1+r)$

$PV_0 * (1+r) = PV_1 + CF_1$

➤ $EI = PV_1 + CF_1 - PV_0 = PV_0 * r$

Economic and accounting income

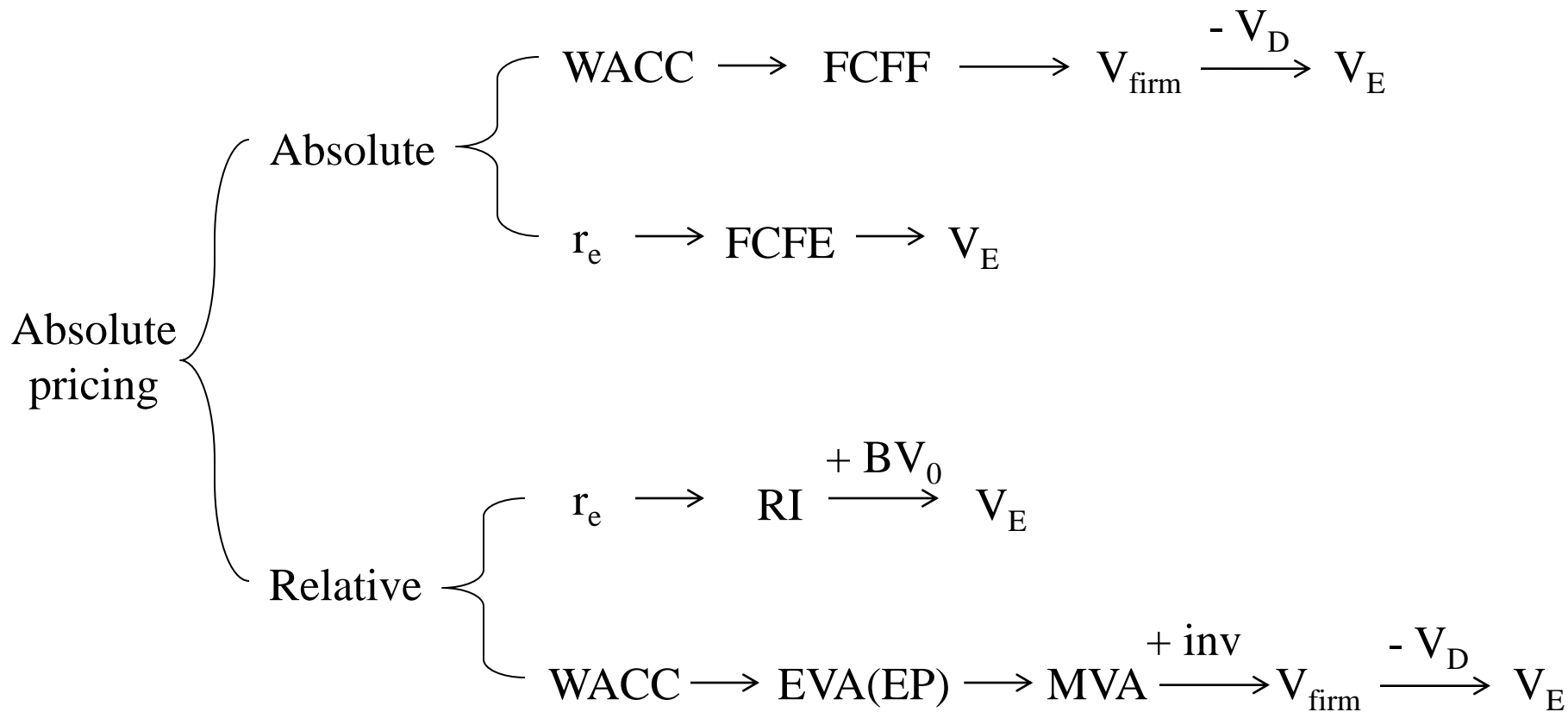
➤ Economic income Vs. Accounting income

Economic income	Accounting income
Economic income = ATCF + Δ MV	Accounting income = revenue – expense
Economic depreciation: the decrease in MV of investment	Accounting depreciation: the decrease in BV based on the original cost
Financing cost: ignored	Financing cost: subtracted to arrived at NI

➤ The accounting income differs from the economic income for two reasons.

- Accounting dep. is based on the original cost of the investment, while economic dep. (beginning- ending value) is based on the market value of the asset. The economic dep. is much larger than the accounting dep., resulting in economic income much smaller than accounting income.
- Interest exp. is deducted from the accounting income. Interest exp. is ignored when computing economic income because it is reflected in the WACC.

How to get V_E ?



Economic profit approach

➤ Alternative forms of determining income should theoretically lead to the same calculated NPV if applied correctly.

- Economic profit (EP)

$$= \text{NOPAT} - \$\text{WACC} = \text{EBIT} \times (1-T) - \text{WACC} \times \text{capital}$$

- ✓ EP reflects the income earned by all capital holders.

- ✓ The NPV based on economic profit is called the market value added (MVA)

$$NPV = MVA = \sum_{t=1}^{\infty} \frac{EP_t}{(1 + WACC)^t}$$

$$V_{firm} = MVA + investment$$

Distinguish between
economic income and
economic profit

Residual income approach

➤ Alternative forms of determining income should theoretically lead to the same calculated NPV if applied correctly.

- Residual income focuses on returns to equity holders.

✓ $RI_t = NI_t - r_e B_{t-1}$

- ✓ RI reflects the income to equity holders only

$$NPV = \sum_{t=1}^{\infty} \frac{RI_t}{(1 + r_e)^t}$$

$$V_E = NPV + BV_E$$

Claims valuation approach

- Alternative forms of determining income should theoretically lead to the same calculated NPV if applied correctly.
 - **Claims valuation approach** separates operating cash flows based on the claims that equity holders and debt holders have on the asset.
 - ✓ Cash flows to debt holders are discounted at the cost of debt.
(FCFCreditors)
 - ✓ Cash flows to equity holders are discounted at the cost of equity.(FCFE)
 - ✓ NPV of each set of cash flows is added together to determine the value of the company.
 - The claims valuation method calculates the value of the company, not the project. This is different from the economic profit and residual income approaches, which calculate both project and company value.

Framework of Corporate Finance

SS 8

- R22: Capital Budgeting
- R23: Capital Structure
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SS 9

- R25: Corporate Performance, Governance, and Business Ethics
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Introduction to Capital Structure

- Capital Structure and Leverage
 - Capital Structure Objective
 - Capital Structure Theory
 - Costs and their Potential Effect on the Capital Structure
 - Static Trade-Off Theory
 - Implications for Managerial Decision Making
 - Target Capital Structure
 - Role of Debt Rating
 - Capital Structure Policy and Valuation
 - International Differences in Leverage

Capital Structure Objective

- The objective of a company's capital structure (D/E) decision is to determine the optimal proportion of debt and equity financing that will **minimize** the firm's WACC and **maximize** the firm's value.

$$WACC = \left(\frac{D}{V}\right)r_d \times (1 - t) + \left(\frac{E}{V}\right)r_e$$

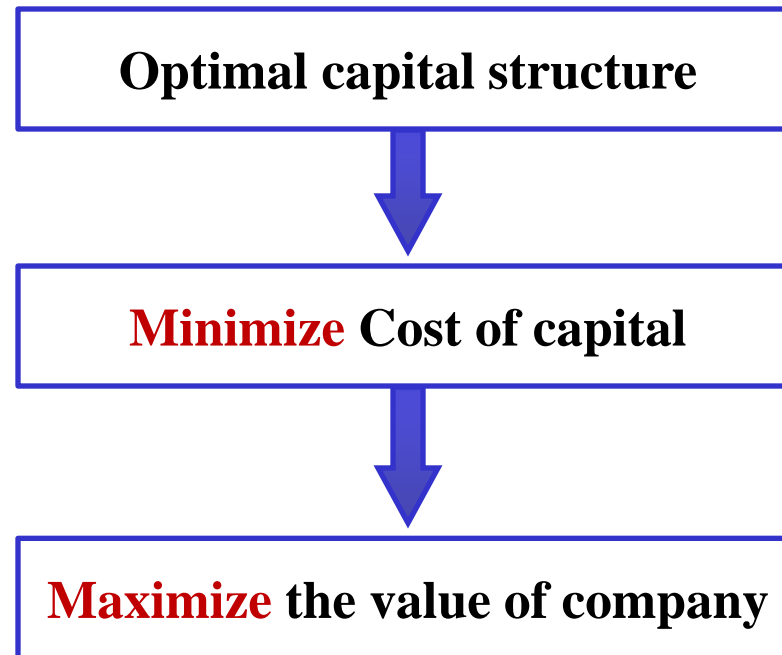
D: market value of debt;

E: market value of shareholders' equity

V: market value of the firm

- Please be noted that the optimal capital structure is not the one that makes the maximum EPS or ROE.

Capital Structure Objective



Capital Structure Theory

Capital Structure Theory

- MM theory 1958 → **No** taxes, **no** costs of financial distress
- MM theory 1963 → **With** taxes, **no** costs of financial distress
- The static trade – off theory → **With** taxes, **with** costs of financial distress

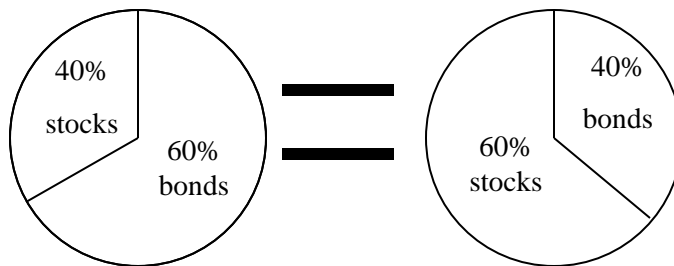
MM: Modigliani - Miller

Under different assumptions of taxes, transaction costs, and bankruptcy costs, there are different conclusions.

Capital Structure Theory

➤ MM proposition 1 without taxes: capital structure irrelevance

- the market value of a company is not affected by the capital structure.
- Assumptions:
 - ✓ Investors agree on the expected cash flow from a given investment;
 - ✓ Bonds and shares of stock are traded in a perfect capital market;
 - ✓ investors can borrow/lend at the risk-free rate
 - ✓ no agency costs
 - ✓ Financing decision and investment decision are independent



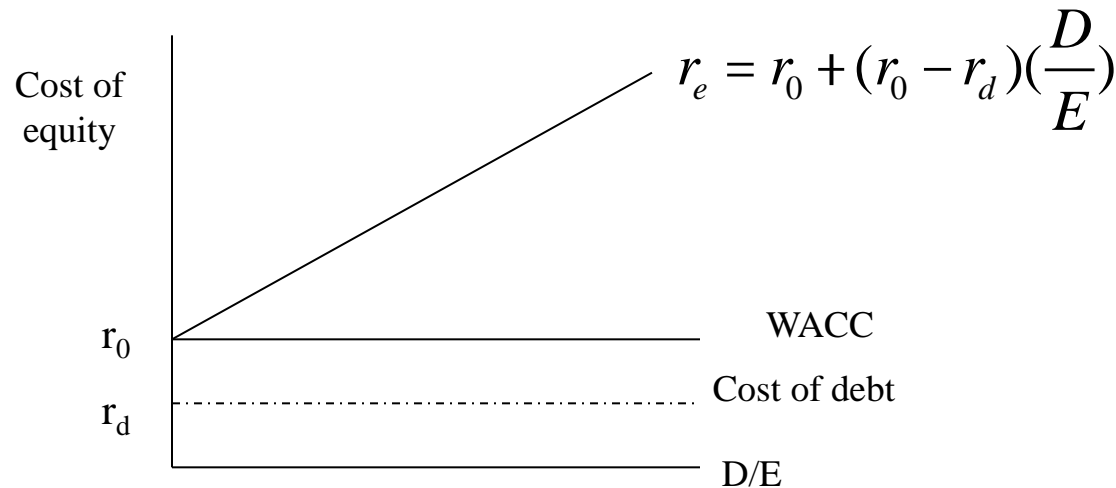
$$V_L = V_U$$

- Value is not created by just change the leverage of a firm;
- With the increase in leverage, the increase in equity returns is offset by increases in the risk and the associated increase in the required rate of return on equity.
- For simplification, assume 2 firms have the same cash flow (FCFF) and uncertainty. The firm value is the same as the discount rate is the same.

Capital Structure Theory

➤ MM proposition 2 without taxes: higher leverage raises the cost of equity.

- the **cost of equity** is a linear function of D/E .
- Assumption: financial distress has no cost, and debtholders have prior claim to assets and income. $\rightarrow r_d < r_e$
- r_e rises with higher D/E to offset the increased use of cheaper debt to maintain constant WACC



The r_0 is not determined by capital structure, but by business risk of the company.

$$V = \frac{EBIT}{r_0}$$

$$\beta_a = \left(\frac{D}{V}\right)\beta_d + \left(\frac{E}{V}\right)\beta_e \Rightarrow \beta_e = \beta_a + (\beta_a - \beta_d)\frac{D}{E}$$

Capital Structure Theory

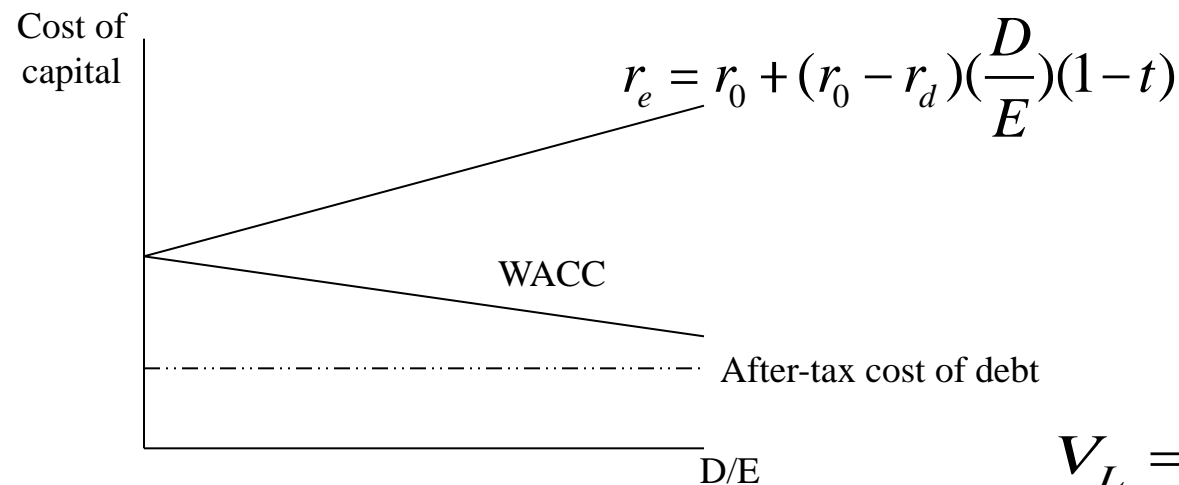
➤ MM proposition 1 (with taxes):

- the tax deductibility of interest payment creates a tax shield that adds value to the firm, and the optimal capital structure is 100% debt.

$$V_L = V_U + t \times d$$

➤ MM proposition 2 (with taxes):

- WACC is minimized at 100% debt.



We do not consider the costs here:

- Cost of financial distress;
- Cost of bankruptcy.

$$V_L = \frac{EBIT(1-t)}{r_0}$$

Short summary for MM theory

- Difference between Proposition 2 without taxes and with taxes is $(1 - t)$.
 - When $t \neq 0$, $(1 - t)$ lowers cost of leveraged equity compared to no-tax case.
 - ✓ r_e becomes greater as the company increases the debt financing, but r_e does not rise as fast as it does in the no-tax case. Because the slope coefficient $(r_0 - r_d)(1 - t) < (r_0 - r_d)$ in the case of no taxes.
 - ✓ WACC for the leveraged company falls as debt increases, and overall company value increases.
 - ✓ If taxes are considered but financial distress and bankruptcy costs are not, debt financing is highly advantageous. In extreme, optimal capital structure is all debt.

	Without taxes	With taxes
Proposition 1	$V_L = V_U$	$V_L = V_U + t * D$
Proposition 2	$r_e = r_0 + (r_0 - r_d) * D/E$	$r_e = r_0 + (r_0 - r_d)(1 - t) * D/E$

Costs of financial distress

- **Costs of financial distress** are the increased costs when earnings decline and the company has trouble paying its fixed costs.
- The expected costs of financial distress have two components:
 - Cost of financial distress and bankruptcy.
 - ✓ Direct costs: cash expenses associated with the bankruptcy
 - ✓ Indirect costs: foregone investment opportunities and losing the trust of customers, creditors, suppliers, and employees.
 - Probability of financial distress
 - ✓ operating leverage and financial leverage.
 - ✓ quality of management and corporate governance structure;
- Companies whose assets have a ready second market have lower cost of financial distress:
 - safe, tangible assets, lower cost of financial distress;
 - few tangible assets, higher cost of financial distress.

Agency costs

- The net **agency costs of equity** are the costs associated with the conflict of interest between a company's managers and owners;
 - Smaller stake the managers have, **HIGHER** cost;
 - Net agency cost of equity consist of three components:
 - ✓ Monitoring costs are the costs associated with supervising management and include the expenses associated with making reports to shareholders and paying the board of directors.
 - ✓ Bonding costs are assumed by management to assure shareholders that the managers are working in the shareholders' best interest. (e.g. premiums for insurance to guarantee performance and implicit costs associated with non-compete agreements.)
 - ✓ Residual losses may occur even with adequate monitoring and bonding provisions because such provisions do not provide a perfect guarantee.
 - The better the company is governed, the lower agency cost;
 - The increase in use of debt vs. equity, decrease the agency cost.

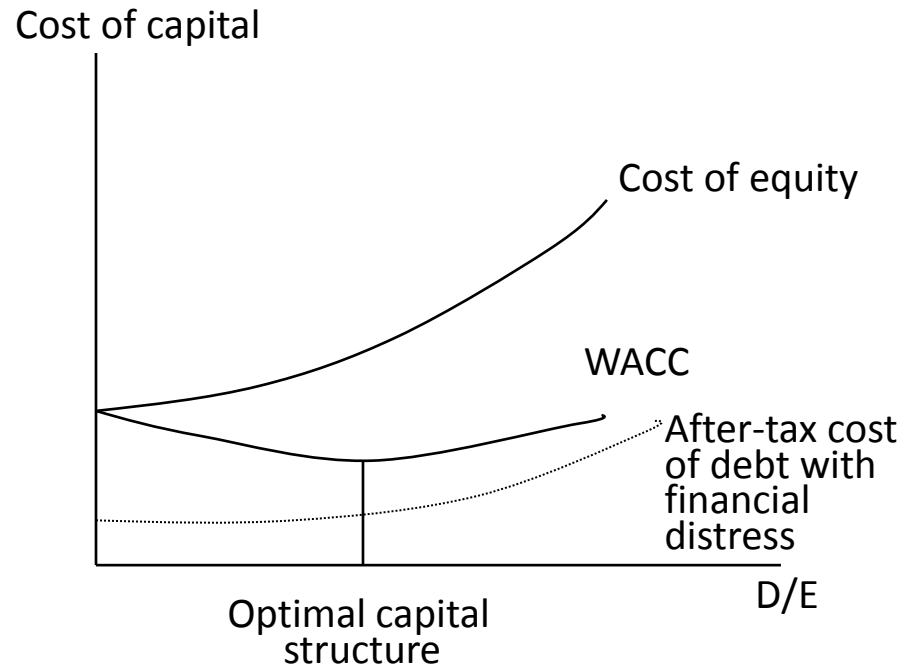
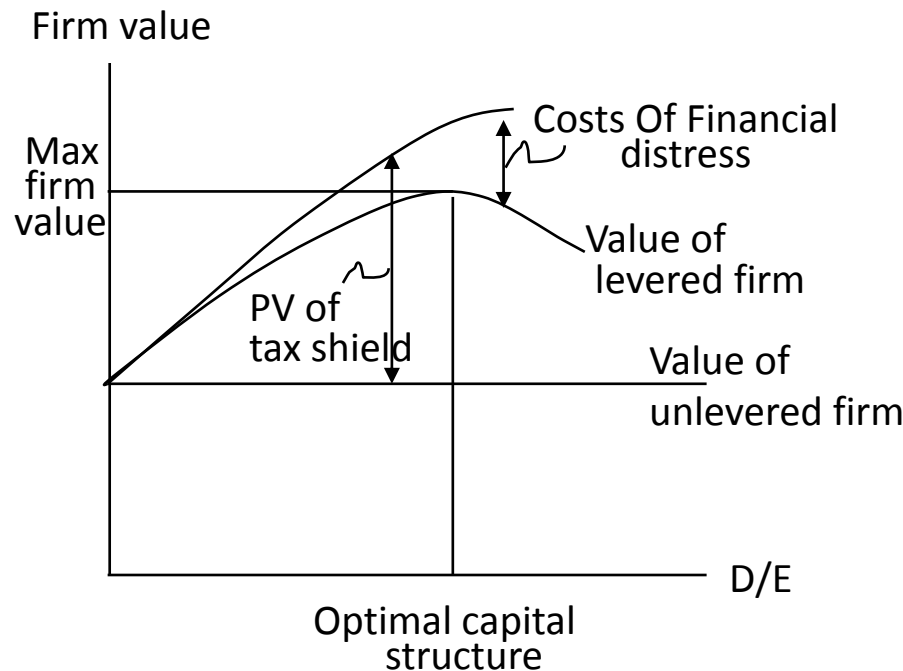
Cost of asymmetric information

- **Cost of asymmetric information** result from managers having more information about a firm than investors.
 - The provider of both debt and equity capital demand higher returns from companies with higher asymmetry in information because there is a great likelihood of agency costs.
- **Pecking order theory** suggests that the management of the company prefers the way of financing that disclose less information.
 - The pecking order is (from most favored to least favored)
 - ✓ Internally generated equity (i.e., retained earnings)
 - ✓ Debt
 - ✓ External equity (i.e., newly issued shares)
 - It predicts that the capital structure is a by-product of the individual financing decisions
 - It indicates that the management prefers to issue equity when it is overvalued; but is reluctant to issue equity when it is undervalued.
 - Issuance of equity is a negative signal of the company.

Static Trade-Off Theory

- **The static trade-off theory** seeks to balance the costs of financial distress with the tax shield benefits from using debt and state that there is an optimal capital structure that has an optimal proportion debt.

$$V_L = V_U + (t \times d) - \text{PV}(\text{Costs of Financial Distress})$$



Static Trade-Off Theory

➤ Key points of static trade-off theory:

- With increase in financial leverage,
 - ✓ the tax shield add value to the firm;
 - ✓ the impact of cost of financial distress, agency cost and cost of asymmetric reduce the firm value;
- Unlike the MM proposition of no optimal capital structure, or a structure with almost all debt, static trade-off theory puts forth an optimal capital structure with an optimal proportion of debt.
 - ✓ Once the value adding from tax shield and value reduction from these costs are balanced, the company reaches a max value with lowest cost of capital → optimal capital structure.

Implications for managerial decision making

➤ MM's proposition

- No tax: irrelevant
- With tax: tax shield makes borrowing valuable, WACC is minimized at 100% debt

	Without taxes	With taxes
Proposition 1	$V_L = V_U$	$V_L = V_U + t \cdot D$
Proposition 2	$r_e = r_0 + (r_0 - r_d) \cdot D/E$	$r_e = r_0 + (r_0 - r_d)(1-t) \cdot D/E$

- **Static trade-off theory:** Increasing the use of debt also increases the costs of financial distress. At some point, the costs of financial distress will exceed the tax benefits of debt.
 - optimal proportion of debt
- **Pecking order theory:** managers prefer to make financing choices that are least likely to send signals to investors. Pecking order (most favored to least favored) is:
 - Internally generated equity (i.e., retained earnings).
 - Debt
 - External equity (i.e., newly issued shares).

Target capital structure

➤ The target capital structure

- The structure the firm uses over time when making capital structure decisions.
 - ✓ For managers trying to maximize the value of the firm, the target capital structure = optimal capital structure.
- In practice, the actual capital structure will fluctuate around the target for two reasons:
 - ✓ management's exploitation of market opportunities. (e.g. A temporary rise in the firm's stock price may create a good opportunity to issue additional equity)
 - ✓ market value fluctuations. (e.g. Changes in stock and bond markets will cause fluctuations in the firm's stock and bond prices.)

Role of debt rating

- Debt ratings are an important consideration in the practical management of leverage.
 - Higher leverage, lower ratings of company's debt, higher costs of capital
- Because the cost of capital is tied to debt ratings, many managers have goals for maintaining certain minimum debt ratings when determining their capital structure policies.

Evaluating capital structure policy

- Factors an analyst should consider when evaluating a firm's capital structure include:
 - Changes in the firm's capital structure over time.
 - Capital structure of competitors with similar business risk.
 - Company-specific factors (e.g., better corporate governance reduce agency costs).
- Scenario analysis is a useful tool to determine whether current capital structure policy is maximizing the value of the firm.
 - Starting with the firm's current capital structure, an analyst can assess how changes in the firm's debt ratio may reduce the WACC and then evaluate what happens to the firm's value if the company moves toward its optimal capital structure.

International differences in leverage

- For international firms, country-specific factors may have a significant impact on a firm's capital structure policy. Observations regarding international differences in financial leverage include:
- Total debt.
 - ✓ Companies in Japan, Italy, and France tend to have more total debt in capital structure than firms in the U.S. and the U.K.
 - Debt maturity.
 - ✓ Companies in North America tend to use longer maturity debt than companies in Japan.
 - Emerging market differences.
 - ✓ Companies in developed countries tend to use more total debt and use longer maturity debt than firms in emerging markets.

International differences in leverage

- Major factors that explain the majority of the differences in capital structure across countries:
 1. Institutional and Legal Factors.
 - ✓ Strength of legal system.
 - ✓ Information asymmetry.
 - ✓ taxes
 2. Financial market and banking system factors.
 - ✓ Liquidity of capital markets.
 - ✓ Reliance on banking system.
 - ✓ Institutional investor presence.
 3. Macroeconomic factors.
 - ✓ Inflation.
 - ✓ GDP growth.

International differences in leverage

1. Institutional and Legal Factors.

- Strength of legal system.

- ✓ Firms in countries with weak legal systems tend to have greater agency costs due to lack of legal protection for investors.
- ✓ Firms in countries with strong legal systems tend to use less debt, and the debt tends to have longer maturities.

- Information asymmetry.

- ✓ High information asymmetry between managers and investors encourages managers to use more debt.
- ✓ In countries where auditors and financial analysts have a greater presence, information asymmetries are reduced. Increased transparency results in lower financial leverage.

- Taxes

- ✓ Tax shield encourages debt financing. But it changes if dividends are taxed at a more favorable rate than interest income.
- ✓ A favorable tax rate for dividends reduce r_e , causing firms in countries with lower tax rates on dividend income to use less debt financing.

International differences in leverage

2. Financial market and banking system factors.

- Liquidity of capital markets.
 - ✓ Companies in countries with larger and more liquid capital markets use longer maturity debt than firms in countries with less liquid capital markets.
- Reliance on banking system.
 - ✓ Companies in countries that are more reliant on the banking system than corporate bond markets tend to be more highly leveraged.
- Institutional investor presence.
 - ✓ Institutional investors may have preferred maturity ranges for their debt investments (preferred habitat).
 - ✓ For example, life insurance companies and pension plans may exhibit a preference for long-term debt securities relative to short-term debt.
 - ✓ Firms in countries with active institutional investors issue more long-term debt compared to short-term debt. We may also observe marginally lower debt-to-equity ratios in these countries.

International differences in leverage

3. Macroeconomic factors.

- Inflation.

- ✓ Higher inflation reduces the value to investors of fixed interest payments. As a result, firms in countries with high inflation tend to use less debt financing, and the debt used has a shorter maturity.

- GDP growth.

- ✓ Firms in countries with higher GDP growth tend to use longer maturity debt.

International differences in leverage

➤ Impact of country-specific factors on capital structure

Country-specific factors	Use of Total Debt	Debt Maturity
<i>Institutional and Legal Factors</i>		
Strong legal system	lower	longer
Less Information asymmetry	lower	longer
Favorable tax rates on dividends	lower	N/A
Common law as opposed to civil law	lower	longer
<i>Financial Market Factors</i>		
More liquid stock and bond markets	N/A	longer
Greater reliance on banking system	higher	N/A
large institutional investors	lower	longer
<i>Macroeconomic environment</i>		
Higher inflation	lower	shorter
Higher GDP growth	N/A	longer

Framework of Corporate Finance

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Introduction to Dividends and Share Repurchase

- Dividends and Share Repurchase
 - Dividends policy and company value theory
 - Factors affecting dividend policy
 - Payout policies
 - Analysis of dividend safety

Dividend policy and company value theory

- Theories in dividend policy and company value:
1. Does not matter;
 2. Bird in hand;
 3. Tax aversion;
 4. Clientele effect;
 5. Signaling;
 6. Agency costs and dividend as a mechanism to control them

Dividend policy and company value theory

1. Dividend policy does not matter

- Inference from MM theory;
 - ✓ Under MM assumption, no meaningful distinction between dividends and share repurchases
- Perfect capital market assumptions;
- Dividend is irrelevant to company value:
 - ✓ Homemade dividend by investors: if investors need dividend, they can construct their own dividend by selling sufficient shares to create cash flow;
 - ✓ **It does not mean dividend per share is irrelevant but the dividend policy is irrelevant;**

Dividend policy and company value theory

2. Dividend policy matters: Bird in hand argument

- Prefer cash dividend to capital dividends as it is more certain;
 - ✓ The argument is that a company that pays dividends will have a lower cost of equity than a similar company that does not pay dividends, thus result in a higher share price.
- MM theory contend that it is incorrect: under their assumption, current dividend does not affect the risk of future cash flow, only lower the ex-dividend price.

3. Dividend policy matters: Tax aversion

- The investors prefers the way that incur lower tax;
- Dividends are taxed at higher rates than capital gains
- Tax-aversion theory implies that investors would want companies to have a zero dividend payout ratio so that they will not be burdened with higher tax rates.

Dividend policy and company value theory

4. Clientele effect

- Different investors desire different dividend policy due to:
 - ✓ Tax consideration: If $T_{CG} < T_D$, investor prefers capital gains.
 - ✓ Requirements of institutional investors: some institutional investors will invest only in companies that pay a dividend or have a dividend yield above some target threshold.
 - ✓ Individual investor preferences: Some investors prefer to buy stocks to spend the dividends while preserving the principal.
- The effect does not contradict with irrelevance but trend to promote stability of dividend policy;
 - ✓ If the demands of all clienteles for various dividend policies are satisfied by sufficient numbers of companies, a company cannot affect its own share value by changing its dividend policy.
 - ✓ The change would only result in a switch in clientele.

Dividend policy and company value theory

4. Clientele effect

- Tax effects the trading strategies in regard with dividend
 - ✓ Sell just before ex-dividend: $P_w - (P_w - P_b)T_{CG}$
 - ✓ Sell just after ex-dividend: $P_w - (P_x - P_b)T_{CG} + D(1 - T_D)$
 - ✓ **Indifferent:** $P_w - (P_w - P_b)T_{CG} = P_x - (P_x - P_b)T_{CG} + D(1 - T_D)$

$$\Delta P = P_w - P_x = D(1 - T_D) / (1 - T_{CG})$$

- ✓ Where, P_w = price before ex-dividend
 P_b = purchase price
 P_x = ex-dividend date price
 T_D = dividend tax, T_{CG} = capital gain tax

- Conclusions
 - ✓ $T_{CG} = T_D$, share drops = dividend
 - ✓ $T_{CG} < T_D$, share drops < dividend
 - ✓ $T_{CG} > T_D$, share drops > dividend

Example: Dividend vs. Capital gain

Example

- a. A firm is planning on declaring \$12 in dividend. The tax rate for an investor are: $T_D = 30\%$, $T_{CG} = 15\%$. Compute the expected drop in stock price when the stock goes ex – dividend
- b. Suppose the tax rate on capita gain is 25%, if the stock price of a company falls by 105% of the dividend amount to average when the stock goes ex – dividend, what is the tax rate on dividend for an investor in that stock?

Answer

a.

$$\Delta P = \frac{D(1 - T_D)}{(1 - T_{CG})} = \frac{\$12(1 - 30\%)}{(1 - 15\%)}$$
$$= \$9.88$$

b.

$$\frac{\$1(1 - T_D)}{1 - 25\%} = \$1.05$$

$$T_D = 21.25\%$$

Conclusions

$T_{CG} = T_D$, share drops = dividend;

$T_{CG} < T_D$, share drops < dividend;

$T_{CG} > T_D$, share drops > dividend.

Dividend policy and company value theory

5. Signaling:

- MM assume all investors, including outside investors, have the same information. In reality, managers have more information (asymmetric info);
- For outside investors, dividend is meaningful because of asymmetric info.
- A company's BOD and management may use dividends to **signal to investors** how the company is really doing.
- The information conveyed by dividend initiation is ambiguous.
 - ✓ A dividend initiation could mean that a company is optimistic about the future and is sharing its wealth with stockholders—a positive signal.
 - ✓ Initiating a dividend could mean that a company has a lack of profitable reinvestment opportunities—a negative signal.
- An unexpected dividend increase can signal to investors that a company's future business prospects are strong and that managers will share the success with shareholders.
- Unexpected dividend decreases or omissions are typically negative signals that the business is in trouble and that management does not believe that the current dividend payment can be maintained.

Dividend policy and company value theory

6. Agency issues:

- Between shareholders and managers
 - ✓ Managers may have an incentive to overinvest (empire building). May invest in negative NPV projects.
 - ✓ One way to reduce agency cost is to increase the payout of free cash flow as dividends.
- Between shareholders and bondholders
 - ✓ When risky debt outstanding, shareholders can pay themselves a large dividend, leaving the bondholders with a lower asset base as collateral.
 - ✓ Agency conflict between stockholders and bondholders is resolved via provisions in the bond indenture.
 - ✓ The provisions include restrictions on dividend payment, maintenance of certain balance sheet ratios, and so on.

Factors affecting dividend policy

- Investment opportunities;
 - More profitable investment opportunity, less cash dividend;
- Expected volatility of future earnings;
 - If earnings are volatile, firms are more cautious in *changing* dividend;
- Financial flexibility;
 - Firms with excess cash and a desire to maintain financial flexibility may resort to stock repurchases instead of dividends.
 - Since stock repurchase plans are not considered sticky, they don't entail reduction in financial flexibility going forward.
- Tax considerations; (see next page)
- Flotation costs;
 - Higher flotation costs, less dividend;
- Contractual and legal restrictions
 - Impairment of capital rule: dividend paid < retained earnings
 - Debt covenants: require a certain liquidity ratio and coverage ratio before dividend payout.

Tax consideration – Taxation methods

➤ Tax consideration: Effective tax rate depends on the tax system

● Double-taxation

✓ Earnings are taxed at the corporate level regardless of whether they are distributed as dividends, and dividends are taxed again at the shareholder level.

✓ **Effective tax rate** = $1 \times \text{corporate tax rate} + (1 - \text{corporate tax rate}) \times (\text{individual tax rate})$

● Split-tax rate system

✓ Corporate earnings as dividends are taxed at a lower rate at the corporate level than retained earnings.

✓ At the individual level, dividends are taxed as ordinary income. Earnings as dividends are still taxed twice, but with relatively low corporate tax rate. The effect is to offset the higher (double) tax rate applied to dividends at the individual level.

Tax consideration – Taxation methods

➤ Tax consideration: Effective tax rate depends on the tax system

● Tax-imputation system

- ✓ taxes are paid at corporate level but are attributed to the shareholder, *all taxes are effectively paid at the shareholder rate.*

Effective tax rate = shareholder's marginal tax rate.

- ✓ If shareholder's marginal tax rate $>$ company's, shareholder pays the difference between the two rates.
- ✓ If the shareholder tax bracket is $<$ company rate, the shareholder would receive a tax credit equal to the difference between the two rates.

Tax consideration – Dividends or Capital gains

- **Tax consideration:** Shareholder Preference for Current Income vs. Capital Gains
- All else equal, the lower an investor's T_D relative to T_{CG} , the stronger preference for dividends.
 - Other issues also impinge on this preference
 - ✓ The investor may buy high-payout shares for a tax-exempt retirement account. Even if $T_D < T_{CG}$, it is not clear that shareholders will necessarily prefer higher dividends.
 - ✓ Tax-exempt institutions (e.g. pension funds and endowment funds) are major shareholders in most industrial countries and are exempt from both T_D and T_{CG} . (indifferent)
 - ✓ T_{CG} not have to be paid until being sold, whereas T_D must be paid in the year received, even if reinvested.

Payout policies

➤ Types of dividend policies

- Stable dividend policy;
- Constant dividend payout ratio policy; (seldomly used)
- Residual dividend policy.

➤ Stable dividend policy

- Company tries to align its dividend growth rate with the company's long-term growth rate to provide a steadily increasing dividend;
- **Target payout adjustment model;**

Expected dividend=(previous dividend)

+ [(expected increase in EPS)

* (target payout ratio) * (adjustment factor)]

adjustment factor = 1 / number of years over which the adjustment in dividends will take place

Payout policies

➤ Residual dividend model

- Dividends are based on earnings less funds the firm retains to finance the equity portion of its capital budget.
- The model is based on the firm's:
 - ✓ investment opportunity schedule;
 - ✓ target capital structure;
 - ✓ access to and cost of external capital.

Payout policies

➤ Residual dividend model

- Steps to determine the target payout ratio:
 - 1) identify the optimal capital budget.
 - 2) determine the amount of equity needed to finance that capital budget for a given capital structure.
 - 3) meet equity requirement to the maximum extent possible with retained earnings.
 - 4) pay dividends with the “residual” earning that are available after the needs of the optimal capital budget are supported.

Dividend = Earnings

– (Capital budget * Equity% in capital structure)

or zero, whichever is greater

Payout policies

➤ Residual dividend model

- Advantages:
 - ✓ easy for the company to use;
 - ✓ maximizes allocation of earnings to investment.
- Disadvantage:
 - ✓ dividend fluctuates with investment opportunities and earnings;
 - ✓ uncertainty cause higher expected return and lower valuation.

$$r_s \uparrow \Rightarrow P_0 = \frac{D_1}{r_s - g} \downarrow$$

- Long-term residual dividend. Some firms try to mitigate the disadvantages by forecasting capital budget over a longer time frame. The leftover earnings are paid out as dividends in relatively equal amounts each year.
 - ✓ Any excess cash flows are distributed through share repurchases.

Payout policies - Repurchase vs. Cash dividend

➤ Repurchase vs. Cash dividend

- Since shares are bought using a company's own cash, a share repurchase can be considered an alternative to a cash dividend.
- Rationales for share repurchase:
 - ✓ Tax advantages: $T_D > T_{CG}$, share repurchase have tax advantage over cash dividends.
 - ✓ Share price support/signaling;
 - ✓ Added flexibility
 - Unlike dividends, share repurchases are not a long-term commitment.
 - managers have discretion over "market timing" repurchases.
 - ✓ Offsetting dilution from employee stock options;
 - ✓ Increase financial leverage
 - Share repurchases increase leverage.
 - modify the capital structure by decreasing equity percentage.

Payout policies

➤ Global trends in payout policy

- A lower proportion of U.S. companies pay dividends as compared to their European counterparts.
- Globally, in developed markets, the proportion of companies paying cash dividends has trended downwards over the long term.
- The percentage of companies making stock repurchases has been trending upwards in the United States since the 1980s and in the United Kingdom and continental Europe since the 1990s.

Analysis of dividend safety

➤ Calculation of dividend coverage ratio

- Net income method:

Dividend coverage ratio = net income / dividend paid

- Free cash flow method:

FCFE coverage ratio = FCFE / (dividends + share repurchases)

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- R29: Mergers and Acquisitions *

Introduction

- Corporate Governance
 - Stakeholders of a company
 - Stakeholders Impact Analysis
 - An agency relationship
 - Roots of unethical behavior
 - Ethical considerations
 - Philosophical Approaches to Ethics

Stakeholders of a company

- A company's stakeholders can be divided into internal stakeholders and external stakeholders.

Internal Stakeholders

Classification	Interests and Concerns
Stockholders	Maximize the return on their investment
Employees	Salary, job satisfaction, etc.
Managers	
Board members	

External Stakeholders

Classification	Interests and Concerns
Customers	Reliable products
Suppliers	Revenues and dependable buyers
Creditors	Receive principle and interest on time
Governments	Companies to obey the rules
Unions	Union members' benefit
Local communities	Responsible citizens
General public	The quality of life will be improved

Stakeholders Impact Analysis

- The reason of a stakeholders impact analysis
 - The goals of different groups of stakeholders may conflict. A company must identify the most important stakeholders and give highest priority to pursuing strategies that satisfy their needs.
- **Three stakeholder groups must be satisfied** above all others if a company is to survive and prosper: customers, employees, and stockholders.

Maximize Shareholders'
return

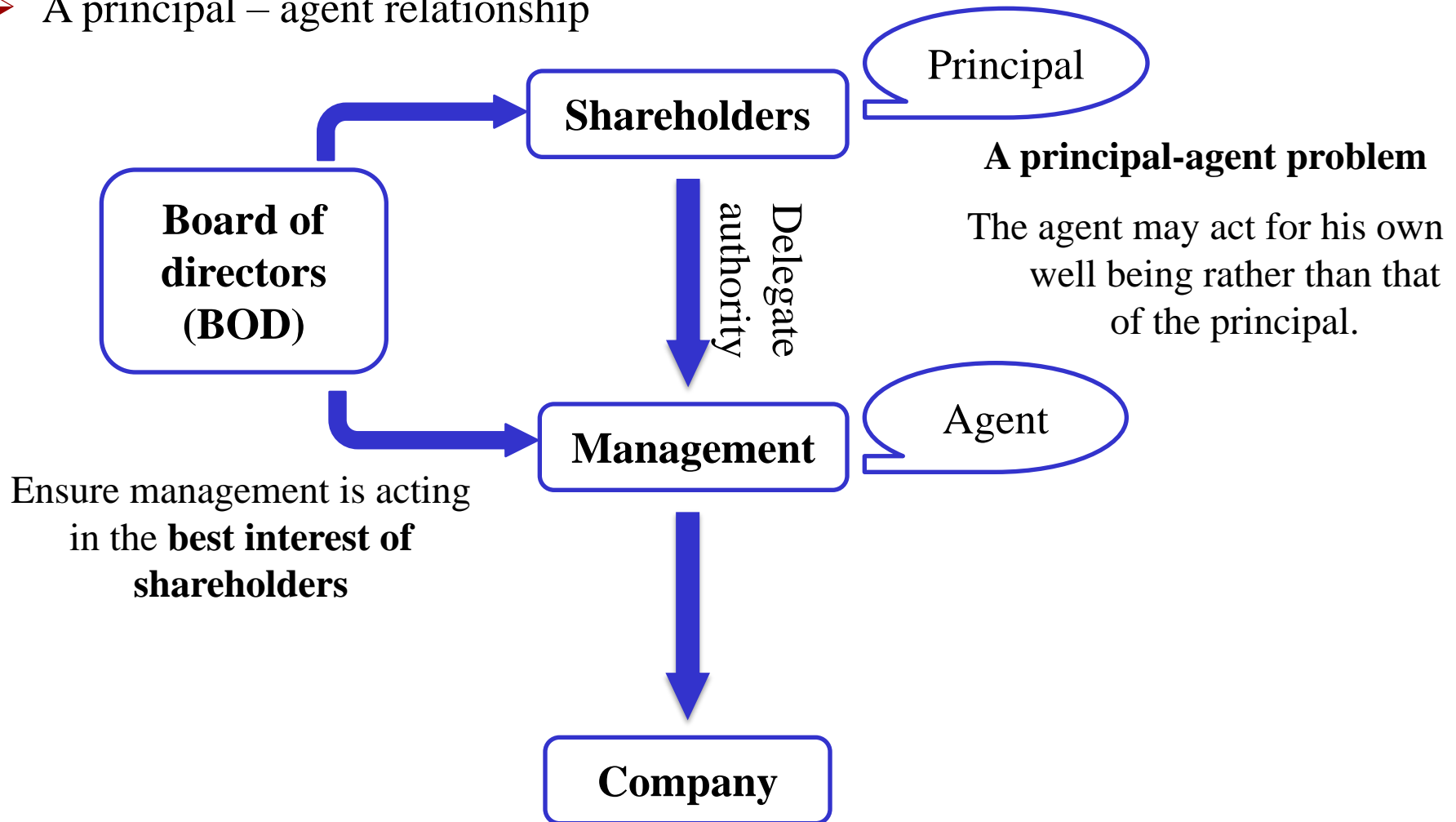


Maximize the company' long-
run profitability

- Conflict of interest
 - Not all stakeholder groups want the company to maximize its long-run profitability and profit growth. Suppliers want to receive higher prices for their goods and services. Customers want to receive lower prices for the products they purchase from the company.

An agency relationship

➤ A principal – agent relationship



An agency relationship

- **An agency relationship** occurs when an individual, referred to as the **agent**, act on behalf of another individual, who is referred to as the **principal**. Such a relationship creates the potential for a principal-agent problem where the agent may act for his own well being rather than that of the principal.
- Potential conflicts between
 - **managers and shareholders**: management may act for their own interests rather than those of shareholders
 - ✓ Using funds to expand the size of the firm (empire building).
 - ✓ Granting excessive compensation and perquisites.
 - ✓ Investing in risky ventures.
 - ✓ Not taking enough risk.

An agency relationship

➤ Potential conflicts between

- **Directors and shareholders:** directors should help ensure that management is acting in shareholders' best interest. Directors may align more with management interests rather those of shareholders.

- ✓ Lack of independence.
- ✓ Board members have personal relationships with management.
- ✓ Board members have consulting or other business agreements with the firm.
- ✓ Interlinked boards.
- ✓ Directors are overcompensated.

➤ **Effective corporate governance systems** are designed to monitor management's activities, reward good performance, and discipline managers who do not act in the best interests of shareholders.

An agency relationship

➤ Suggestion for mitigating agency problems

- Shape the behavior of agents so that they act in accordance with the goals set by principals.
- Reduce the information asymmetry between agents and principals.
- Develop mechanisms for removing agents who do not act in accordance with the goals of principals and mislead them.

Roots of unethical behavior

- Unethical behavior often arises in a corporate setting when managers decide to put the attainment of their own personal goals, or the goals of the enterprise, above the fundamental rights of one or more stakeholder groups.
- **Self-dealing** occurs when managers find a way to feather their own nests with corporate monies.
 - **Information manipulation** occurs when managers want to enhance their own financial situation or the competitive position of the firm.
 - **Anticompetitive behavior** covers a range of actions aimed at harming actual or potential competitors.
 - **Opportunistic exploitation** violates the rights of suppliers.
 - **Substandard working conditions** arise when managers want to reduce company's costs of production.
 - **Environmental degradation** occurs when the firm takes actions that directly or indirectly result in pollution or other forms of environmental harm.
 - **Corruption** occurs when managers pay bribes to gain access to lucrative business contracts.

Roots of unethical behavior

➤ Root cause of unethical behavior

- Personal ethical code.
- Unconscious conduct of behaving unethically.
- Organizational culture that de-emphasizes business ethics and considers all decisions to be purely economic ones.
- Pressure from top management to meet performance goals.
- Unethical leadership.

Ethical considerations

- managers can and should do at least seven things to ensure that basic ethical principles are adhered to and that ethical issues are routinely considered when making business decisions.
1. favor hiring and promoting people with a well-grounded sense of personal ethics.
 2. build an organizational culture that places a high value on ethical behavior.
 3. make sure that leaders within the business not only articulate the rhetoric of ethical behavior but also act in a manner that is consistent with that rhetoric.
 4. put decision-making processes in place that require people to consider the ethical dimension of business decisions.
 5. hire ethics officers.
 6. put strong governance processes in place.
 7. act with moral courage.

Philosophical Approaches to Ethics

➤ **The Friedman Doctrine** (stockholder theory)

- A company's only responsibility is to increase its profits. A company should have no "social responsibility" to the public or society because its only concern is to increase profits for itself and for its shareholders.
 - ✓ Weakness: have no regard for potential harm, justice.

➤ **Utilitarian and Kantian Ethics**

- From a utilitarian perspective, the best decisions are those that produce the greatest good for the greatest number of people.
 - ✓ Weakness: have no regard for potential harm, justice.
- Kantian ethics indicate that people are not instruments, like a machine. People have dignity and need to be respected as such.
 - ✓ Weakness: have no place for moral emotions or sentiments.

Philosophical Approaches to Ethics

➤ Rights Theories

- Rights theories recognize that human beings have fundamental rights and privileges. Rights establish a minimum level of morally acceptable behavior. (e.g. the right to free speech)

➤ Justice Theories

- The first principle is that each person should be permitted the maximum amount of basic liberty compatible with a similar liberty for others. Rawls takes these liberties to be political liberty (the right to vote), freedom of speech and assembly, liberty of conscience and freedom of thought, the freedom and right to hold personal property, and freedom from arbitrary arrest and seizure.
- The second principle is that once equal basic liberty is ensured, inequality in basic social goods— such as income, wealth, and opportunities—is to be allowed only if it benefits everyone.

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Introduction to Corporate Governance

➤ Corporate Governance

- What Is The Corporate Governance?
- Three Major Business Forms;
- Responsibilities of The Board of Directors;
- Corporate Governance Best Practices;
- Corporate Governance Policies: Investors And Analysts Should Assess;
- The Strength And Effectiveness of A Corporate Governance System

What is the corporate governance?

- **Corporate governance** is a system of principles, policies, procedures, and clearly defined responsibilities and accountabilities used by stakeholders to **overcome conflicts** of interest inherent in the corporate form.
- Corporate governance has **two major objectives**:
 1. Eliminate or reduce conflicts of interest.
 2. Use the company's assets in a manner consistent with the best interests of investors and other stakeholders.
- **Core attributes** of effective corporate governance system:
 - Delineation of the **rights** of shareholders and other core stakeholders;
 - Clearly defined manager and director governance **responsibilities** to shareholders; (what to do)
 - Identifiable and measureable **accountabilities** for the performance of the responsibilities; (how to deal with bad performance)
 - **fair** and equitable treatment in dealings between managers, directors, and shareholders.
 - complete **transparency** and accuracy in disclosures regarding operations, performance, risk, and financial position.

Three major business forms

- **Sole proprietorships** are owned and operated by a single individual. Liability unlimited, easy to set up.
 - Conflicts between management and owners don't exist,
 - Conflicts of interest for a sole proprietorship involve creditors and suppliers.
- **Partnerships** are composed of two or more owner. Liability unlimited, similar to sole proprietorship, more recourses. Pool knowledge and capital, as well as share in business risks.
 - Conflicts also involve creditors and suppliers.
 - Potential conflicts between partners are addressed by creating partnership contracts that delineate the roles and responsibilities of each partner.

Three major business forms

- **Corporations** are distinct legal entities that have rights similar to those of an individual person. Managers empowered to act as agents of the company.
 - Advantages:
 - ✓ Easier to raise large amounts of capital.
 - ✓ Owners need not to be an expert. Any individual with sufficient capital can become a shareholder.
 - ✓ Ownership stakes transferable.
 - ✓ Limited liability.
 - Disadvantage:
 - ✓ Corporate shareholders have difficulty monitoring a firm's operations and the actions of management.
 - ✓ Separation of ownership and control creates the potential for conflicts between management and shareholders.

Responsibilities of the board of directors

➤ Responsibilities of the board of directors:

- 1) institute corporate values and corporate governance mechanisms
- 2) Ensure that the firm meets and complies with all legal and regulatory requirements in a timely manner.
- 3) Create long-term strategic objectives for the company
- 4) Determine management's responsibilities
- 5) Regularly evaluate the performance of the CEO
- 6) Require management to supply the board with complete and accurate information for the board to make decisions.
- 7) Meet regularly
- 8) Ensure board members are adequately trained to perform board functions

Evaluate effectiveness of BOD

- Analyst might evaluate the board of directors in following aspects:
1. Board composition and independence;
 2. Independent chairman of the board;
 3. Qualification of directors;
 4. Annual election of directors;
 5. Annual self-assessment;
 6. Separate sessions of independent directors;
 7. 3 committees (audit, nominating and compensation);
 8. Independent or expert legal counsel;
 9. Statement of policies;
 10. Disclosure and transparency;
 11. Insider or related party transactions;
 12. Shareholder proxy votes;

Evaluate effectiveness of BOD

1. Board composition and independence

- **Best practice:** at least three-quarters of board members should be independent.
- Factors that often indicate a lack of independence include:
 - ✓ Former employment with the company.
 - ✓ Business relationships
 - ✓ Personal relationships
 - ✓ Interlocking directorships
 - ✓ Ongoing banking or other creditor relationships

2. Independent chairman of the board

- Many companies have a single individual serve the dual role of CEO and Chairman of the Board.
- Independence of the chairman of the board does not guarantee that the board will function properly, but should be regarded as a necessary condition, even if it is not a sufficient one.

Evaluate effectiveness of BOD

3. Qualification of directors

● **Best practice:**

- ✓ board members have the requisite industry, strategic planning, and risk management knowledge (Expertise in the industry)
- ✓ not serve on more than two or three boards (dedication to the board)
- ✓ show a commitment to investor interests and ethical management and investing principles. (dedication to investors)

Evaluate effectiveness of BOD

4. Annual election of directors

- Proponents of staggered elections say that they ensure board continuity.
- But strong corporate governance practice says that staggered elections limits the power of shareholders and doesn't allow changes to the board composition to occur quickly.
- Annual elections force directors to make more careful decisions and be more attentive to shareholders because they can cast a vote to keep or eliminate a director each year.

Evaluate effectiveness of BOD

5. Annual self-assessment

- Boards should evaluate and assess their effectiveness at least annually.
- Should review:
 - ✓ Board's effectiveness as a whole
 - ✓ Performance of board members
 - ✓ Board committee activities
 - ✓ Effectiveness in monitoring and overseeing their specific functions
 - ✓ Future needs of the board
 - ✓ Report of the board self-assessment.

Evaluate effectiveness of BOD

6. Separate sessions of independent directors

- **Best practice** requires independent board members to meet at least annually, preferably quarterly, in separate sessions without management in attendance.
- Enhance the board's effectiveness by improving the cooperation among board members.

Evaluate effectiveness of BOD

7. 3 committees

● Audit committee

✓ **Best practice:**

- consists only of independent directors
- has expertise in financial and accounting matters
- has full access to and the cooperation of management
- meets with auditors at least once annually

● Nominating committee

✓ **Best practice**

- nominating committee consists only of independent directors

● Compensation committee

✓ **Best practice**

- base salary and perquisites as a small percentage of compensation,
- with bonuses, stock options, and grants of restricted stock making up the majority of a senior manager's income

Evaluate effectiveness of BOD

8. Independent or expert legal counsel

- The BOD should hire expert legal counsel to fulfill its fiduciary duties and assess the company's compliance with regulatory requirements.
- poor corporate governance:
 - ✓ Internal corporate counsel to advise the BOD
- **Best practice**
 - ✓ the board use independent, outside counsel whenever legal counsel is required.

Evaluate effectiveness of BOD

9. Corporate governance policies: Should assess the following:

- Codes of ethics.
- Directors' oversight, monitoring, and review responsibilities, including statements regarding internal controls, risk management, audit and accounting disclosure policies, regulatory compliance, nominations, and compensation.
- Management's responsibility to the board. Provide complete information and timely information to board members, and to provide directors with direct access to the company's control and compliance functions.
- Reports of directors' oversight and review function
- Board self assessments
- Management performance assessments
- Director training.

Evaluate effectiveness of BOD

10. Disclosure and transparency

- Investors depend on timely, complete, and accurate financial statements to value securities, inaccurate financial data can result in mispriced securities, thus reduce the efficiency of financial markets.
- **Best practice**
 - ✓ more disclosure is better
 - ✓ A company should provide information about organization structure, corporate strategy, insider transactions, compensation policies, and changes to governance structures.

Evaluate effectiveness of BOD

11. Insider or related party transactions

- The analyst should assess the company's policies concerning related-party transactions, whether the company has entered into any such transactions, and, if so, what the effects are on the company's financial statements.
- **Best practice**
 - ✓ Any related-party transaction should require the prior approval of the BOD and a statement that such transactions are consistent with company policy.

Evaluate effectiveness of BOD

12. Shareholder proxy votes

- A clear indicator of the extent to which directors and executives take seriously their fiduciary responsibility to shareholders is the response of the company to shareholder votes on proxy matters.
- If an important matter such as executive compensation, a merger, or a governance issue is put to a shareholder vote and management ignores the result of the vote, it is obvious that management is not motivated by shareholder opinion as to what is in the best interest of the shareholders.

Environmental, Social, and Governance Factors

➤ ESG factors

- Environmental risk: For example, related to greenhouse gas emissions that may cause climate change.
- Social risk: Such as labor rights or occupational safety.
- Governance risk: The effectiveness of the firm's governance structure.

➤ The risks from these ESG factors can be categorized as follows:

- Legislative and Regulatory Risk
 - ✓ Governmental laws and regulations directly or indirectly affecting a company's operations will change with potentially severe adverse effects on the company's continued profitability and even its long-term sustainability.
 - ✓ investors who consider ESG factors and monitor regulatory and legislative developments for the companies they follow will be better equipped to make sound investment decisions.

Environmental, Social, and Governance Factors

- Legal risk

- ✓ Failures by company managers to effectively manage ESG factors will lead to lawsuits and other judicial remedies, resulting in potentially catastrophic losses for the company.
- ✓ To evaluate the level of legal risk, should examine the company's regulatory filings, such as form 10-K, and consider the industry that the firm operates in, as well as its specific operations

- Reputational Risk

- ✓ Companies with management that has been seen in the past to show insufficient regard for ESG factors will be valued at a lower market value compared to companies that manage these risk exposures suitably.

Environmental, Social, and Governance Factors

- Operating Risk

- ✓ Operating risk refers to the possibility that a firm will be forced to modify an operation, or shut it down altogether, due to impact of ESG factors.

- Financial Risk

- ✓ the risk that the ESG risk factors will result in a monetary cost to the firm or shareholders.
- ✓ analysts should be sure to examine all possible sources of ESG risk when analyzing a company and include these potential risk impacts in the valuation.

The strength & effectiveness

- **The strength and effectiveness** of a corporate governance system has a direct and significant impact on the value of a company.
 - 1) **Strong/effective** corporate governance system has higher measures of profitability and generates higher returns for shareholders.
 - 2) **Weak/ineffective corporate** governance system increases the risk to investors, thus reducing the value of the company. Even cause a company to go bankrupt.
- **Risks of an ineffective corporate system include:**
 - 1) **Financial disclosure risk.** Incomplete, misleading, or materially misstated.
 - 2) **Asset risk.** Excessive compensation and perks.
 - 3) **Liability risk.** Off-balance sheet obligations reduce shareholders' value.
 - 4) **Strategic policy risk.** Acquisitions may increase the size of the firm and improve management's prestige and perhaps its pay, but ultimately destroy shareholder value

Framework of Corporate Finance

SS 8

- R22: Capital Budgeting
- R23: Capital Structure
- R24: Dividends and Share Repurchases

SS 9

- R25: Corporate Performance, Governance, and Business Ethics
- R26: Corporate Governance
- R27: Mergers and Acquisitions *

Introduction to Mergers and Acquisitions

➤ Mergers and Acquisitions

1. Categorize Merger And Acquisition Activities
2. Bootstrapping *
3. The Industry Life Cycle And Merger Motivations
4. Key Differences Between Forms of Acquisition
5. Method of Payment And US Antitrust Legislation
6. Takeover Defense Mechanisms: Pre-offer And Post-offer
7. The Herfindahl-Hirschman Index (HHI)
8. Valuing A Target Company: Three Basic Methods
9. Evaluating A Merger Bid
10. Downsizing Operations Through Corporate Restructuring

Categorize merger and acquisition activities

➤ Types of mergers

- 1) In a **horizontal merger**, the two businesses operate in the same or similar industries, usually as competitors. Two reasons:
 - ✓ Pursuit of economies of scale, which are savings achieved through consolidation of operations and elimination of duplicate resources.
 - ✓ To increase market power
- 2) In a **vertical merger**, the acquirer buys another company in the same production chain. Including forward integration to ultimate consumers and backward integration to suppliers
- 3) In a **conglomerate merger**, the acquirer buys another company unrelated to its core business. There are few synergies from combining the two companies.
 - ✓ By investing in companies from a variety of industries, companies hoped to reduce the volatility of the conglomerate's total cash flows.
 - ✓ Company level diversification is not necessarily in the shareholders' best interests.

Categorize merger and acquisition activities

➤ Forms of integration

- 1) In a **statutory merger**, the acquiring company acquires all of target's assets and liabilities.
✓ $A + B = A$
- 2) In a **subsidiary merger**, the target company becomes a subsidiary of the purchaser.
✓ $A + B = A + B$
- 3) With a **consolidation**, both companies cease to exist in their prior form, and they come together to form a completely new company.
✓ $A + B = C$

Categorize merger and acquisition activities

➤ Merger motivations

1. Synergies,
 - ✓ $1 + 1 > 2$,
 - ✓ cost saving due to economies of scale,
 - ✓ sales synergies due to cross-selling, expanded market share, or higher prices from reduced competition.
2. Achieving more rapid growth,
 - ✓ Making investments internally (**organic growth**) or buying the necessary resources externally (**external growth**).
 - ✓ Faster to grow externally. Growth through M&A is common for a company in a mature industry.
 - ✓ External growth can mitigate risk, less risky than to enter an unfamiliar market and establish resources internally.
3. Increasing market power,
 - ✓ both vertical and horizon integration increase market power.
4. Gaining access to unique capabilities and resources,
5. Diversification,
 - ✓ Not in the best interest of the conglomerate's shareholders.

Categorize merger and acquisition activities

➤ Merger motivations

6. Bootstrapping earnings

- ✓ Possible to create the illusion of synergies or growth

7. Personal benefits for managers.

- ✓ Manger's compensation highly related to company size;
- ✓ Corporate executives may be motivated by self-aggrandizement.

8. Tax benefits

- ✓ A target with tax losses has the tax shield, but not legally approved if the primary reason for merger is tax avoidance.

9. Unlocking hidden value.

10. Achieving international business goals

- ✓ Taking advantage of market inefficiencies;
- ✓ Working against disadvantageous government policies;
- ✓ Technology transfer to new market;
- ✓ Product differentiation;
- ✓ Provide support to existing multinational clients

Bootstrapping Earnings

- **Bootstrapping** is a way of packaging the combined earnings from two companies after a merger so that merger generates an increase in the EPS of the acquirer, even when no real economic gains have been achieved.
- The “**bootstrap effect**” occurs when a high P/E firm (high growth prospects) acquires a low P/E firm (low growth prospects) in a stock transaction.
- The valuation multiplier would be based on the acquiring firm, the higher P/E. That results the total market value post to the acquisition is larger than the total market value of the acquiring and acquired firms prior to the acquisition.
- In practice, the market tends to recognize the bootstrapping effect and post-merger P/E's adjust accordingly. The post-merger P/E should adjust to the weighted average of the two companies' contributions to the post-merger company's total earnings.

The industry life cycle and merger motivations

Life cycle	Industry characteristics	Motivations	Types of mergers
Pioneering development	<ul style="list-style-type: none"> • Substantial development cost; • Low, slowly increasing sales growth 	<ul style="list-style-type: none"> • Sell to larger and mature company; • Young firms merge to pool resources 	<ul style="list-style-type: none"> • Conglomerate, • Horizontal
Rapid accelerating growth	<ul style="list-style-type: none"> • High profit margins caused by few participants in the market 	<ul style="list-style-type: none"> • Large capital required to expand capacity to grow 	<ul style="list-style-type: none"> • Conglomerate, • Horizontal
Mature growth	<ul style="list-style-type: none"> • Drop in the entry of new competition, • still have growth potential 	<ul style="list-style-type: none"> • To achieve economies of scale/synergies, and operational efficiencies 	<ul style="list-style-type: none"> • Vertical, • Horizontal

The industry life cycle and merger motivations

Life cycle	Industry characteristics	Motivations	Types of mergers
Stabilization and market mature	<ul style="list-style-type: none"> • Increasing competition; • capacity constraints 	<ul style="list-style-type: none"> • Economies of scale to match the low cost and price performance of other companies • Large firms acquire small firms to improve management and reach a broader financial base 	<ul style="list-style-type: none"> • Horizontal
Deceleration and decline	<ul style="list-style-type: none"> • Over capacity, • Eroding profit margin 	<ul style="list-style-type: none"> • Horizontal merger to survive; • Vertical to increase efficiency and profit margin; • Firms in related industries merge to exploit synergy • May acquirer target in young industry 	<ul style="list-style-type: none"> • Conglomerate, • Horizontal • Vertical

Form of acquisition

➤ Form of acquisition

● Stock purchase

- ✓ It occurs when the acquirer gives the target's shareholders some combination of cash and securities in exchange for shares of the target company's stock.
- ✓ Shareholders receive compensation, not the company, and must approve the transaction with at least a majority vote.
- ✓ Shareholders must pay tax on gains, but there are no taxes at the corporate level. If the target company has accumulated tax losses, a stock purchase benefits the shareholders.
- ✓ The acquirer assumes the target company's liabilities.

Form of acquisition

- Asset purchase
 - ✓ When the assets $> 50\%$ of the company, shareholder approval is required.
 - ✓ Advantage:
 - Conducted more quickly and easily than a stock purchase because shareholder approval is not required unless a substantial proportion of the assets are being sold.
 - acquirer can focus on buying the parts of a company of particular interest
 - ✓ Payment is made to the company, no direct tax for shareholder. Target company will pay any capital gain taxes.
 - ✓ Acquirer not assume any of the target company's liabilities. But sole purpose of avoiding the assumption of liabilities is not allowed from a legal standpoint.

Key differences between forms of acquisition

Major Differences of Stock versus Asset Purchases

	Stock purchase	Asset purchase
Payment	<ul style="list-style-type: none"> Made directly to target company shareholders in exchange for their shares 	<ul style="list-style-type: none"> Made directly to target company
Approval	<ul style="list-style-type: none"> Majority shareholder approval required 	<ul style="list-style-type: none"> No shareholder approval needed unless asset sale is substantial
Tax: corporate	<ul style="list-style-type: none"> No corporate level tax 	<ul style="list-style-type: none"> Target company pays capital gains taxes
Tax: shareholder	<ul style="list-style-type: none"> Shareholders of target pay capital gain tax 	<ul style="list-style-type: none"> No direct tax consequence for target company's shareholders
Liabilities of target	<ul style="list-style-type: none"> Acquirers assumes liabilities of target 	<ul style="list-style-type: none"> Acquirer usually avoids assumption of target's liability

Method of payment

➤ *Method of payment:*

A securities offering, a cash offering, and combination of the two.

- **In a securities offering**, the target shareholders receive shares of the acquirer's common stock in exchange for their shares in the target company.
- **In a cash offering**, the acquirer simply pays an agreed upon amount of cash for the target company's share.

➤ Exchange ratio

- Definition: number of shares that stockholders in the target company receive in exchange for each of their shares in the target company.
- Because share prices are constantly fluctuating, exchange ratios are typically negotiated in advance for a range of stock prices.
- The acquirer's cost is the product of the exchange ratio, the number of outstanding shares of the target company, and the value of the stock given to target shareholders.

Method of payment

- 3 main factors to be considered when deciding payment method:
 1. Distribution of risk and reward between the acquirer and target shareholders.
 - ✓ If acquirer is confident in completing the merger and in the value to be created by the merger, inclined to negotiate for a cash offering rather than a stock offering.
 2. Relative valuations of companies involved
 - ✓ When an acquirer's shares are considered overvalued relative to the target's shares, stock financing is more appropriate.
 - ✓ stock offerings interpreted as overvaluation of acquirer's shares
 3. Changes in capital structure.
 - ✓ borrowing to raise funds for a cash offering increases the acquirer's financial leverage and risk.
 - ✓ issuing new common shares for a stock offering can dilute the ownership interests of existing shareholders.

Mind-Set of Target Management

➤ Attitude of target management:

- **Friendly merger** offers usually begin with the acquirer directly approaching the target's management.
 - ✓ Once the negotiation and due diligence process is complete, attorneys draft a definitive merger agreement that outlines the terms of the transaction and the rights of each party.
 - ✓ Only when each party signs the definitive merger agreement is the transaction announced to the public.
 - ✓ Announcement is accompanied by an endorsement of the merger from the target's management and BOD to encourage target shareholders to vote for the deal. The target company's shareholders are then given a proxy statement that outlines all of the pertinent facts of the transaction.
 - ✓ After approval by shareholders and regulators, payment is made, the deal is complete.

Mind-Set of Target Management

➤ Attitude of target management:

● Hostile merger offers:

- ✓ **Bear hug:** In a hostile merger, which is a merger that is opposed by the target company's management, the acquirer may decide to circumvent the target management's objections by submitting a merger proposal directly to the target company's BOD and bypassing the CEO.
- ✓ **If the bear hug is unsuccessful**, the next step is to appeal directly to the target's shareholders using one of two methods:
 - **Tender offer:** The acquirer offers to buy the shares directly from the target shareholders, and each individual shareholder either accepts or rejects the offer.
 - **Proxy battle:** The acquirer seeks to control the target by having shareholders approve a new "acquirer approved" BOD.

Takeover defense mechanisms

- When a target is faced with a hostile tender offer (takeover) attempt, the target managers and board of directors face a choice:
 - Sell the company to hostile bidder or third party; or
 - Attempt to remain independent;
- If the managers and BOD decided to keep independent, a series of defense actions will be taken to protect from taking over.
- A target might use defensive measures to delay, negotiate a better deal for shareholders, or attempt to keep the company independent.
 - Pre-Offer Takeover Defense
 - ✓ Two broad varieties are rights-based defenses, such as poison pills and poison puts, and a variety of changes to the corporate charter that are sometimes collectively referred to as **shark repellents**.
 - Post-Offer Takeover Defense
 - ✓ Typically used in conjunction with pre-offer defenses.

Takeover defense mechanisms

➤ Pre-offer defense mechanisms

1) poison pill

- ✓ **Flip-in pill:** the shareholders of target have right to buy its shares at a discount; (most effective)
- ✓ **Flip-over pill:** the shareholders of target have right to buy the acquirer's shares at a discount;
- ✓ **Dead hand provision:** allows the board of the target to redeem or cancel the poison pill only by a vote of the continuing directors. This makes it harder to take over a target without prior board approval.

2) poison put

- ✓ It gives rights to the bondholders of the target;
- ✓ In the event of takeover, it allows bondholders to put the bonds to the target;
- ✓ Increase the need for cash and raises the cost of acquisition.

Takeover defense mechanisms

3) states with restrictive takeover laws

- ✓ Companies that want to avoid a potential hostile merger offer may seek to reincorporate in a state that has enacted strict anti-takeover laws.

4) staggered board

- ✓ Only a part of board of directors are due to election each year;
- ✓ It delays the control of boards by acquiring company due to freeze of election of most of board members in the coming future.

Takeover defense mechanisms

5) restricted voting rights

- ✓ Restricts stockholders who have recently acquired large blocks of stock from voting their shares;
- ✓ The possibility of owning a controlling position in the target without being able to vote the shares serves as deterrent.

6) supermajority voting provision for mergers

- ✓ Requires shareholder support in excess of a simple majority. E.g. 66.7%, 75%, or 80% of votes in favor of a merger.

7) fair price amendment

- ✓ A term in corporate charter and bylaws that disallow mergers for which the offer is below a certain threshold.

8) golden parachutes

- ✓ Allows the senior management of the target to receive lucrative payouts if they leave the target following a change in corporate control.
- ✓ Encourage key executives to stay with the target as the takeover progresses and the target explores to generate shareholder value.

Takeover defense mechanisms

➤ Post-offer defense mechanisms

1) “just say no” defense

- ✓ If the acquirer attempts a bear hug or tender offer, then target management lobbies the BOD and shareholders to decline and build a case for why the offer is not in the shareholders' best interests.

2) Litigation

- ✓ File a lawsuit against the acquirer based on alleged violation of securities or antitrust law.

3) Greenmail

- ✓ An agreement that allows the target to repurchase its own shares back from the acquiring company at a premium to the market price.

Takeover defense mechanisms

4) share repurchase

- ✓ submit a tender offer for its own shares. This forces the acquirer to raise its bid and also increases the use of leverage in the target's capital structure, which can make the target a less attractive takeover candidate.

5) leveraged recapitalization

- ✓ Repurchase of shares with assumption of a large amount of debt.

6) crown jewel defense

- ✓ Target sells off assets to party upon announcement of taking-over.
- ✓ This part of assets to be sold might be significant;
- ✓ It makes target unattractive to acquiring company.

Takeover defense mechanisms

7) Pac-man defense

- ✓ Offer to acquire the acquiring company.

8) White knight defense (overpay of winner, winner's curse)

- ✓ The target company to seek a third party to acquire the target;
- ✓ It may increase the bidding price if the white knight appears;

9) White squire defense

- ✓ The target seeks a friendly-party to buy a substantial minority stake the target;
- ✓ It will block the hostile takeover without selling the entire company. (high litigation risk due to direct buying from target but no compensation for target's shareholders)

Antitrust law and HHI

➤ US antitrust legislation

- 1) 1890: The Sherman Antitrust Act (monopolize is illegal)
- 2) 1914: The Clayton Antitrust Act (detail the business practice)
- 3) 1950: The Celler-Kefauver Act (acquisition of asset, conglomerate not just previous shares acquisition, horizontal)
- 4) 1976: The Hart-Scott-Rodino Antitrust Improvements Act (required to be review an approve in advance)

Antitrust law and HHI

- The HHI is calculated as the sum of the squared market shares for all firms within an industry.

$$HHI = \sum_{i=1}^n (MS_i \times 100)^2$$

MS_i = market share of firm i

n = number of firms in the industry

- HHI concentration level and likelihood of antitrust action

Post-merger HHI	Concentration	Change in HHI	Government action
$HHI < 1,000$	Not concentrated	Any amount	No action
$1,000 < HHI < 1,800$	Moderately concentrated	100 or more	Possible challenge
$HHI > 1,800$	Highly concentrated	50 or more	Challenge

Valuing a target company

- The three basic methods that analysts use to value target companies in an M&A transaction are
- 1) discounted cash flow analysis
 - 2) comparable company analysis
 - 3) comparable transaction analysis

Discounted cash flow analysis

- **Discounted cash flow analysis:** similar to the free cash flow to the firm (FCFF) approach.
- 1) Determine which FCF model to use for the analysis.
 - 2) Develop pro forma financial estimates.
 - 3) Calculate FCF using the pro forma data.
 - 4) Discount FCF back to the present at the appropriate rate. ($WACC_{adjusted}$)
 - 5) Determine the terminal value and discount it back to the present.
 - 6) Add the discounted FCF values for the first stage and the terminal value to determine the value of the target firm.

Net income

+ Net interest after tax = unleveled Net income

± change in deferred taxes

= net operating profit less adjusted taxes (NOPLAT)

+ Net noncash charges

± change in net working capital

- Capital expenditures (capex)

= Free cash flow (FCF)

**Distinguish
between NOPAT
and NOPLAT**

Discounted cash flow analysis

➤ Discounted cash flow analysis – several concerns

- Terminal value can be reached by:
 - ✓ Perpetuity growth from a certain years' estimate, like Gordon growth model

$$\text{Terminal value}_T = \frac{\text{FCF}_T (1+g)}{(\text{WACC}_{\text{adjusted}} - g)}$$

- ✓ Use multiplier that the analyst believes that the firm will trade at the end of the first stage;

$$\text{Terminal value}_T = \text{FCF}_T * (\text{P/FCF})$$

- Discount rate
 - ✓ The discount rate is adjusted WACC to reflect the risk of the target

Summary: Discounted cash flow analysis

➤ Summary: Discounted cash flow analysis

● Advantages

- ✓ easy to model any changes;
- ✓ Based on forecasts of fundamental conditions in the future rather than on current date
- ✓ The model is easy to customize

● Disadvantages

- ✓ Model is difficult to apply when FCF is negative;
- ✓ Estimates of cash flows and earnings are subject to error;
- ✓ Discount rate changes over time;
- ✓ Estimation is a major concern.

Comparable company analysis

- **Comparable company analysis:** uses relative valuation metrics for similar firms to estimate market value, and then adds a takeover premium to determine a “fair price” for the acquirer to pay for the target.
- 1) Identify the set of comparable firms.
 - 2) Calculate various relative value measures based on the current market prices of companies in the sample. Multiples such as P/E, P/B, P/S.
 - 3) Calculate descriptive statistics for the relative value metrics and apply those measures to the target firm.
 - ✓ The estimated stock value of the target is a mean of value estimated with various multiples;

Comparable company analysis

➤ Comparable company analysis: (cont'd)

4) Estimate a takeover premium.

$$PRM = \frac{DP - SP}{SP}$$

- ✓ PRM = takeover premium
- ✓ DP = deal price per share
- ✓ SP = target company's stock price

5) Calculate the estimated takeover price for the target as the sum of estimated stock value based on comparables and the takeover premium.

- ✓ **Target's takeover price** = estimated stock value \times (1 + PRM)

Comparable company analysis

➤ Step 1: Identify the set of comparable firms

Valuation variables	Company1	Company2	company3
•Current stock price	20	32	16
•Earnings per share	1.00	1.82	0.93
•Cash flows per share	2.55	3.90	2.25
•Book value per share	6.87	12.80	5.35
•Sales per share	12.62	18.82	7.62

Comparable company analysis

- **Step 2: Calculate various relative value measures based on the current market prices of companies in the sample**

Valuation ratio	Company1	Company2	company3	Mean
P/E	20.00	17.58	17.20	18.26
P/CF	7.84	8.21	7.11	7.72
P/BV	2.91	2.50	2.99	2.80
P/S	1.58	1.70	2.10	1.79

Comparable company analysis

- *Step 3: Calculate descriptive statistics for the relative value metrics and apply those measures to the target firm.*

Target company Valuation variables	Target company a	Comparable companies' valuation variable	Mean b	Estimated stock value based on comparables a*b
Earnings per share	1.95	P/E	18.26	35.61
Cash flows per share	4.12	P/CF	7.72	31.81
Book value per share	12.15	P/BV	2.80	34.02
Sales per share	18.11	P/S	1.79	<u>32.42</u>
Estimated stock value			Mean	33.47

Comparable company analysis

➤ Step 4 takeover premium

- PRM = takeover premium
$$PRM = \frac{DP - SP}{SP}$$
- DP = deal price per share (Takeover price)
- SP = target company's stock price prior to take over

Target company	Stock price prior to takeover	Take over price	Take over premium
V	23.00	28.50	23.9%
W	17.25	22.65	31.3%
X	86.75	102.00	17.6%
Y	45.00	43.75	19.4%
Z	36.75	45.00	<u>22.4%</u>
Mean premium			22.9%

Comparable company analysis

➤ *Step 5* Target's takeover price = estimated stock value \times $(1 + \text{PRM})$

- Target's estimated stock value (Step 4) \$33.47
- Estimated take over premium (Step 5) 22.9%
- Estimated takeover price of target $\$33.47 \times 1.229 = \41.14

Summary: Comparable company analysis

➤ Summary: Comparable company analysis

- Advantages:
 - ✓ data is easy to access
 - ✓ Assumption that similar asset has similar value is fundamentally sound
 - ✓ Estimates derived directly from the market, rather than from assumptions and estimates about the future.
- Disadvantages
 - ✓ the approach assumes the market's valuation is accurate
 - ✓ An appropriate takeover premium must be determined.
 - ✓ Synergies and capital structures are difficult to analyze
 - ✓ The takeover premium may not be timely.

Comparable transaction approach

- **Comparable transaction analysis** use details from recent takeover transactions of similar companies to estimate the target's takeover value. The methodology is very similar to the comparable company approach except that all of the comparables are firms that have recently been taken over.
- 1) identify a set of recent takeover transactions
 - 2) Calculate various relative value measures based on completed deal prices for the companies in the sample.
 - ✓ The price used in calculating in the comparable multiples is the takeover price not the stock price prior transaction.
 - 3) Calculate descriptive statistics for the relative value metrics and apply those measures to the target firm.
 - ✓ The estimated takeover price is the mean of value estimated with various multiples.

Comparable transaction approach

➤ Step 1: Identify a set of recent takeover transactions

Valuation variables	Acquired Company1	Acquired Company2	Acquired company3
Current stock price	35.00	16.50	87.00
Earnings per share	2.12	0.89	4.37
Cash flows per share	3.06	1.98	7.95
Book value per share	9.62	4.90	21.62
Sales per share	15.26	7.61	32.66

Comparable transaction approach

- **Step 2: Calculate various relative value measures based on completed deal prices for the companies in the sample.**

Valuation ratio	Acquired Company1	Acquired Company2	Acquired company3	Mean
P/E	16.5	18.5	19.9	18.3
P/CF	11.4	8.3	10.9	10.2
P/BV	3.6	3.4	4.0	3.7
P/S	2.3	2.2	2.7	2.4

Takeover price has included premium

Comparable transaction approach

- **Step 3: Calculate descriptive statistics for the relative value metrics and apply those measures to the target firm.**

Target company Valuation variables	Target company a	Comparable companies' valuation variable	Mean b	Estimated stock value based on comparables axb=c	Weight d	Weighted estimated cx d
Earnings per share	2.62	P/E	18.3	47.95	20%	9.59
Cash flows per share	4.33	P/CF	10.2	44.17	40%	17.67
Book value per share	12.65	P/BV	3.7	46.81	20%	9.36
Sales per share	22.98	P/S	2.4	55.15	20%	<u>11.03</u>
Estimated Takeover price					Mean	47.65

Comparable transaction analysis

➤ Summary: Comparable Transaction Approach

- Advantages:
 - ✓ no need to estimate a takeover premium
 - ✓ Estimates derive directly from recent prices for actual deals completed in marketplace;
 - ✓ Low lawsuit risk against target's managers and BOD by shareholders.
- Disadvantages:
 - ✓ Assumes the market valued the past transactions accurately
 - ✓ There may not be enough comparable transactions;
 - ✓ Difficult to incorporate merger synergies or changing capital structures into analysis

Evaluating a merger bid

➤ Post-Merger Value of an Acquirer

$$V_{AT} = V_A + V_T + S - C$$

V_{AT} = post-merger value of the combined company (acquirer and target)

V_A = pre-merger value of acquirer

V_T = pre-merger value of target

S = synergies created by the merger

C = cash paid to target shareholders

➤ Gains Accrued to the Target

$$Gain_T = TP = P_T - V_T$$

$Gain_T$ = gains accrued to target shareholders

TP = takeover premium

P_T = price paid for target

V_T = pre-merger value of target

Evaluating a merger bid

➤ Gains Accrued to the Acquirer

$$Gain_A = S - TP = S - (P_T - V_T)$$

$Gain_A$ = gains accrued to the acquirer shareholders

➤ Cash payment versus stock payment: The gain of cash payment is capped.

With a stock offer, the gains will be determined in part by the value of the combined firm. For a stock deal we must adjust our formula for the price of the target.

$$P_T = N \times P_{AT}$$

N = number of new shares the target receives.

P_{AT} = price per share of combined firm after the merger announcement

Effects of price and payment method

- **Effect of price:** acquirer will want to pay the lowest while the target wants to receive the highest.
- **Effect of payment method:**
 - **Cash offer:** the acquirer assumes all the risk and receives all potential reward from merger, confident in synergies
 - **Stock offer:** some of the risks and potential rewards from the merger shift to the target firm.
 - The main factor that affects the method of payment decision is confidence in the estimate of merger synergies. The more confident both parties are that synergies will be realized, the more the acquirer will prefer to pay cash and the more the target will prefer to receive stock.

Who benefits from merger?

- **Distribution of merger benefits:** empirical evidence related to the distribution of benefits in a merger.
 - **Short-term** performance studies show:
 - ✓ target shareholders reap 30% premiums over the stock's pre-announcement market price, and the acquirer's stock price falls between 1 and 3%;
 - ✓ on average, both the acquirer and target tend to see higher stock returns surrounding cash offers than around share offers.
 - ✓ The high average premiums paid to target shareholders may be attributed to the winner's curse.
 - ✓ Hubris of acquirers' mgt by overestimating synergies. Even if no synergies from a merger, managerial hubris would still lead to higher-than-market bids and a transfer of wealth from the acquirer's shareholders to the target's shareholders
 - **Longer term** performance studies show
 - ✓ that acquirers tend to underperform their peers
 - ✓ a general post-merger operational failure to capture synergies;

Who benefits from merger?

- Some mergers do enhance value for the acquirer. The following are characteristics of M&A deals that create value:
- **Strong buyer:** Acquirers that have exhibited strong performance (in terms of earnings and stock price growth) in the prior three years.
 - **Low premium:** The acquirer pays a low takeover premium.
 - **Few bidders:** The lower the number of bidders, the greater the acquirer's future returns.
 - **Favorable market reaction:** Positive market price reaction to the acquisition announcement is a favorable indicator for the acquirer.

Corporate restructuring

➤ Divestitures

- 1) Equity carve-outs, creating a new legal entity and sales of equity in it to outsiders;
- 2) Spin-offs, parent company shareholders receive a proportional number of shares in a new, separate entity; Whereas the sale of a division results in an inflow of cash to the parent company, a spin-off does not.
- 3) Split-offs, some of shareholders of parent company are given shares in new entity in exchange for shares of the parent company.
- 4) Liquidations, break up the firm and sell off its asset piece by piece, which is associated with bankruptcy.

Corporate restructuring

- Previous mergers that did not work out as planned are not the only reason companies may choose to divest assets
- **Some of the common reasons for restructuring:**
 - 1) Change in strategic focus, division no longer fits into management's long-term strategy
 - 2) Poor fit (low profit)
 - 3) Reverse synergy, individual parts are worth more than the whole
 - ✓ Managers may feel that a segment of the company is undervalued by the market because of poor performance.
 - ✓ It is possible that the division and the company will be worth more separately than combined.
 - 4) Financial or CF needs, selling a division can create a significant cash flow for the parent company and reduce debt