

Capital Budgeting is the process that companies use for decision making on capital projects i.e. long-term projects or investments.

There are three ways to organize the cash flows information:

- Table format with Cash flows collected by year. (See table 14, Volume 3, Reading 22)
- Table format with cash flows collected by type. (See table 15, Volume 3, Reading 22)
- Using equations as explained below.

Depreciation

- Depreciation is a non-cash operating expense and it is an important part of estimating operating cash flows because it is a source of tax savings.
- Generally, higher depreciation results in lower income and higher cash flows. Hence, use of accelerated depreciation method results in higher after-tax cash flows in the early life of the project and lower after-tax cash flows in the later life as compared to straight line depreciation method. Thus, accelerated depreciation method improves the NPV of the project as compared to straight-line depreciation method.
- Depreciation that is used for tax reporting purposes is used for capital budgeting purposes as capital budgeting analysis is based on after-tax cash flows not on accounting income.
- Modified Accelerated Cost Recovery System (MACRS) method is generally used for tax purposes. Under MACRS, assets are classified into 3, 5, 7, or 10 year classes and each year's depreciation is determined by the applicable percentage given.

Source: Table 16, Volume 3, Reading 20.

Assumption used in MACRS: It is assumed that depreciation period is started at middle of the year. For example, for a 3-year class asset, depreciation percentages are given for 4 years.

Depreciable Basis = Purchase price + any Shipping or handling or installation costs

NOTE:

Depreciation basis is not adjusted for salvage value either in accelerated or straight line method.

5.3 Equation Format for Organizing Cash Flows

1. Expansion Project: It is an investment in a new asset to increase both the size and earnings of a business. It is an independent investment that does not affect the cash flows for the rest of the company.

a) Initial Outlay:

$$\text{Outlay} = \text{FCInv} + \text{NWCInv}$$

where,

FCInv = investment in new capital

NWCInv = investment in net working capital

$$= \Delta \text{non-cash current assets} - \Delta \text{non-debt current liabilities} \\ = \Delta \text{NWC}$$

NOTE:

When NWCInv is positive, it represents cash outflow and when NWCInv is negative it represents cash inflow.

b) Annual after-tax operating cash flow:

$$\text{CF} = (\text{S} - \text{C} - \text{D}) (1 - \text{T}) + \text{D} \\ \text{or} \\ \text{CF} = (\text{S} - \text{C}) (1 - \text{T}) + \text{TD}$$

where,

S = sales

C = cash operating expenses

D = depreciation expense

T = marginal tax rate

c) Terminal year after-tax non-operating cash flow:

$$\text{TNOCF} = \text{Sal}_T + \text{NWCInv} - \text{T} (\text{Sal}_T - \text{B}_T)$$

where,

Sal_T = cash proceeds (salvage value) from sale of fixed capital on Termination date

B_T = book value of fixed capital on termination date

Example:

FCInv = 200,000

NWCInv = 30,000

S = 220,000

C = 90,000

D = 35,000

T = 40% or 0.40

Sal_T = 50,000

B_T = 25,000

n = 5

$$\text{Outlay} = 200,000 + 30,000 \\ = \$230,000$$

$$\text{CF} = (220,000 - 90,000 - 35,000) (1 - 0.40) + 35,000 \\ = \$92,000$$

or

$$\text{CF} = (220,000 - 90,000) (1 - 0.40) + (0.40 \times 35,000) \\ = \$92,000$$

$$\text{TNOCF} = 50,000 + 30,000 - 0.40 (50,000 - 25,000) \\ = \$70,000$$

NPV is calculated as follows:

CF₀ = -230,000

CF₁ = 92,000

CF₂ = 92,000

CF₃ = 92,000

CF₄ = 92,000

$$CF_5 = 92000 + 70000$$

$$I = 10\%$$

$$\text{Compute NPV} = \$162,217$$

2. Replacement Project: It is a project when a firm replaces existing asset with a newer or better asset. It must deal with the difference between the cash flows that occur with the new investment and the cash flows that would have occurred for the existing investment. CFs analysis is more complicated in this type of investment.

3. Initial Outlay:

$$\text{Outlay} = FCInv + NWCInv - Sal_0 + T (Sal_0 - B_0)$$

where,

$FCInv$ = investment in new capital

$NWCInv$ = investment in net working capital

$$= \Delta \text{non-cash current assets} - \Delta \text{non-debt current liabilities}$$

$$= \Delta NWC$$

NOTE:

When $NWCInv$ is positive, it represents cash outflow and when $NWCInv$ is negative it represents cash inflow.

Sal_0 = cash proceeds (salvage value) from sale of old fixed capital

B_0 = book value of old fixed capital

4. Annual after-tax operating cash flow i.e. Incremental Operating CFs:

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

or

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

where,

ΔS = change in sales or incremental sales

ΔC = change in cash operating expenses or incremental cash operating expenses

ΔD = change in depreciation expense or incremental depreciation expense

T = marginal tax rate

5. Terminal year after-tax non-operating cash flow:

$$TNOCF = \Delta Sal_T + NWCInv - T (\Delta Sal_T - \Delta B_T)$$

where,

Sal_T = cash proceeds (salvage value) from sale of fixed capital on Termination date

B_T = book value of fixed capital on termination date

Example:

Old Equipment		New Equipment	
Current book value	\$400,000		
Current market value	\$600,000	Acquisition cost	\$1,000,000
Remaining	10 yrs	Life	10 yrs

Old Equipment		New Equipment	
life			
Annual sales	\$300,000	Annual sales	\$450,000
Cash operating expenses	\$120,000	Cash operating expenses	\$150,000
Annual depreciation	\$40,000	Annual depreciation	\$100,000
Accounting salvage value	\$0	Accounting salvage value	\$0
Expected salvage value	\$100,000	Expected salvage value	\$200,000
		NWCInv	\$80,000
		Tax rate	30%
		Required rate	8%

$$\begin{aligned} \text{Outlay} &= 1,000,000 + 80,000 - 600,000 + 0.30(600,000 - 400,000) \\ &= \$540,000 \end{aligned}$$

$$\begin{aligned} CF &= [(450,000 - 300,000) - (150,000 - 120,000) - (100,000 - 40,000)] (1 - 0.30) + (100,000 - 40,000) \\ &= \$102,000 \end{aligned}$$

$$\begin{aligned} TNOCF &= (200,000 - 100,000) + 80,000 - 0.30 [(200,000 - 100,000) - (0 - 0)] \\ &= \$150,000 \end{aligned}$$

NPV is calculated as follows:

$$CF_0 = -540,000$$

$$CF_1 \text{ to } 9 = 102,000$$

$$CF_{10} = 102,000 + 150,000$$

$$I = 8\%$$

$$\text{Compute NPV} = \$213,907$$

NPV is positive and IRR = 15.40% > 8%, therefore, Project is attractive.

Source: Table, Volume 3, Reading 20.

6.3

Spreadsheet Modeling

Practice: Example 7
Volume 2, Reading 20.



6.4

Effects of Inflation on Capital Budgeting Analysis

Nominal Cash Flows: Nominal CFs include the effects of inflation. Nominal CFs should be discounted at a nominal discount rate.

Real Cash Flows: Real CFs are adjusted downward to remove the effects of inflation. Real CFs should be discounted at a real rate.

$$(1 + \text{Nominal rate}) = (1 + \text{Real rate}) (1 + \text{Inflation rate})$$

- Inflation causes the WACC to increase. Because the WACC reflects inflation, future cash flows must be adjusted to avoid a downward bias on NPV and IRR. Both the NPV and the IRR will tend to decline if cash flows are not adjusted.
- If inflation is higher than expected, the profitability of the investment is lower than expected.
- Inflation reduces the value of depreciation tax savings. If inflation is higher than expected, the firm's real taxes increase because it reduces the value of the depreciation tax shelter. Thus, higher inflation shifts wealth from the taxpayer to the government.

- If inflation is higher than expected, the real payments to bondholders are lower than expected. Higher than expected inflation shifts wealth from bondholders to the issuing corporations.
- Inflation does not affect all revenues and costs uniformly i.e. it depends on how inflation affects sales outputs and cost inputs. If increase in sale price is higher than the increase in cost of the inputs, then company's after-tax cash flows will be better due to inflation. However, the opposite is also true.

7.

Project Analysis and Evaluation

7.1 Mutually Exclusive Projects with Unequal Lives

There are two ways of comparing mutually exclusive projects with unequal lives and when they are replaced repeatedly (such situation is called replacement chain). These two approaches are logically equivalent and give the same result.

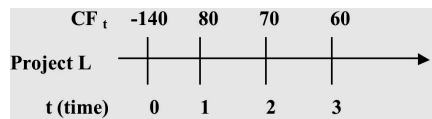
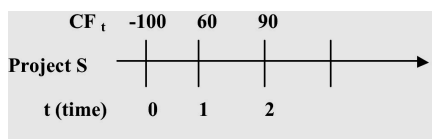
- Least common multiple of lives
- Equivalent annual annuity approach

7.1.1) Least Common Multiple of Lives Approach

Assume there are two projects with unequal lives i.e.

Project S is replaced every two years. Required rate (RR) = 10% and NPV = \$28.93

Project L is replaced every three years. Required rate (RR) = 10% and NPV = \$35.66

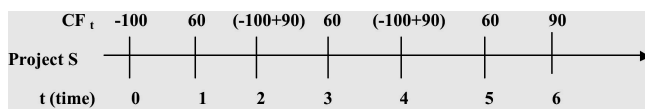


NOTE:

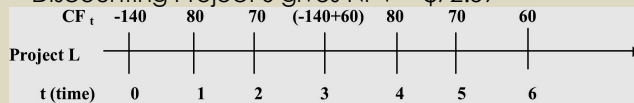
If both projects are mutually exclusive, with **equal lives** then Project L (i.e. with the higher NPV) should be chosen.

Calculating Least Common Multiple:

For both projects S and L, the least common multiple of 2 and 3 is 6. (if e.g. projects have lives of 8 & 10 yrs, then least common multiple will be 40 not 80).



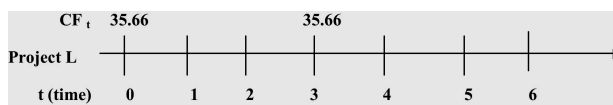
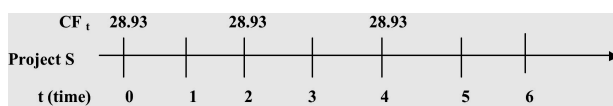
- Discounting Project S gives NPV = \$72.59



- Discounting Project L gives NPV = \$62.45

Since NPV of project S > NPV of project L, choose project S.

NPV of a Replacement chain can be evaluated as follows:



It means investing in project S is equivalent to receiving \$28.93 at times 0, 2, & 4 while investing in project L is equivalent to receiving \$35.66 at times 0 & 3. The PVs of these CF patterns are \$72.59 for project S and \$62.45 for project L.

7.1.2) Equivalent Annual Annuity Approach (EAA)

Following are the steps to estimate EAA:

- Find NPV of each project
- Calculate the annuity payment that has a value equivalent to the NPV.

Example:

EAA of project S:

Project S is replaced every two years. Required rate (RR) = 10% and NPV = \$28.93

PV = -28.93

$n = 2$

$i = 10\%$

FV = 0

Compute $Pmt = EAA = \$16.66$

EAA of project L:

Project L is replaced every three years. Required rate (RR) = 10% and NPV = \$35.66

PV = -35.66

$n = 3$

$i = 10\%$

FV = 0

Compute $Pmt = EAA = \$14.34$

Decision rule:

- Choose the Investment chain that has the highest EAA (In case where payments represent cash inflows to the company). Thus, choose Project S in this example.
- When payments represent cash outflows of the company, then lowest EAA Project is selected.

where,

$PI = \text{profitability index}$

$PI = 1 + (NPV/\text{Initial investment})$ i.e. when $PI > 1$, invest and when $PI < 1$, do not invest.

- Company will choose Project 1 & 2 with total outlay of \$800 and NPV of \$290.

ii. Case 2

	Investment outlay	NPV	PI	IRR(%)
Project 5	600	300	1.50	16
Project 6	200	80	1.40	18
Project 7	200	60	1.30	12
Project 8	200	40	1.20	14

- Company will choose projects 5, 6, & 7 with total outlay of \$1000 and NPV of \$440.

iii. Case 3

	Investment outlay	NPV	PI	IRR(%)
Project 9	600	300	1.50	15
Project 10	600	270	1.45	16
Project 11	200	80	1.40	12
Project 12	400	100	1.25	11

- Company will choose projects 9 & 12 with total outlay of \$1000 and NPV of \$400.

NOTE:

- PI is a useful measure as it shows the profitability of each investment per currency unit invested.
- IRR is not a reliable measure in selecting projects under capital rationing.
- Capital rationing has the potential to misallocate resources. It violates market efficiency if society's resources are not allocated where they will generate the best returns.

There are two types of capital rationing.

- Hard capital rationing:** When the budget is fixed and the managers cannot increase it.
- Soft capital rationing:** When the budget is fixed but the managers are allowed to over-spend if they have profitable opportunities to invest in.

7.2 Capital Rationing

Capital rationing is the allocation of a fixed amount of capital among those projects that will maximize shareholders' wealth. In this situation, company will choose projects that are within the budget and have the highest total NPV. The purpose of capital rationing is to maximize the overall NPV and not to choose the individual highest NPV projects. Following are some of the scenarios:

Assume capital budget = \$1000

i. Case 1

	Investment outlay	NPV	PI	IRR(%)
Project 1	600	220	1.37	15
Project 2	200	70	1.35	16
Project 3	200	-60	0.70	10
Project 4	400	-100	0.75	8

7.3

Risk Analysis of Capital Investments Stand-Alone Methods

Stand-alone risk measures depend on the variation of the project's cash flows. There are three types of stand-alone risk methods

7.3.1) Sensitivity analysis

It calculates the effect of changes in one input variable at a time on the NPV. This analysis is useful to evaluate which variables are most influential on the success or failure of a project. In sensitivity analysis, the dependent variable is plotted on the y-axis and the independent variable on the x-axis. The steeper the slope on the resulting line the more sensitive the dependent variable is to changes in the independent variable.

Source: Table 23, Volume 3, Reading 20.

7.3.2) Scenario analysis

It creates scenarios that are based on changes in several input variables at a time and estimates the NPV for each scenario. Corporations usually use three scenarios i.e.

- **Pessimistic:** In which several of the input variables are changed to reflect higher costs, lower revenues and higher required rate of return.
- **Optimistic:** In which several of the input variables are changed to reflect higher revenues, lower costs and lower required rate of return.
- **Most likely:** It is based on base case scenario. In this case, the company's projected cash flows as the inputs are used to calculate the net present value (NPV) of a project.

Source: Table 24, Volume 3, Reading 20.

7.3.3) Simulation (Monte Carlo) analysis

It is a procedure for estimating a probability distribution of outcomes i.e. for the NPV or IRR for a capital investment project.

Practice: Example 8
Volume 3, Reading 20.



CAPM:

It is based on two components i.e.

- Systematic risk
- Unsystematic risk

When the firm is diversified, it is inappropriate to use total risk measures. Security market line (SML) expresses the asset's or project's required rate of return as a function of β . β represents the systematic risk measure of project/asset.

$$r_i = R_F + \beta_i [E(R_M) - R_F]$$

where,

r_i = required return for project or asset i

R_F = risk-free rate of return

β_i = beta of project or asset i

$[E(R_M) - R_F]$ = market risk premium

- The Required rate of return (RR) calculated from SML can be used as a discount rate to find NPV i.e. when $NPV > 0$, accept project; when $NPV < 0$, reject project.
- The Required rate of return (RR) calculated from SML can be compared to the project's IRR i.e. when $IRR > RR$, accept project; when $IRR < RR$, reject project.

Practice: Example 9
Volume 3, Reading 20.



Important:

The cost of capital for a company is based on the average riskiness of the company's assets as well as its financial structure. When a project under consideration is more risky or less risky than the company, the WACC should not be used as the project's required rate of return. Rather, project specific required rate of return should be used.

- Using WACC for a conservative (high beta/high systematic risk) project will overstate the project's required rate of return.
- Using WACC for an aggressive (low beta/low systematic risk) project will understate the project's required rate of return.

Company's beta and WACC can be calculated using its publicly available market returns. In the event the returns of specific capital projects are unavailable, the pure-play method can be used to estimate a company's beta.

7.5

Real Options

Real options are capital budgeting options that allow managers to make decisions in the future that change the value of capital budgeting investment decisions made today. These are like financial options but unlike

7.4

Risk Analysis of Capital Investments Market Risk Methods

Market risk measures depend not only on the variation of a project's cash flows but also on how those cash flows covary (correlate) with market returns.

When evaluating a project, the discount rate should be a risk-adjusted discount rate, which includes a premium to compensate investors for non-diversified risk (market risk). CAPM and APT (arbitrage pricing theory) are two types of equilibrium models for estimating the market risk premium.

financial options they deal with real assets instead of financial assets. Real option gives the right to make a decision; there is no obligation to exercise it. The company should only exercise a real option when it is profitable to do so. Real options are contingent on future events. Following are some of the types of real options:

1. Timing Options: It gives the option to delay the timing of investment.

2. Sizing Options: There are two types of sizing options.

- **Abandonment option:** It gives the option to abandon the project when future cash flows from abandoning a project > PV of the CFs from continuing the project.
- **Growth/Expansion Option:** It gives an option to make additional investments if future financial results are profitable.

3. Flexibility options: There are two types of flexibility options.

- **Price-setting Option:** When demand is greater than capacity, management has an option to increase price to benefit from increase in demand.
- **Production-Flexibility:** In case of higher demand, company has an option to profit from working overtime, or adding additional shifts, or using different inputs or producing different outputs.

4. Fundamental Options: It is an option when the whole investment project is an option i.e. when the oil price is high, the company has an option to drill a well and when the oil price is low, the company has an option not to drill a well or refinery.

Following are the four common approaches to evaluate capital budgeting projects with real options.

- i. NPV of a project without considering options is calculated. If NPV is > 0, then considering real options will be more profitable. Therefore, there is no need to evaluate the options separately.
- ii. Total project NPV (with option's impact) is calculated i.e.
Project NPV = NPV (based on DCF alone, without option) – cost of options + value of options
- iii. Decision trees are used.
- iv. Option pricing models are used to evaluate the options.

Practice: Example 10, 11 & 12
Volume 3, Reading 20.



Not incorporating economic responses into the investment analysis: Economic responses should be incorporated in investment analysis as they affect profitability e.g. when investment is attractive, competitors can enter and reduce the profitability.

Misusing capital budgeting templates: It is not appropriate to use standardized capital budgeting templates to evaluate every project because every project is unique.

Pet projects: It is inappropriate to use overly optimistic forecasts to inflate the pet project's profitability. "Ideally, pet projects will receive normal scrutiny that other investments receive and will be selected on the strength of their own merits."

Basing investment decisions on EPS, net income, or ROE: Instead of basing investment decisions on short-run profitability measures i.e. Net income, EPS, ROE etc., projects should be based on long-term economic profitability of the company, which is represented by positive NPV.

Using IRR to make investment decisions: For evaluating mutually exclusive projects with unconventional CFs, NPV criterion should be used instead of IRR since IRR will tend to result in choosing smaller short-term projects with high IRRs at the cost of neglecting larger, long-term, higher NPV projects.

Bad accounting for cash flows: It is easy to omit relevant cash flows, double count CFs and mishandle taxes in case of complex projects.

Overhead costs: Incremental overhead costs i.e. management time, information technology support etc. should be taken into account in the cost of the project. Over/underestimating these costs can lead to incorrect investment decisions.

Not using the appropriate risk-adjusted discount rate: High risk project should not be discounted using the company's WACC, rather project's required rate should be used.

Spending the entire investment budget just because it is available: Many managers overspend their capital budget to prove that their budget is too small. The ideal practice is to return the excess funds whenever profitable projects cost is less than the total budget and justify a budget increase with sound reason (if the budget is small).

Failure to consider investment alternatives: Most of the time, the company's focus is on generating a single good investment idea instead of considering alternative investment ideas as well.

Handling sunk costs and opportunity costs incorrectly: Only opportunity costs should be included in the cost of the project and sunk costs should be ignored.

7.6 Common Capital Budgeting Pitfalls

Some of the common mistakes that managers make are as follows:

8. OTHER INCOME MEASURES AND VALUATION MODELS

8.2 Economic and Accounting Income

Economic and Accounting Income

Accounting income = Revenues – Expenses

Economic Income = After-Tax Cash Flows from investment + Change in market value

Economic Income = After-Tax Cash Flows from investment + (Ending market value – Beginning market value)

OR

Economic Income = After-Tax Cash Flows from investment – (Beginning market value – Ending market value)

Economic Income = After-Tax Cash Flows from investment – Economic Depreciation

where,

- Beginning market value at time 0 is the PV of the future after-tax cash flows at the required rate of return. The market value at any future date is the PV of the subsequent cash flows discounted back to that date.
- Ending Market Value (e.g. in Year 1) =
$$\frac{\text{After-tax operating CF in yr 2}}{(1+r)^1} + \frac{\text{After-tax operating CF in yr 3}}{(1+r)^2} + \frac{\text{After-tax operating CF in yr 4}}{(1+r)^3} + \dots$$

NOTE:

After-tax operating CF of the last year of the project includes after tax salvage value as well.

Source: Table 28 & 29, Volume 3, Reading 20.

Differences between Accounting and Economic Income:

		Accounting Income	Economic Income
1.	Depreciation	Accounting depreciation is based on the original cost of the investment (not the market value). It represents the decrease in the book (accounting) value.	Economic depreciation is the decrease in the market value of the investment.
2.	Net income	Accounting NI is the after-tax income after paying interest expenses on the company's debt obligations.	When computing the economic income or after-tax operating CFs, the interest expenses are ignored. The effects of financing costs are captured in the discount rate.
3.	Measures of Performance	Example: ROE or ROA	Economic rate of return i.e. year's Economic income / Beginning market value

Source: Table 30 & 31, Volume 3, Reading 20.

8.3.1) Economic profit

It is a periodic measure of profit, which is earned in excess of the dollar cost of the capital invested in the project. The dollar cost of capital is the dollar return that is required to be earned by the company in order to pay the debt holders and the equity holders. Positive Economic Profit means that the firm is earning more than required rate of return.

$$\text{Economic Profit (EP)} = \text{NOPAT} - \$\text{WACC}$$

where,

NOPAT = net operating profit after tax i.e. $\text{EBIT} (1 - \text{Tax rate})$

EBIT = earnings before interest and taxes

$\$WACC = \text{dollar cost of capital} = WACC \times \text{capital}$

Capital = investment = Initial Investment - depreciation

- It is used in asset or security valuation.
- It is used to measure performance and compensation of management.

Source: Table 32, Volume 3, Reading 20.

Market Value added

The NPV calculated from Economic profit is known as Market Value added (MVA).

$$\text{MVA} = \sum_{t=1}^{\infty} \frac{\text{EP}_t}{(1 + \text{WACC})^t}$$

Total value of the company = original investment + NPV

NOTE:

EP is from the perspective of all suppliers of capital therefore WACC is used to discount it.

8.3.2) Residual Income

Uses of Economic Profit:

Residual income (RI) = Net income – Equity Charge
Or

$$RI_t = NI_t - (r_e \times B_{t-1})$$

where,

RI_t = residual income during period t

NI_t = net income during period t

$(r_e \times B_{t-1})$ = equity charge for period t

r_e = required rate of return on equity

B_{t-1} = beginning book value of equity

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

Total value of the company = NPV + Original Equity investment + Original Debt investment

NOTE:

RI is from the perspective of equity investors therefore RI is discounted at the cost of equity.

Source: Table 33, Volume 3, Reading 20.

Claims Valuation

Claims valuation estimates the value of debt liabilities and equity, which are the claims against the assets of the company.

Total value of the company = value of liabilities + value of equity

where,

Value of liabilities: Value of liabilities is found by discounting cash flows to debt holders i.e. interest payments & principal payments at the cost of debt.

Value of equity: Value of equity is found by discounting cash flows to stockholders i.e. dividends & share repurchases at the cost of equity.

Source: Table 34, Volume 3, Reading 20.

NOTE:

- The Claims Valuation method only calculates the value of the company.
- Economic Profit and Residual Income methods calculate both project and company value.

In theory, all the valuation models give the same value. However, in reality, analysts have to deal with various accounting complications, which may result in different valuations.

Some of these complications include:

- Pension liability adjustments
- Valuations of marketable securities
- Exchange rate gains & losses
- Adjustments for leases
- Adjustments for Inventories
- Adjustments for Goodwill
- Adjustments for Deferred taxes etc.

Practice: End of Chapter Practice Problems for Reading 20 & FinQuiz Item-set ID# 16123, 16520 & 16555.



2.

THE CAPITAL STRUCTURE DECISION

A capital structure is the mix of debt and equity that the company uses to finance its business.

Goal of Capital Structure Decision: Goal of capital structure decision is to determine that capital structure which maximizes the value of the company and minimizes the WACC (cost of capital).

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

where,

r_{WACC} represents the overall **Marginal** cost of capital of the company i.e. the costs of raising **Additional** capital.

r_d = before-tax Marginal cost of debt

r_e = marginal cost of equity

t = marginal tax rate

$\frac{D}{V}$ = market value of debt divided by value of company

$\frac{E}{V}$ = market value of equity divided by value of company

$$\text{Total value of Company} = V = D + E$$

2.1 Modigliani and Miller (MM) Proposition I without Taxes: Capital Structure Irrelevance

"The market value of a company is not affected by the capital structure of the company"

Value of a company levered (V_L) = Value unlevered (V_U)
Which implies,

- WACC for a company is unaffected by its capital structure in the no-tax case.
- The value of a company is determined solely by its cash flows, not by its capital structure.

Without taxes:

$$V_L = V_U$$

Value of Unlevered (all equity) Company = V_U =

$$V_L = \frac{EBIT}{r_{WACC}}$$

Assumptions:

This proposition is based on certain assumptions:

- All investors have homogeneous expectations.
- There are no transaction costs, no taxes, no bankruptcy costs and everyone has the same information. (Perfect capital markets)
- Investors can borrow and lend at the risk-free rate.
- There are no agency costs.
- The company's operating income is not affected by the changes in the capital structure of a company.

2.2 MM Proposition II without Taxes: Higher Financial Leverage Raises the Cost of Equity

"The cost of equity is a **linear** function of the company's debt/equity ratio".

Which implies as the company increases its use of debt financing, the cost of equity rises linearly but WACC and cost of debt remain constant/unchanged.

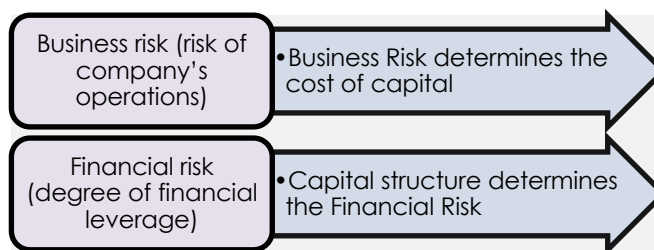
Assumptions:

- No financial distress costs.
- Debt-holders have prior claim to assets and income relative to equity-holders therefore, Cost of Debt < cost of Equity.*

* However, as debt increases, the risk to equity-holders increases which in turn increases the cost of equity.

Risk of equity:

It depends on two factors



WACC without taxes is:

$$r_{WACC} = \left[\frac{D}{V} \times r_d \right] + \left[\frac{E}{V} \times r_e \right]$$

where,

r_{WACC} = weighted average cost of capital of the company

r_d = before-tax Marginal cost of debt = after-tax marginal cost of debt with no tax assumption

r_e = marginal cost of equity

t = marginal tax rate

$\frac{D}{V}$ = market value of debt divided by value of company

$\frac{E}{V}$ = market value of equity divided by value of company

Cost of equity is a linear function of the debt/equity ratio i.e.

$$\text{Cost of Equity} = r_e = r_0 + (r_0 - r_d) \frac{D}{E}$$

↙ Intercept
↘ Slope coefficient

NOTE:

$(r_0 - r_d)$ is positive because cost of equity must be an increasing function of the debt/equity ratio so that WACC remains constant when debt ratio is changed.

$$V = D + E = \frac{\text{Interest payments on debt}}{\text{Cost of debt}} + \frac{(\text{EBIT} - \text{interest payments on debt})}{\text{Cost of equity}}$$

Example:

EBIT = \$5,000
WACC = 10%
Debt = D = \$15,000
Cost of debt = 5%

$$\begin{aligned} \text{Value of Unlevered (all-equity) Company} &= V_U = \frac{\text{EBIT}}{r_{WACC}} \\ &= \frac{\$5,000}{0.10} = \$50,000. \end{aligned}$$

According to MM proposition I:

$$\begin{aligned} V_L &= V_U \\ E &= V - D = \$50,000 - \$15,000 = \$35,000 \end{aligned}$$

According to MM proposition II, the cost of equity is:

$$r_e = 0.10 + (0.10 - 0.05) \frac{\$15,000}{\$35,000} = 12.143\%$$

$$V = D + E = \frac{\text{Interest payments on debt}}{\text{Cost of debt}} + \frac{(\text{EBIT} - \text{interest payments on debt})}{\text{Cost of equity}}$$

$$V = D + E = \frac{(0.05 \times 15,000)}{0.05} + \frac{(5,000 - 750)}{0.12143} \approx \$50,000$$

$$r_{WACC} = \frac{15,000}{50,000} \times 0.05 + \frac{35,000}{50,000} \times 0.12143 = 10\%$$

- Systematic Risk of the assets of the entire Company is the weighted average of the systematic risk of the company's debt & equity i.e.

$$\beta_a = \left[\frac{D}{V} \right] \beta_d + \left[\frac{E}{V} \right] \beta_e$$

where,

β_a = asset's systematic risk or asset beta

β_d = beta of debt

β_e = beta of equity

$$\beta_e = \beta_a + (\beta_a - \beta_d) (D/E)$$

- Which implies as debt ratio rises, the equity's beta also rises.

2.3 TAXES, THE COST OF CAPITAL AND THE VALUE OF THE COMPANY

After-tax cost of debt = Before-tax cost of debt \times (1 - Marginal tax rate)

MM Proposition I with Taxes: Company's value is maximized at 100% Debt

The value of company with debt > the all-equity company by an amount equal to the tax rate multiplied by the value of the debt i.e.

$$V_L = V_U + (t \times D)$$

where,

$t \times D$ = Debt tax-shield

Value of Unlevered(all equity) Company

$$(V_U) = \frac{\text{EBIT} (1 - t)}{r_{WACC}}$$

$$\begin{aligned} V &= D + E \\ &= \frac{\text{Interest payments on debt}}{\text{Cost of debt}} + \frac{(\text{EBIT} - \text{interest payments on debt})(1 - t)}{\text{Cost of equity}} \end{aligned}$$

Assumptions:

- No financial distress costs.
- No bankruptcy costs.

NOTE:

- Under these assumptions, a company's Optimal Capital Structure is 100% Debt.
- The increased use of debt has no impact on expected default rates under MM, because it is assumed to be risk-free.

MM Proposition II with Taxes: WACC is minimized at 100% Debt

The cost of equity increases as the company increases the amount of debt but the cost of equity does not rise as fast as it does in the no-tax case.

$$r_e = r_0 + (r_0 - r_d)(1 - t) \frac{D}{E}$$

$(r_0 - r_d)(1 - t)$ = Slope coefficient *

$$*(r_0 - r_d)(1 - t) < (r_0 - r_d)$$

WACC with taxes:

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

- WACC for the company with debt < WACC for all-equity company

Example:

EBIT = \$5,000
WACC = 10%
Debt = D = \$15,000
Cost of debt = 5%
Tax rate = t = 25%

Value of Unlevered (all-equity) Company (VU) =

$$\begin{aligned} &\frac{\text{EBIT} (1 - t)}{r_{WACC}} \\ &= \frac{\$5,000(1 - 0.25)}{0.10} = \$37,500. \end{aligned}$$

According to MM proposition I with taxes:

$$V_L = V_U + tD = \$37,500 + 0.25(\$15,000) = \$41,250$$

$$E = V - D = \$41,250 - \$15,000 = \$26,250$$

According to MM proposition II with taxes, the cost of equity is:

$$r_E = 0.10 + (0.10 - 0.05)(1 - 0.25) \frac{\$15,000}{\$26,250} = 12.143\%$$

$$V = D + E = \frac{\text{Interest payments on debt}}{\text{Cost of debt}} + \frac{(\text{EBIT} - \text{interest payments on debt})(1 - t)}{\text{Cost of equity}}$$

$$V = D + E = \frac{(0.05 \times 15,000)}{0.05} + \frac{(5,000 - 750)(1 - 0.25)}{0.12143}$$

$$\approx \$41,250$$

$$r_{WACC} = \frac{15,000}{41,250} \times 0.05(1 - 0.25) + \frac{26,250}{41,250} \times 0.12143 = 9.091\%$$

Thus, levered WACC < Unlevered WACC

Value of levered Company

$$(V_L) = \frac{\text{EBIT}(1-t)}{r_{WACC}} = \frac{\$5,000(1-0.25)}{0.09091} \approx \$41,250$$

Practice: Exhibit 1,
Volume 3, Reading 21.



Practice: Example 1 & 2,
Volume 3, Reading 21.

**NOTE:**

Whether debt financing adds value to the company depends on:

- Corporate tax rate
- Personal tax rate on interest income
- Personal tax rate on dividend income

i.e. if personal tax rate on interest income > personal tax rate on dividend income, investors demand higher return on debt which increases the cost of debt and decreases company's value.

Factors that affect the value of a levered company:

- Tax issues
- Cost of Financial Distress
- Agency costs
- Asymmetric information

2.4**Cost of Financial Distress**

It is the cost that occurs due to high uncertainty regarding a company's ability to meet its various obligations because of lower or negative earnings. The expected cost of financial distress is composed of two components:

- 1) The costs of financial distress and bankruptcy.
- 2) The probability of occurrence of financial distress and bankruptcy.

Costs of financial distress can be classified into two categories:

- 1) Direct Costs of Financial Distress:** i.e. actual cash expenses related to bankruptcy e.g. legal & admin fees.
- 2) Indirect costs of Financial Distress:** i.e. impaired ability to conduct business, loss of customers, creditors, suppliers and valuable employees, agency costs related to debt etc.

Cost of Financial Distress is lower when:

- Companies have assets that have higher secondary market e.g. companies with marketable tangible assets i.e. airlines, steel manufacturers etc.

Cost of Financial Distress is higher when:

- Companies have few tangible assets i.e. high-tech growth companies, pharmaceutical companies etc.

The probability of bankruptcy depends on:

- **The degree of financial leverage:** The higher the leverage, the higher is the probability of financial distress.
- **Company's business risk:** The higher the business risk, the higher is the probability of financial distress.
- **Corporate governance structure and management of the company:** The lower the quality of management & corporate governance, the higher is the probability of financial distress.

NOTE:

The higher the expected costs of financial distress, the lower is the amount of debt preferred in capital structure, all else equal.

2.5**Agency Costs**

Agency costs are related to the conflict of interest between managers and shareholders & bondholders.

Agency costs of Equity: When the managers have smaller stake in the company, their share in bearing the cost of excessive perquisite consumption is less and they do not give their best efforts in running the company.

The net agency costs of Equity have three components:

- 1. Monitoring Costs:** These are the costs that are borne by the owners to monitor the management of the company i.e. expenses of annual report, board of directors expenses, cost of annual meeting etc.
- 2. Bonding Costs:** These are the costs that are borne by the management to assure the owners that they are working in the owner's best interest i.e. implicit cost of non-compete employment contracts and explicit cost of insurance to guarantee performance.
- 3. Residual Loss:** These are the agency costs that are incurred despite sufficient monitoring and bonding of management.

Factors affecting Agency Costs:

- Good corporate governance lowers the agency costs (monitoring costs).
- Using more debt in a company's capital structure reduces the net agency costs of equity. (High debt levels in the company put pressure on managers to manage company efficiently in order to make interest and principal payments on time. This reduces the company's free cash flow and thus management's opportunities to misuse cash). This is the foundation of Jensen's free cash flow hypothesis.

2.6 Costs of Asymmetric Information

Asymmetric information is the unequal distribution of information which arises when managers have more information about a company's performance and prospects than outsiders i.e. owners & creditors.

Information asymmetry is high in:

- High-tech companies.
- Companies with less transparent financial statements.
- Companies with lower level of institutional ownership.
- Companies with higher proportion of equity in the capital structure.

NOTE:

The higher the level of information asymmetry of the company, the higher is the probability of agency costs and higher is the return demanded by debt & equity providers.

The Pecking Order Theory:

According to this theory, managers prefer to make financing choices that are least likely to send signals to investors. Forms of financing, which are the least visible to outsiders, are the most preferable (i.e. internally generated funds) while the forms of financing, which are the most visible, are the least preferable (i.e. external equity). Forms of financing in the order from the most favored to the least favored are:

- Internally generated funds (retained earnings)
- Debt
- External equity (newly issued shares)
- Managers tend to issue equity when the stock is believed to be overvalued.
- Managers are reluctant to issue equity when the stock is believed to be undervalued.
- Additional issuance of stocks is taken as a negative signal by investors.
- Use of debt financing shows management's confidence in the firm's ability to make interest payments in the future.

2.7 The Optimal Capital Structure according to the Static Trade-Off Theory

According to static trade-off theory of capital structure, a company chooses its capital structure so that the incremental tax shield benefits are exactly offset by the incremental costs of financial distress. Thus, an optimal capital structure is chosen at which the value of the company is maximized and cost of capital is minimized.

$$V_L = V_U + tD - PV(\text{Costs of financial distress})$$

where,

tD = Debt tax-shield

NOTE:

In Static trade-off theory, assumption of no taxes and no costs of financial distress are removed.

Practice: Exhibit 2,
Volume 3, Reading 21.



Target Capital Structure

Target capital structure is the structure that the firm uses over time when making decisions about how to raise additional capital. The firm's value is maximized when firm's target capital structure is equal to optimal capital structure. For a firm that does have a target capital structure, the actual structure may vary from the target due to

- **Market-value fluctuations in its securities:** Changes in bond & stock markets conditions lead to changes in market value of debt and equity. The change in market value of debt & equity may make capital

structure different from target capital structure.

- **Management's desire to exploit an opportunity in a particular financing source:** i.e. a temporary rise in the stock's price gives good opportunity to issue additional equity, which may result in increase in percentage of equity in capital structure.

Practice: Example 4,
Volume 3, Reading 21.



3. Practical Issues in Capital Structure Policy

3.1 Debt Ratings

When leverage of a company is increased, rating agencies tend to lower the ratings of the company's debt to reflect the higher credit risk resulting from the increasing leverage. Lower ratings indicate higher risk to both equity and debt capital providers and therefore, they demand higher returns.

Firms seek to maintain a high debt rating because it implies a lower probability of financial distress, which reduces the cost of debt and equity capital and leads to a higher value for the firm.

Practice: Exhibit 4,
Volume 3, Reading 21.



Degree of financial leverage in different countries differs according to:

- Tradition of a country
- Tax policy
- Regulation
- Companies in France, Italy and Japan use more debt financing as compared to companies in U.S. and U.K.
- Companies in U.S. use more long-term debt as compared to companies in Japan.
- Companies in developed markets use more long-term debt than do companies in emerging markets.
- Companies in developed markets use more debt than do companies in emerging markets

When comparing capital structures of companies in different countries, an analyst must consider a variety of characteristics that might differ and affect both the typical capital structure and the debt maturity structure.

The major characteristics are as follows:

- 1) Institutional and legal environment:** For example taxation, accounting standards, and the presence or lack of corruption etc.
- 2) Financial markets and banking sector:** These factors include characteristics of the banking sector as well as the size of and activity of the financial markets.
- 3) Macroeconomic environment:** These factors capture the general economic & business environment i.e. economic growth, inflation etc.

3.2 Evaluating Capital Structure Policy

When evaluating a company's capital structure, the financial analysts should consider the following factors:

- Changes in the capital structure of the company over time.
- Capital structure of competitors with similar business risk.
- Company-specific factors i.e. quality of corporate governance.

Other factors include industry in which a company operates, the volatility of company's cash flows, and its need for financial flexibility etc.

3.3 Leverage in an International Setting

A company's capital structure depends on company-specific factors i.e.

- Probability of bankruptcy
- Profitability
- Quality and structure of assets
- Growth opportunities
- Company's industry affiliations etc.

COUNTRY-SPECIFIC FACTORS AND THEIR ASSUMED IMPACTS ON THE COMPANIES' CAPITAL STRUCTURE

Country-Specific Factor	If a country	then D/E ratio is potentially	and Debt Maturity is potentially
<i>Institutional Framework</i>			
i. Legal system efficiency	Is more efficient	Lower	Longer
ii. Legal System origin	Has common law as opposed to civil law	Lower	Longer
iii. Information Intermediaries	Has auditors and analysts	Lower	Longer
iv. Taxation	Has lower tax rate on equity	Lower	N/A
<i>Banking system, financial markets</i>			
i. Equity & bond markets	Has active bond & stock market	N/A	Longer
ii. Bank-based or market-based country	Has a bank-based financial system	Higher	N/A
iii. Investors	Has large institutional investors	Lower	Longer
<i>Macroeconomic Environment</i>			
i. Inflation	Has high inflation	Lower	Shorter
ii. Growth	Has high GDP growth	Lower	Longer
<i>Other factors</i>			
Cash flows	Has stable cash flows	Higher	N/A
Industry in which company operates	Operates in Natural monopoly	Higher	N/A
Information asymmetry	Has high information asymmetry	Higher	Shorter
Tangible assets	Has few tangible assets e.g. technology industry	Lower	N/A
Need for financial flexibility	High need	Lower	N/A
Benefit from tax deductibility of interest	High benefits	Higher	N/A
Tax rate on interest v/s dividend income	Has high tax rate on interest income	Lower	N/A

For detail: Reference: Volume 3, Reading 21.

Practice: End Of Chapter Practice Problems For Reading 21 & FinQuiz Item-Set Id# 10684 & 16541.



2. Dividends: Forms & Effects on shareholder wealth & issuing company's financial ratios.

Dividends are paid in a no. of ways such as i) cash dividends, ii) stock dividends and iii) stock splits. The three forms of cash dividends are: regular, extra (also called irregular/special) and liquidating.

2.1 Regular Cash Dividends

Many companies distribute cash to their shareholders on regular basis. Companies' cash distribution frequency varies in different geographical regions.

Consistent dividends payment over a long period of time is interpreted as consistent profitability, therefore, companies try to maintain or increase their dividends; or when experiencing temporary problems, strive not to reduce dividends.

Note:

- Investors interpret regular/increasing dividends as signal of company's growth and its profit sharing practice.
- Management can use dividend announcement to signal its confidence in company's future.
- Increase in regular dividends has a positive effect on share price.

2.1.1.) Dividend Reinvestment Plans (DRPs)

Dividend reinvestment plans allow shareholders to automatically invest all or portion of cash dividends in additional shares of the company. Three types of DRPs based on company's source of shares are:

- Open Market DRP – company purchases shares in the open market for plan participants.
- New Issue DRP – company issues new shares for plan participants.
- Plans that are permitted to obtain shares either through a or b.

Advantages of DRPs:

- DRPs help small shareholders accumulating additional shares easily.
- Companies can issue new capital through DRPs without the flotation costs associated with secondary equity issuance.
- Participating shareholders obtain additional shares through DRP at no transaction costs and sometimes purchase shares at a discount to the market price.

Disadvantages of DRPs:

- Shareholders require extra record keeping in jurisdictions where capital gains are taxed.
- DRPs change (increase/decrease) the average cost basis for shareholders.
- Shareholders have to pay tax on cash

dividends even when the dividends are reinvested, therefore, such plans are appropriate for tax-deferred accounts.

2.2 Extra or Special (Irregular) Dividends

Dividends paid by a company that does not pay regular dividends or paying extra dividends on special circumstances that supplement regular dividends. Companies in cyclical industries distribute additional earnings during strong earning years.

Practice: Example 1, Reading 22, Curriculum.



2.3 Liquidating Dividends

A company pays liquidating dividends:

- when go out of business and distribute net assets (assets-liabilities) to shareholders.
- when sell a portion of its business on cash and distribute proceeds to shareholders.
- that exceed its accumulated retained earnings.

Note: Liquidating dividend is a return of capital instead of distribution from retained earnings.

2.4 Stock Dividends

- Non-cash form of dividends, also known as bonus issue of shares.
- Shareholder's cost per share is reduced although his total cost basis remains the same.
- Shareholder's proportionate ownership in the company remains unaffected as increase in the no. of shares held is complemented by proportionate decrease in earning per share and other value per share measures.
- Stock dividends show improvement on cash dividends from both shareholders & the company's perspective, as without spending real money:
 - Shareholders receive additional dividends.
 - Company issues additional dividends.

Effect of a stock dividend:**Stock Dividends will**

Increase:	Decrease:	Not affect
-Shares outstanding	-EPS	-P/E
-Shares owned	-Stock price	-Total Market value
		-Ownership Value

Stock dividends lower company's cost of equity financing, increase the stock's float, which in turn lower share price volatility and improve liquidity.

Key Difference between Stock Dividends and Cash Dividends from company's perspective

Cash Dividends:	Stock Dividends:
<ul style="list-style-type: none"> Affect company's capital structure by reducing cash (assets) and equity (retained earnings). Lower liquidity ratios (cash ratio & current ratio) Increase financial ratios ($\frac{\text{debt}}{\text{equity}}$ & $\frac{\text{debt}}{\text{assets}}$). 	<ul style="list-style-type: none"> Do not affect company's capital structure i.e. assets and equity Retained earnings are reduced by value of stock dividends (# of shares x price per share) and contributed capital is increased by the same amount keeping total shareholders' equity unchanged. Liquidity ratios, financial ratios remain unchanged.

reduce to half, leaving P/E and equity market value unchanged. Common stock splits are two for one and three for one. Unusual stock splits may include: five for four or seven for three etc.

Stock splits and stock dividends are similar in their impact on shareholders and on the company.

Total shareholder's equity remains unchanged under stock splits and stock dividends; however, the only difference is in the accounting treatment is that:

- Stock split** → does not affect any shareholder's equity account
- Stock dividends** → value of stock dividends paid is transferred from retained earnings to contributed capital.

Generally, stock splits happen after significant rise in stock price, to bring the price down to a level perceived as not too high by investors (price range: \$20-\$80). Historically, contrary to what many investors believe, stock splits have been poor indicator of future outperformance of stocks.

Reverse stock splits: Decrease in number of shares outstanding, which increases the share price, keeping company's underlying fundamentals or shareholder's total cost basis unchanged.

Companies with very low stock prices opt for reverse stock splits with the objective to increase the stock prices at a marketable range.

Note: Though much less common than stock splits, reverse stock splits are common for companies, in or coming out of financial distress.

2.5 Stock Splits

Stock splits are similar to stock dividends. For example a two for one stock split adds one new share for every share currently held. As a result, shareholder's EPS will

Practice: Example 2, Reading 22, Curriculum.



3. Dividend Policy & Company Value Theory

3.1 Dividends Policy Does Not Matter

Miller & Modigliani (MM) argued that dividend policy is irrelevant as under perfect capital market assumptions (i.e. no taxes, no transaction costs, equal information availability), company's dividend policy should have no impact on its cost of capital or on shareholder wealth. This theory states that a company's dividend decisions are independent of its investment and financing decisions.

MM theory is based on the concept of '**homemade dividend**', which states that a shareholder can make his own dividend policy by selling shares or reinvesting dividends.

NOTE:

Following are some real world, imperfect market problems for MM's dividend policy.

- Companies incur flotation costs for selling shares to the public (4% to 10% of the capital raised).
- Shareholder has to incur transaction costs for selling shares to create home-made dividends.
- Shareholders have to pay capital and/or dividend taxes.
- Creating steady income stream by selling dividends become challenging overtime amid volatile share prices.

3.2 Dividends Policy Matters: The Bird in the Hand Argument

Bird in the hand argument states that investors view dividends as less risky. Financial theorists- Gordon, Lintner & Graham, argued that even under perfect capital market assumptions, investors prefer a dollar of dividends to a dollar of potential capital gains (price appreciation) because dividends are viewed to be less risky. Therefore, a dividend paying company is assumed to have a lower cost of equity and a higher share price as compared to a similar non-dividend paying company.

However, according to MM, paying or increasing dividends today only lowers the Ex-Dividend Price* of the share. It does not affect the risk of future cash flows.

***Ex-Dividend Price:** Share price when the share first trades without the right to receive an upcoming dividend.

3.3 Dividends Policy Matters: The Tax Argument

When dividends are taxed at a higher rate than capital gains, investors prefer to invest in companies that pay low dividends. In this case, earnings are preferred to be reinvested in profitable growth opportunities and any growth in earnings in excess of the cost of capital results in increase in share price. If there are no profitable opportunities available, then excess cash can be distributed through share repurchases instead of paying cash dividends. This theory ideally advocates 'zero dividend payout ratio'.

3.4 Other Theoretical Issues

3.4.1) Clientele Effect:

Clientele effect is the existence of different groups of investors who have different preferences regarding the dividend policy of companies. For example:

- Retired investors prefer higher current income and thus, higher dividend payout ratios.
- Young workers with a long time horizon prefer to invest in companies with low or zero dividend payout ratio.
- Investor whose marginal tax rate on capital gains is < marginal tax rate on dividends prefers to invest in companies with little or no dividends.
- Tax-exempt investors are indifferent about the returns in the forms of capital gains or dividends, all else equal.
- Some institutional investors, i.e. mutual funds, banks, insurance companies only invest in companies that pay dividends.

Thus, according to clientele effect theory the demands of all clienteles for various dividend policies are satisfied by sufficient numbers of companies. Therefore, the dividend market is always in equilibrium Dividend policy

of a company cannot affect its share price (like in case of dividend irrelevance theory).

If dividends and capital gains are taxed at the same rate, all else constant ex-dividend share price declines by the amount of the dividend.

Ex-Dividend Price: Share price when the share first trades without the right to receive an upcoming dividend.

Ex-dividend Date: The first date that the shares trades without the right to receive an upcoming dividend.

a) Share is sold just before it goes ex-dividend: i.e. the share is sold at the end of the last trading day before the ex-dividend day at price P_w . The purchaser of the share will be the owner of dividend in this case.

Cash flow from Sale = Sale price – capital gains tax owned on the sale

$$\text{Cash flow from Sale} = P_w - (P_w - P_b) (T_{CG})$$

where,

P_w = price with the right to receive dividend

P_b = purchase price where b is for buy

T_{CG} = marginal tax rate on capital gains

b) Share is sold after the share goes ex-dividend: In this case, the investor (seller) will receive the dividend, not the new owner of the share.

Cash flow from Sale = Sale price – capital gains tax owed on the sale + after-tax amount of dividend

$$\text{Cash flow from Sale} = P_x - (P_x - P_b) (T_{CG}) + D (1 - T_D)$$

where,

P_x = ex-dividend price

P_b = purchase price where b is for buy

T_{CG} = marginal tax rate on capital gains

T_D = marginal tax rate on dividends

D = dividends

Marginal Investor: An investor who is expected to be part of the next trade in the share and who is therefore important in setting price.

When investor is indifferent about selling the share just before and just after it goes ex-dividend

$$P_x = P_w$$

In this case, two cash flows given must be equal i.e.

$$P_w - (P_w - P_b) (T_{CG}) = P_x - (P_x - P_b) (T_{CG}) + D (1 - T_D)$$

and

The amount of price decrease when the share goes ex-dividend is as follows:

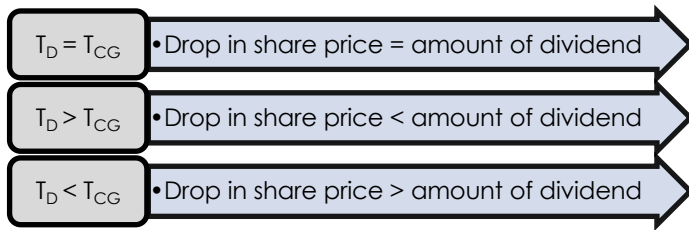
$$P_w - P_x = D \left[\frac{1 - T_D}{1 - T_{CG}} \right]$$

or

$$\Delta P = D \left[\frac{1 - T_D}{1 - T_{CG}} \right]$$

where,

ΔP = change in price when the stock goes from with dividend to ex-dividend



Refer to example 3 in the reading 22.

Practice: Example 3 & 4, Reading 22, Curriculum.



3.4.2) The Information Content of Dividend Actions: Signaling

In contradiction of MM's assumption about symmetric information, company's board and management are usually more informed about its performance than outside investors and can use dividends to send signals to investors regarding the performance of the company.

- Dividends initiations or increases convey positive signal to investors as it represents increase in future earnings growth. This also leads to increase in share price.
- Dividend omissions or reducing dividends convey negative signal to investors as it represents future earnings problems.
- Dividends declaration helps reducing information gap between management and investors. Share price may rise to intrinsic value, as a result.

Note:

- Initiation or increase in dividends brings more scrutiny by analysts resulting in correction of mispricing. Thus company's management with a belief that their stock price is undervalued (overvalued) is more (less) likely to initiate or increase dividend.
- Occasionally, cutting dividend can be good news for investors when the firm uses undistributed cash to grow rapidly.
- For management, signaling false positive future prospect is difficult because dividends increases are costly to mimic.

Following are some characteristics of companies that consistently increase their dividends.

- Dominant/niche position in industry
- Global operations
- Relatively less volatile earnings, high returns on assets, low debt ratios.

Dividend payout ratio is usually low or zero for:

- Companies with high R&D requirements.
- Capital-intensive Companies.
- Companies with high business risks.

3.4.3) Agency Costs and Dividends as a Mechanism to control them

- **Dividend payment may reduce overinvestment agency problem:** When agents (the managers) and owners (the shareholders) are different, managers may have an incentive to maximize their own welfare at the company's expense. The agency problem also occurs due to the presence of asymmetric information. This problem may facilitate managers to invest in negative NPV projects, which only grow the size of the company and increases the manager's span of control at the expense of company's long term performance. This **overinvestment agency problem** can be removed by paying dividends, which reduces the excess cash available to managers to invest in negative NPV projects. This is known as "Free cash flow Hypothesis".
- Smaller Fast-Growing companies, which operate in cyclical industries, hold more cash and pay low or no dividends.
- Mature large companies, which operate in non-cyclical industries, do not usually hold cash and they have high payout ratios.
- Dividends and share repurchases increase the risk of default of the company because payment of dividends reduces the cash cushion available to pay fixed payments to bondholders.
- Payment of large dividends can also lead to **underinvestment in profitable projects**.

NOTE:

Bond indenture includes a covenant, which restricts distribution to shareholders that might impair the position of bondholders. It restricts the financing of dividend payments by the sale of company's existing assets or by the issuance of new debt.

Practice: Example 8, Reading 22, Curriculum.



3.5

Dividend Theory: Summary

It is difficult to demonstrate an exact relationship between dividends and value of a company because many variables affect value. Research suggests that higher tax rates do result in lower dividend payouts. There is empirical support for the "bird in the hand"

theory because some companies that pay dividends are assumed to be less risky by investors.

However, it is important that company's dividend policy should match its reinvestment opportunities, client preferences and legal/financial environment.

4. Factors Affecting Dividend Policy in Practice

There are six factors that affect a company's dividend policy.

4.1 Investment Opportunity

All else equal, a company which has many profitable investment opportunities pays less or zero dividends as compared to a company which has fewer opportunities because the former will have more uses of internally generated cash flows. Such cash flows are a cheaper source of financing for a company than new equity issuance.

Industry in which a company operates, influences the opportunities for new investment and the speed with which a company is required to respond to them i.e.

- Availability of Internally generated funds is important for technology companies.
- For utility companies, there are fewer opportunities to invest rapidly and thus these companies have higher dividend payout ratios.

4.2 The Expected Volatility of Future Earnings

When earnings are volatile, companies are cautious in the change in size and frequency of dividend increases i.e. companies are reluctant to cut dividends and prefer to smooth dividends. When determining dividend payout policy, most managers:

- Determine target payout ratio on the basis of long-term sustainable earnings.
- Focus more on increase/decrease in dividends not on amount of dividends.
- Are reluctant to increase dividends when earnings are not expected to increase continuously.

4.3 Financial Flexibility

Substantial cash on hand provides companies with financial flexibility to meet unforeseen operating needs and to exploit investment opportunities with minimum delay. Financial flexibility is extremely useful during economic contractions when credit is not easily available. Therefore, companies may not initiate or may reduce or omit dividends to obtain financial flexibility.

Financial flexibility can be obtained by means of share repurchases as share repurchases are not expected to be continued on regular basis and do not represent any formal commitment unlike regular dividends.

4.4 Tax Considerations

Tax is an important factor that affects investment decisions because it is the after-tax return which is relevant to investors. Different countries have different ways to tax dividends and capital gains. Also, foreign taxes are as important as domestic taxes for a foreign investor.

4.4.1) Taxation Methods

There are three major taxation methods that affect dividends.

i. Double Taxation Method:

In double taxation method, corporate earnings are taxed twice i.e. once at the corporate level regardless of whether they will be distributed as dividends or retained and then taxed again at the shareholder level if they are distributed to taxable shareholders as dividends. This system is used in U.S.

Effective Tax Rate = Corporate tax rate + {(1 – Corporate tax rate) (Individual tax rate)}

ii. Dividend imputation tax system:

Under this system, dividends are effectively taxed at the shareholder rate.

The U.K. uses a modified imputation tax system. Under this system, corporate earnings are first taxed at the corporate level. When those earnings are distributed to shareholders in the form of dividends, shareholders receive a tax credit. This tax credit is known as Franking Credit. In this system, dividends are effectively taxed only once at the shareholder's tax rate.

- When the marginal tax rate of shareholder < marginal tax rate of company, shareholder receives the difference between the two rates i.e. a tax credit.
- When the marginal tax rate of shareholder > marginal tax rate of company, shareholder pays the difference between the two rates.

Effective Tax Rate = Shareholder's Marginal Tax Rate

iii. Split-rate tax system:

Under this system, corporate earnings that are distributed as dividends are taxed at a lower rate at the

corporate level than earnings that are retained in the business. Dividends are taxed as ordinary income at individual investor level. This system is used in Germany.

Effective Tax Rate = Corporate tax rate on dividends + $\{(1 - \text{Corporate tax rate on dividends}) (\text{personal tax rate})\}$

4.4.2) Shareholder Preferences for Current Income versus Capital Gains

- When investor's tax rate on dividends < tax rate on capital gains, investor will prefer dividends, all else equal.
- Even if dividends are taxed at a lower rate than capital gains, investors usually prefer capital gains due to the following reasons:
 - Capital gains taxes do not have to be paid until the shares are sold.
 - The tax basis of the shares received by the beneficiary from the decedent is stepped up to fair market value at the date of death of the decedent.
 - Tax-exempt institutions such as pension funds are indifferent to returns coming in the form of dividends or capital gains.

4.5 Floatation Costs

Flotation costs include:

- 1) Fees that a company pays to investment bankers, attorneys, securities regulators, auditors etc. to issue shares.
 - 2) Possible negative impact on market price from a rise in the supply of shares outstanding.
- Aggregate flotation costs are higher for smaller companies who issue fewer shares than for larger companies.
 - Flotation costs make new equity capital an

expensive source of financing as compared to using internally generated funds.

Practice: Example 10, Reading 22, Curriculum.



4.6 Contractual and Legal Restrictions

The payment of dividends is often affected by legal or contractual restrictions or rules i.e.

- **Impairment of Capital Rule:** It is a legal restriction, which states that net value of balance sheet assets should be at least equal to a specified amount.
- **Bond indentures:** These restrictions require companies to maintain certain ratios e.g. interest coverage, current ratio, etc.
- **Presence of Preferred stock:** i.e. dividends on common shares cannot be paid until preferred share dividends are paid.

NOTE:

Taxation is not company-specific while factors i.e. contractual restrictions, expected volatility of future earnings are company-specific.

4.7 Factor Affecting Dividend Policy

A company's dividend policy is affected by many factors including above-mentioned six factors in varying degrees of importance.

Practice: Example 11, Reading 22, Curriculum.



5. Payout Policies

Payout Policy: The principles by which a company distributes cash to common shareholders by means of cash dividends and/or share repurchases.

Dividend Policy: It is the strategy that a company follows to determine the amount and timing of dividend payments.

Types of Dividend Policies:

- 1) Stable Dividend Policy
- 2) Constant Dividend Payout ratio Policy
- 3) Residual Dividend Policy

5.1 Stable Dividend Policy

A policy that is based on the long-run expected earnings pays regular dividends. This policy represents less uncertainty for shareholders about the level of future dividends, as it does not reflect short-term volatility in earnings. It is the most common dividend policy.

- Dividends may increase even in years when earnings decline.
- Dividends increase at lower rate than earnings in boom years.

Target Payout Ratio: is a strategic goal that represents the proportion of earnings that the company intends to

distribute (payout) to shareholders as dividends over the long-term i.e.

$$\text{Expected Increase in Dividends} = (\text{Expected Earnings} \times \text{Target payout ratio} - \text{Previous Dividends}) \times \text{Adjustment factor}$$

where,

$$\text{Adjustment factor} = 1 / \text{number of years over which the adjustment in dividends will take place}$$

Practice: Example 12, Reading 22, Curriculum.



5.2 Constant Dividend Payout Ratio Policy

A policy in which a constant percentage of net income is paid out as dividends. In this policy, dividends are affected by short-term volatility in earnings. This policy is not frequently used in practice.

Practice: Example 13, Reading 22, Curriculum.



5.3 Residual Dividend Policy

A policy in which dividends are paid from any internally generated funds, which are left after funds are used to finance current period's capital expenditures (i.e. positive NPV projects). This policy is rarely used in practice.

$$\text{Dividend} = \text{Earnings} - (\text{Capital budget} \times \text{Equity percent in capital structure})$$

6. Share Repurchases

Share Repurchases (or buyback): A transaction where company buys back its own shares. Share repurchases, an alternative to cash dividends, are different from stock dividends or stock splits because of use of corporate cash.

Treasury Shares: Shares that were issued earlier and later repurchased by the company.

Canceled Shares: Shares that were issued earlier and later repurchased by the company and then retired (cannot be reissued).

Note: Both treasury and canceled shares are not considered for dividends & voting rights and in EPS calculation.

Share repurchases in many markets are subject to restrictions such as requiring shareholders' approval for share repurchase program or mechanism, limiting the %

or
Dividend = Zero, whichever is greater.

Practice Exhibit 10

Practice: Example 14, Reading 22, Curriculum.



Advantages of Residual Dividend Policy:

- It is simple to use.
- It allows managers to focus on profitable investment opportunities without being constrained by dividend payments.

Disadvantages of Residual Dividend Policy:

- This policy results in highly volatile dividend payments, which fluctuate with investment opportunities.
- The increased uncertainty about future dividends results in higher rate of return on equity demanded by investors and lower valuation.

Long-term Residual Dividend Approach: In order to deal with the problem of volatile dividends, companies can use a long-term residual dividend approach. In this approach, earnings and capital expenditures are forecasted over the next 5 or 10 years and the total amount of residual dividends is determined for the period. This estimated amount of dividends is either paid out evenly over the forecasted period or the company can keep low stable cash dividends in every period while the excess cash is distributed in the form of share repurchase.

of share-repurchases to share outstanding, restrictions regarding creditor protections etc.

6.1 Share-repurchase Methods

Companies use the following four main share-repurchase methods, listed in order of importance:

1. Buy in the Open Market: Company purchases its own shares in the open market

- Most common method
- Gives the company maximum flexibility, as there is no legal obligation to undertake or complete the program.
- Many shareholders believe that announcement of share repurchase program provides support for the share price.
- Exploiting markets mispricing of company stock

can make this method cost effective.

2. Buy Back a Fixed Number of Shares at a Fixed Price:

Companies repurchase a specific number of shares at a fixed price, typically, at a premium to the current market price.

- If shareholders are willing to sell more, company typically buys shares pro rata basis.
- The repurchase method can become time efficient by adding a fixed date.

3. Dutch Auction: Buying of shares at the lowest price possible by inviting shareholders to submit offers in the company's specified price range. Offers are qualified from lowest offered price to higher prices to meet the number of shares the company intends to purchase. Within all qualified offers – the highest price will be applied for all purchases.

4. Repurchase by Direct Negotiation: Company negotiates with a major shareholder to re purchase shares typically at a premium. Objectives of such transaction may include preventing:

- large block of shares from overhanging the market.
- an 'activist' shareholder from gaining representation on the board of directors.
- hostile takeover attempt by purchasing shares from hostile investor (would-be-suitor) at premium to the market price, known as 'Greenmail'.

Note: For liquidity purposes, large investors with weak negotiating position, sometimes sell shares at discount to the market price.

Practice: Example 15, Reading 22, Curriculum.



6.2 Financial Statement Effects of Repurchases

i) Share repurchases affect balance sheet.

- If repurchase is made with surplus **cash**: assets ↓, equity ↓, leverage (debt ratios) ↑.
- If repurchase is made with **debt**: debt ↑, equity ↓, leverage (debt ratios) ↑. Debt ratios even worsen more.

ii) Share repurchases affect income statement.

A share repurchase may increase, decrease or have no effect on EPS depending on how the repurchase is financed (internally or externally).

6.2.1) Changes in Earnings per Share

A share repurchase may increase, decrease or have no effect on EPS depending on the financing of repurchase. Assuming net income remains the same, smaller number of shares after buyback results in higher

EPS ($\frac{\text{Net Income}}{\text{shares outstanding}}$). However, if repurchase is financed with higher cost of borrowing, both net income and outstanding shares will be reduced, and can result in lower EPS.

Note: As total return on a stock = dividend yield + capital gains, any boost in capital gains resulting from repurchase is offset by decrease in dividend yield.

- For repurchases without borrowed funds (financed internally), post- repurchase EPS will be higher than pre repurchase EPS if rate of return on retained earning is less than cost of capital.
- For repurchases with borrowed funds (financed externally), post-repurchase EPS will be higher than pre repurchase EPS if earning yield is higher than cost of borrowing.

Practice: Example 16 & 17, Reading 22, Curriculum.



6.2.2) Changes in Book Value Per Share

	After Share Repurchase
When Market Price per Share is > BVPS	BVPS will decrease
When Market Price per share is < BVPS	BVPS will increase

Practice: Example 18, Reading 22, Curriculum.



6.3 Valuation Equivalence of Cash Dividends and Share Repurchases: The Baseline

Shareholders' wealth remains unaffected whether company repurchase shares or pay cash dividends (of equal amount), assuming other things constant. Assumptions may include that taxation and information content of cash dividends and share repurchase are similar.

Practice: Example 19 & 20, Reading 22, Curriculum.



6.4 The Dividend versus Share Repurchase Decision

It is a common belief that share repurchases positively affect shareholders' value. The explanation for this belief is that management tends to buyback undervalued shares and issues stocks when shares are overvalued.

Rationales for Share Repurchases v/s Cash Dividends are as follows:

1) Potential tax advantages:

When capital gains are taxed at a lower rate than dividends, share repurchases have a tax advantage over cash dividends.

2) Share price support/signaling that the company considers its shares a good investment:

Share repurchases can signal that company's management thinks its shares are undervalued and hence represents a good investment. However, share repurchases can also send a negative signal that the company has no new profitable investment opportunities.

3) Managerial Flexibility:

Share repurchases do not create any expectation about the continuance of distribution of cash in future. Unlike cash dividends, share repurchases are not a long-term commitment. Also, managers have flexibility to adjust the timing of share repurchases.

4) Offsetting dilution from employee stock options:

Share repurchases can be used to offset the possible dilution of EPS, which may result when employee stock options are exercised.

5) Increasing Financial Leverage:

Share repurchases can be used to change the capital structure of the company i.e. when shares are repurchased, leverage increases.

Practice: Example 21 & 22, Reading 22, Curriculum.



Important

- When tax rate on both dividends and capital gains is the same, a share repurchase has the same effect on shareholder's wealth as a cash dividend

payment of an equal amount.

- When share is repurchased by borrowing funds:
 - It will lead to increase in EPS when**
After-tax cost of debt < Earnings yield of the shares before the repurchase
 - It will lead to decrease in EPS when**
After-tax cost of debt > Earnings yield of the shares before the repurchase
 - It will not change EPS when**
After-tax cost of debt = Earnings yield of the shares before the repurchase
- A stock dividend does not affect shareholder wealth i.e. the price of stock decreases to reflect stock dividend but this decrease in price is offset by the increase in the number of shares owned.

Note:

Shares are also repurchased to increase EPS. But this objective has two problems i.e.

- When EPS is increased due to share repurchases, the required rate of return also increases due to the increase in leverage.
- Increase in EPS by share repurchases does not affect shareholder's wealth when total free cash flow is unchanged.

Generally,

- When the economy is strong ☐ Share repurchases increase in volume.
- When the economy is in recession ☐ Share repurchases decrease in volume.

Refer Exhibit 13: Share repurchases & dividends for several large U.S. Banks

Practice: Example 23, Reading 22, Curriculum.



7. Global Trends in Payout Policy

- In developed countries, the fraction of companies:
 - paying cash dividends has decreased.
 - engaging in share repurchases has increased.
- A small fraction of U.S. companies pay dividends as compared to similar European companies
- In 2009, a dividend behavior study concluded that aggregate dividend amount and dividend payout ratios have increased overtime while the fraction of dividend payers has decreased.
- A more recent study in 2015 concluded that as compared to non-dividend payers, cash dividend paying firms, on average:
 - have declined in number over time.
 - are large and are more profitable
 - have less growth opportunities and spend less

on R&D.

- A research has shown negative relationship between A) dividend initiation/increase and B) enhanced corporate governance/transparency (i.e. reduce need of dividends as signal in transparent markets).
- Another study has demonstrated low dividend payouts in countries with 'less information asymmetry/better investor protection'.

8. Analysis of Dividend Safety

Dividend safety analysis deals with how safe a company's dividend is i.e. whether the company's earnings and its cash flows are sufficient to sustain the payment of dividend.

Following are some of the measures to analyze dividend safety:

1) Dividend Payout Ratio:

$$\text{Dividend Payout Ratio} = \frac{\text{Dividends}}{\text{Net Income}}$$

- The higher the dividend payout ratio, the higher is the risk of dividend cut

2) Dividend Coverage Ratio:

$$\text{Dividend Coverage Ratio} = \frac{\text{Net Income}}{\text{Dividends}}$$

- The lower the dividend coverage ratio, the higher is the risk of dividend cut.

3) Free Cash Flow to Equity (FCFE) Coverage Ratio:

$$\text{FCFE Coverage Ratio} = \frac{\text{FCFE}}{[\text{Dividends} + \text{Share Repurchases}]}$$

where,

$$\text{FCFE} = \text{CFO} - \text{FCInv} + \text{Net Borrowings}$$

- If ratio = 1, the company is returning all available cash to shareholders.
- If ratio > 1, the company is improving liquidity by using funds to increase cash and/or marketable securities.
- If ratio < 1, the company is paying out more than it can afford by drawing down existing cash/marketable securities and liquidity of the company is decreasing. A ratio < 1 is not sustainable because at some time in future, a company has to issue new equity.

4) Above average Financial Leverage:

It is a fundamental risk factor related to dividend safety i.e. increase in financial leverage increases the risk of dividend cut.

Practice: Example 23, Reading 22 & 24, Curriculum.



Whether a company can sustain its dividends depend on:

- Level of dividend yield: i.e. extremely high level of dividend yield is difficult to sustain over time.
- Whether a company borrows to pay the dividend: i.e. increase in leverage increases the risk of dividend cut in future.
- The company's past dividend record: i.e. Extremely

high dividend yields compared to company's past record and current bond yields indicates a warning signal of dividends cut.

Note: Unsustainable corporate practices include cutting down on profitable capital projects and/or adding net debt, to keep dividend coverage ratios (FCFE to dividends) appear healthy.

Qualitative Judgment about a company:

- Stable or increasing dividends represent positive signal.
- Dividends cut in the past by the companies represent negative signal

End of Chapter Practice Problems for Reading 22 & FinQuiz Item-set ID # 10691 & 15736



Stakeholders and Corporate Performance

A company's **stakeholders** are individuals or groups who have interest, claim, or stake in the company's operations and performance. Stakeholders can be divided into two types i.e. internal stakeholders and external stakeholders.

1. Internal Stakeholders include:

- i. **Stockholders:** Stockholders provide the enterprise with risk capital and in exchange they expect management to try to maximize the return on their investment.
- ii. **Employees (including executive officers):** Employees provide labor and skills and in exchange expect commensurate income, job satisfaction, job security, and good working conditions.
- iii. Other managers
- iv. Board members

2. External Stakeholders include:

- i. **Customers:** Customers provide the company with its revenues and in exchange expect high-quality reliable products.
- ii. **Suppliers:** Suppliers provide a company with inputs and in exchange seek revenues and dependable buyers.
- iii. **Creditors:** Creditors provide the company with capital in the form of debt, and in exchange they expect timely repayment.
- iv. **Governments:** Governments provide the company with rules and regulations that govern business practice and maintain fair competition (including antitrust laws, environmental laws, and laws pertaining to health and safety in the workplace) and in exchange, they want companies to adhere to these rules.
- v. **Unions:** Unions provide a company with productive employees, and in exchange they expect benefits for their members in proportion to their contributions to the company.
- vi. **Local communities:** Local communities provide companies with local infrastructure and in exchange expect companies to be responsible citizens.
- vii. **General Public:** General public provides companies with national infrastructure and in exchange expect company to contribute to the improvement in quality of life

Stakeholder Impact Analysis

Typically, stakeholder impact analysis comprise following steps:

- 1) Identify stakeholders
- 2) Identify stakeholders' interests and concerns
- 3) Identify claims that stakeholders are likely to make on the organization
- 4) Identify the stakeholders who are most important from the organization's perspective. Usually, the most important stakeholders are customers, employees, and stockholders.
- 5) Identify the resulting strategic challenges

The Unique Role of Stockholders

Stockholders are legal owners and the providers of risk capital to a company that allows a company to operate its business. The capital provided by stockholders is considered as risk capital because stockholders have no guarantee to recoup their investment and/or earn a decent return. In exchange, stockholders expect management to maximize the return on their investment.

Under employee stock ownership plan (ESOP), employees have option to purchase stock in their company. Hence, ESOPs tend to increase strong emphasis on maximizing returns to stockholders by making employees stockholders.

Profitability, Profit Growth, and Stakeholder Claims

There are two sources of return on investment received by stockholders:

- 1) Dividend payments
- 2) Capital appreciation in the market value of a share

Strategies that tend to maximize the company's long-run profitability (as measured by the return on invested capital or ROIC) and grow the profits of the company over time result in appreciation of stock price and generation of funds for future dividend payments.

ROIC indicates how efficiently the capital resources of the company are being used to generate profits. Positive ROIC indicates that a company is able to generate excess returns after meeting all of its ongoing expenses. Positive ROIC tends to increase the value of a company and thus the value of a share of stock in the company. As the company's profits grow over time, the value of company's share increases further.

Profits can be increased by

- Participating in a growing market;
- Taking market share from competitors;
- Consolidating the industry through horizontal integration; and
- Developing new markets through international expansion, vertical integration, or diversification;

Strategies that maximize the long-run profitability and profit growth of the company tend to satisfy the claims of various stakeholder groups. However, future profit growth may require investments that decrease the current rate of profitability. Therefore, the company's management needs to find the right balance between profitability and profit growth.

Agency Theory

Principal-Agent Relationships

An agency relationship is created when one party (principal) delegates decision-making authority or control over resources to another (agent). The relationship between stockholders and senior managers is an example of an agency relationship.

The Agency Problem

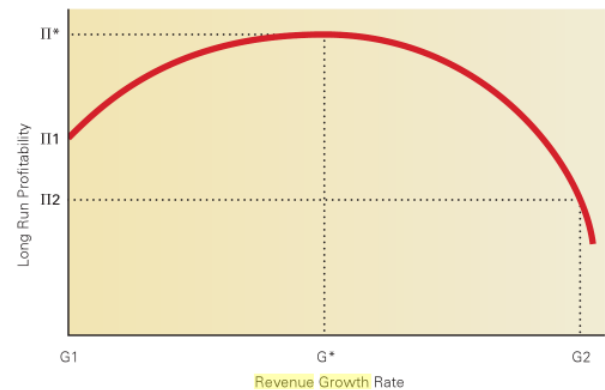
When a conflict of interest between the needs of the principal and those of the agent arises, the conflict is called an "agency problem." Agency problem arises as a result of information asymmetry between the principal and the agent. Typically, agents tend to have more information about the resources managed by them than the principal does. Agency problems may exist between senior managers and stockholder as well as between the CEO and subordinates, and between them and their subordinates.

The principals can mitigate or reduce the agency problem by shaping the behavior of agents so that they act in accordance with the goals set by principals, by reducing the information asymmetry between agents and principals, and by developing mechanisms for removing agents who do not act in accordance with the goals of principals and mislead them. These mechanisms include the board of directors, requirement on the company's management to file detailed financial statements with the Securities and Exchange Commission (SEC) that are in accordance with generally accepted accounting principles (GAAP), and developing internal control systems within the company.

On-the-job consumption: Using one position in a company to invest company's funds various perks that enhance their status, i.e. executive jets, lavish offices, and expense-paid trips to exotic locations, rather than investing those funds to increase stockholder returns is referred to as on-the-job consumption. A CEO may try to enhance for his status, security, power, and income by

engaging in empire building, or buying many new businesses in an attempt to increase the size of the company through diversification.

The Trade-Off between Profitability and Revenue Growth Rates



The above figure shows that:

- A moderate revenue growth rate of G^* allows a company to maximize long-run profitability, generating a return of Π^* .
- A growth rate of $G1$ is not consistent with maximizing profitability, because $\Pi1 < \Pi^*$.
- Similarly, in order to attain a growth in excess of $G2$, the company requires diversifying into areas that the company knows little about which can be done by sacrificing profitability i.e. beyond G^* , the investment required to finance further growth does not generate an adequate return and the profitability of the company declines.
- $G2$ is the growth rate that may be favored by an empire building CEO because it will increase his or her power, status, and income. At $G2$, profitability is equal to $\Pi2$ which is less than Π^* . This implies that at $G2$, company's long-run profitability or the wealth of its stockholders is not maximized.

Ethics and Strategy

Ethics is a set of principles or standards of human conduct that govern the behavior of individuals or organization.

Business ethics are moral principles and standards that govern the way a business and businesspeople behave. There are different types of laws that govern businesses e.g.

- **Tort law:** Laws that govern product liability.
- **Contract law:** Laws that govern contracts and breaches of contract.
- **Intellectual property law:** Laws that govern protection of intellectual property.
- **Antitrust law:** Laws that govern competitive behavior.
- **Securities law:** Laws that govern selling of securities.

It is both unethical and illegal to break these laws.

Ethical Issues in Strategy

The agency problems may give rise to unethical behavior in businesses, such as self-dealing, information manipulation, anticompetitive behavior, opportunistic exploitation of other players in the value chain in which the firm is embedded (including suppliers, complement providers, and distributors), the maintenance of substandard working conditions, environmental degradation, and corruption.

The Roots of Unethical Behavior

There are following causes of unethical behavior in businesses:

- 1) **Business ethics are not separated from personal ethics.** The principles that determine an individual's actions also apply to business. A person having a strong sense of personal ethics is also less likely to behave in an unethical manner in a business practices.
- 2) **Sometimes, businesspeople do not realize that they are behaving unethically** because ethical considerations are not taken into account while making business decisions.
- 3) **An organizational culture that de-emphasizes business ethics** and considers all decisions to be purely economic ones may result in unethical behavior in businesses.
- 4) **Pressure from top management to meet performance goals** that are unrealistic and can be achieved only by behaving in an unethical manner.
- 5) **Unethical leadership** that promote the culture of unethical behavior in businesses.

Philosophical Approaches to Ethics

A. The Friedman Doctrine: Friedman's doctrine says that as long as the company stays within the rules of law, the only social responsibility of business is to increase profits. According to this approach, businesses are not obligated to undertake social expenditures (i.e. that improving working conditions) in excess that is required by the law and that is needed to operate the business efficiently (i.e. to maximize employee productivity).

B. Utilitarian and Kantian Ethics: Under utilitarian approaches to ethics, the moral worth of actions or practices is determined by their consequences or outcome. That is, a business should pursue those actions that result in maximization of good (or minimization of harm) for the greatest number of people in a society. E.g. if oil drilling in any wildlife preserve results in increased oil production and the creation of jobs compared to costs of environmental degradation in a fragile ecosystem, then it would be considered as ethical action.

Drawbacks of utilitarian philosophy:

- Practically, it is difficult to measure the benefits, costs, and risks of a course of action due to limited knowledge.
- Utilitarian philosophy ignores justice because the action that results in greatest good for the greatest number of people may result in the unjustified treatment of a minority.

C. Rights Theories: In ethical theories based on rights, the fundamental human rights established by a society are protected and given the highest priority. In a business setting, stakeholders have basic rights that should be respected, and it is unethical to violate those rights.

D. Justice Theories: According to the justice ethical principle, actions that are fair to everyone associated with them are considered to be ethical. Justice theories focus on a just (i.e. fair and equitable) distribution of economic goods and services. Under this theory, the first principle is that each person should be permitted the maximum amount of basic liberty (including 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 (i.e. income, wealth, and opportunities) should be allowed only if it benefits everyone.

Difference principle:

Under the difference principle, inequalities are justified only if they benefit the least advantaged person. This implies that variations in income and wealth can be considered "just" if the market-based system also benefits the least advantaged members of society.

End of Reading Practice Problems:



2.

**CORPORATE GOVERNANCE:
OBJECTIVES AND GUIDING PRINCIPLES****Corporate Governance:**

Corporate Governance is "the system of principles, policies, procedures, and clearly defined responsibilities and accountabilities used by stakeholders to eliminate or minimize conflicts of interest".

It is essential for an investor to understand the quality of the company's corporate governance practices in order to understand the risks that are inherent in an investment in a company.

Objectives of Corporate Governance

The two major objectives of Corporate Governance are as follows:

1. To eliminate or mitigate conflicts of interest particularly between managers and shareholders.
2. To ensure that the assets of the company are used efficiently and productively and in the best interests of the investors and other stakeholders.

Different industries, economic systems, legal & regulatory environments and cultural differences affect the characteristics of an effective corporate governance system across firms.

Core Attributes of an Effective Corporate Governance System

Companies should have the following core attributes:

- 1) Clearly defined rights of shareholders and other core stakeholders.
- 2) Clearly defined responsibilities of managers and directors to stakeholders.
- 3) Identifiable and measurable accountabilities for the performance of the responsibilities.
- 4) Fairness and equitable treatment in all dealings between managers, directors, and shareholders.
- 5) Complete transparency and accuracy in disclosures regarding operations, performance, risk and financial position.

3.

FORM OF BUSINESS AND CONFLICTS OF INTEREST**Comparison of Characteristics of Business Forms****3.1 Sole Proprietorships**

- Ownership structure: Sole owner
- Few legal requirements & regulations.
- Entity is easily formed.
- No legal distinction between owner and business.
- Unlimited liability.
- Very limited ability to raise capital.
- Ownership is generally non-transferable (except when the entire business is sold).
- Owner expertise in business is mandatory.
- Few corporate governance risks as owner and manager are one and the same.
- Conflicts of interest typically involve creditors and suppliers.

3.2 Partnerships

- Ownership structure: Multiple owners.
- Few legal requirements & regulations.
- Entity is easily formed.
- No legal distinction between owner and business.
- Unlimited liability but shared among partners.
- Limited ability to raise capital.
- Ownership is non-transferable.
- Owner expertise in business is mandatory.
- Few corporate governance risks as owners and

managers are one and the same. Partners can easily overcome conflicts of interest with the help of partnership contracts.

- Conflicts of interest typically involve creditors and suppliers.

3.3 Corporations

Corporation is a legal entity with rights similar to those of a person.

- Ownership structure: Unlimited ownership.
- Numerous legal requirements & regulations.
- There is a legal separation between owner and business.
- Limited liability.
- Nearly Unlimited ability to raise capital.
- Ownership is easily transferable.
- Owner expertise in business is unnecessary.
- Separation of ownership and control creates the potential for conflicts between management and shareholders.

NOTE:

In U.S. corporations represent < 20% of all businesses but generate > 90% of business revenues.

4.

SPECIFIC SOURCES OF CONFLICT:
AGENCY RELATIONSHIPS

The specific sources of conflict of interest in corporate agency relationships are:

4.1 Manager-Shareholder Conflicts

For Example:

- Managers may use funds of the company just to increase the size of company, to increase their job security, power & salaries contrary to shareholders' interest.
- Managers may grant themselves excessive compensation & perquisites, which are treated as ordinary business expenses.
- Managers may invest in risky ventures to increase the value of their stock options.
- Managers may become extremely risk-averse and refrain from investing in risky, but profitable, projects to protect their wealth and job.

4.2 Director-Shareholder conflicts

- Board of Directors act as an intermediary between managers & shareholders. Their responsibility is to monitor the activities of managers, approve strategies & policies and make sure that investors' interests are being served well.
- The board is also responsible for:
 - Approving mergers & acquisitions.
 - Approving audit contracts.
 - Reviewing audit & financial statements.
 - Setting managers' compensation.

- Disciplining or replacing poorly performing managers.
- Conflict between shareholders & directors occurs when directors identify with the managers' interests instead of the shareholders. This may arise due to personal or business relationships of directors with the managers. Board of Directors is not considered independent:
 - When members of the board have consulting agreements with the company.
 - When members of the board serve as major lenders to the firm.
 - When members of the board belong to manager's family, circle of close friends etc.
 - When one or more senior managers from one firm may serve as directors in the companies of their own board members.
 - When overly excessive compensation is paid to the directors for their services.

Advantages of Strong Corporate Governance System:

It provides mechanism for:

- Monitoring managers' activities.
- Rewarding good performance.
- Disciplining managers so that they act in the best interests of the shareholders.

5.

CORPORATE GOVERNANCE EVALUATION

The information and corporate disclosure available in a specific jurisdiction vary widely:

- In U.S. such information is available in the 10-K report, annual report and the Proxy statement (Form DEF 14A)
- In Europe such information is provided in annual reports or in a separate corporate governance report.

5.1 The Board of Directors

Responsibility:

The primary responsibility of board of directors is to make sure that management works in the best interests of the **shareowners**.

Board of directors, both individually and as a group, have the following responsibility:

- 1) Establish corporate values and governance structures to ensure that the business is conducted in an ethical, competent, fair and professional manner.
- 2) Ensure that company meets and complies with all legal & regulatory requirements in a timely manner.
- 3) Establish long-term strategic objectives for the company that are in the best interests of shareholders and which enable the company to meet its obligations to others in a timely and complete manner.
- 4) Clearly define the responsibilities of managers and establish a strong system of accountability and performance measurement in all phases of a company's operations.
- 5) Hire the chief executive officer, determine the

appropriate compensation package and regularly evaluate the officer's performance.

- 6) Ensure that sufficient information is supplied to board by management so that board can make important decisions about the company, which is its responsibility, and adequately monitor the management's performance.
- 7) Meet regularly to perform its duties and also in extraordinary session if necessary.
- 8) Have adequate training in order to perform their duties efficiently.

Board Members should have the following three characteristics to perform their duties effectively:

1. Independence: The board should be composed of at least a majority (75%) of independent board members with the autonomy to act independently from management.

2. Experience: Board members should have appropriate experience and expertise relevant to the company's business.

3. Resources: Board members should have the authority and resources to hire outside consultants and external auditors without management's intervention or approval.

Objectives of the Board of Directors:

- To ensure that company assets are used in the best long-term interests of shareholders.
- To ensure that management strategies, plans, policies and practices are designed to achieve the objectives mentioned above.

An investor or an investment analyst must assess the following:

- 1) Board Composition and Independence.
- 2) Whether the chairman of the board is independent.
- 3) The qualifications of the directors.
- 4) Whether the board is elected on an annual or staggered basis.
- 5) Board self-assessment practices.
- 6) The frequency of separate sessions of independent directors.
- 7) The audit committee.
- 8) The nominating committee.
- 9) The compensation committee.
- 10) The use (or not) of independent legal & expert counsel.

5.1.1) Board Composition and Independence:

In order to have effective corporate governance, it is recommended that **at least three-quarters (75%) of the board members should be independent.**

Factors that indicate a lack of independence include:

- Former employment with the company, including founders, executives, or other employees.
- Business relationships i.e. prior or current service as outside counsel, auditors, or consultants.
- Business interests i.e. contractual commitments and obligations
- Personal relationships whether related to family, friends or other affiliations.
- Interlocking directorship i.e. a senior manager of Firm A may serve as director in Firm B while Firm B's senior manager is on the board of Firm A.
- Ongoing banking or other credit relationships.

NOTE:

Information on the business and other relationships of board members can be obtained from regulatory filings i.e. in U.S. it is provided in Proxy statement (Form DEF 14A).

5.1.2) Independent Chairman of the Board:

Corporate governance experts believe that having a CEO also serve in the role of Chairman of the Board can negatively influence boardroom culture and diminish the role of independent board members. It is for this reason that corporate governance best practice supports having the Chairman and CEO as separate positions.

There are two types of Board Systems:

- a) *Unitary Board system:* A single board of directors.
- b) *Tiered Hierarchy of Boards:* It has two sub-boards i.e.

- i. A management board, which is responsible for overseeing management's strategy, planning etc.
- ii. An independent supervisory board, which is responsible for monitoring and reviewing decisions of the management board and determining managerial compensation.

5.1.3) Qualification of Directors:

Board of directors should have adequate skills and experience in order to fulfill their fiduciary responsibilities to investors & other stakeholders and to function properly. These skills vary by industry; however, there are some core skills that are required by all boards. Following are the core competencies and qualifications that the investors should consider when evaluating the Board:

- 1) Independence
- 2) Relevant expertise in the industry i.e.

- Principal technologies used in the business and in financial operations.
- Legal matters.
- Accounting & auditing
- Success of past companies with which the director had been formerly associated.

- 3) Indications of ethical soundness i.e. directors associations in the past with the legal or regulatory violations.
- 4) Experience in strategic planning and risk management.
- 5) Other board experience with companies regarded as having sound governance practices.
- 6) Board members with the following qualities:

- Not serve on more than a few boards (at one time).
- Have an excellent record of attendance at board meetings.
- Limit other business commitments that require large amounts of time.

- 7) Commitments to the needs of investors.

5.1.4) Annual Election of Directors:

Global corporate governance best practice supports **annual elections** of each board member rather than staggered elections. In annual basis, every member of the board is re-elected every year. While on staggered basis, only a portion of board is re-elected every year.

Information on directors' terms and the frequency of elections can be obtained by examining the term structure of the board members in regulatory filings.

5.1.5) Annual Board Self-Assessment

Board members should regularly review and evaluate their performance and make recommendations for improvements. Generally, this evaluation should occur **at least once annually**.

The review should include:

- An assessment of the board's effectiveness as a whole.
- Evaluations of the performance of individual board members i.e. attendance record, independence.
- An assessment of board committee activities.
- An assessment of the board's effectiveness in monitoring and overseeing their functions.
- Evaluation of board's current and future qualities.
- A report of the board self-assessment prepared by the nominations committee.

NOTE:

Board Self-assessment Report is included in proxy statement in U.S. and in the corporate governance report in Europe.

Advantages of self-assessment of Board:

- It helps in improving board and company performance.
- It enables directors to improve their understanding of the role.
- It improves communication between board members.
- It enhances the cohesiveness of the board.

Essential Corporate Governance Committees include:

- 1) Auditing Committee
- 2) Nominations Committee
- 3) Compensation Committee

5.1.6) Separate Sessions of Independent Directors

Corporate Governance best practice is that independent directors of the board should meet **at least annually and preferably quarterly in separate sessions** (without presence of management, or other interested parties e.g. retired founder of the company).

When such meetings are either not held or held infrequently or irregularly then it may indicate that board members are not acting in the best interests of shareholders.

5.1.7) Audit Committee and Audit Oversight

The functions of Audit Committee are as follows:

- Provide independent oversight of the company's financial reporting.
- Provide independent oversight of the company's non-financial corporate disclosure.
- To evaluate internal control & compliance systems of the company.

Characteristics of the Audit Committee:

- Audit committee must be composed of **Only Independent Directors**.
- Audit committee must have sufficient expertise in financial, accounting, auditing and legal matters. It is advisable that **at least two members** of the committee should have relevant accounting and auditing expertise.
- Audit committee must oversee the internal audit function.
- The internal audit staff should report directly and routinely to the audit committee.
- Audit committee must have sufficient resources to fulfill their responsibilities.
- Audit committee must have access to and cooperation of management.
- Audit committee must have the authority to investigate fully any matters within its scope.
- Audit committee must have the authority to hire external auditors.
- Audit committee must meet the auditors independently from management **at least once annually**.
- Audit committee must have full authority to review the audit & financial statements and to determine the quality and transparency of financial reporting choices.

NOTE:

- *Member previously employed or otherwise associated with the current auditor or the company*

indicates conflicts of interest in Individual audit committee members.

- A Report on the activities of the audit committee is included in proxy statement in U.S. and in the corporate governance report in Europe.

5.1.8) Nominating Committee

Corporate governance best practice requires that nominees to the board should be selected by a nominating committee which is composed of **Only Independent Directors**.

Responsibilities of the Nominating Committee are to:

- Establish criteria for evaluating candidates for the board of directors.
- Identify candidates for the board and the committees.
- Review the qualifications of the nominees to the board and the members of individual committees.
- Establish criteria for evaluating nominees for senior management positions in the company.
- Identify candidates for management positions.
- Review the qualifications of the nominees for management positions.
- Document the reasons for the selection of candidates.

NOTE:

The information about the nominating committee is available in the regulatory filings of the company.

5.1.9) Compensation Committee:

Compensation should be a tool used by directors to attract, retain and motivate the highest quality and most experienced managers for the company. The compensation should focus on long-term goals of the company instead of short-term performance targets and should not be excessive.

The best practice suggests the following:

- Salary and perquisite awards should constitute a small portion of the total compensation award.
- Bonuses, stock options and grants of restricted stock should constitute a major portion of the total compensation award.
- Bonuses should be awarded based solely on exceeding expected stable long-term performance.
- Stock options and stock awards should be used to align the interests of managers with those of shareholders.
(Note: However, large grants of stock options dilute shareholders' positions in the company and reduce the value of their holdings).
- Grants of stock options to executives and other employees should be subject to shareholder approval.

Stock options' potential dilutive effect on shareholders can be assessed by a measure known as the "Share Overhang".

$$\text{Share Overhang} = \frac{\text{Number of shares represented by the Options}}{\text{Total number of shares outstanding}}$$

- Repricing of stock options is **not** considered in the best interests of the shareholders.

Repricing: It is the downward adjustment of exercise price of outstanding option grants to the current price of the stock.

- Levels of compensation that are based by comparing to the highest levels of compensation awarded in other companies instead of on the basis of company's objectives and goals is **not** considered the best practice in good corporate governance system.

5.1.10) Board's Independent Legal and Expert Counsel

The board of directors should have the ability and sufficient resources to hire independent legal and other expert counsel which is necessary to fulfill their fiduciary duties. The best practice is that the board makes use of independent outside counsel whenever legal counsel is required.

5.1.11) Statement of Governance Policies

Companies that have a strong Corporate Governance System frequently supply a statement of their corporate government policies in regulatory filings, on their websites etc.

Following are the important elements of statement of corporate governance policies:

- Codes of ethics.
- Statements of oversight, monitoring & review responsibilities of directors.
- Statements of management's responsibilities to provide complete and timely information to the board members **prior to Board Meetings**.
- Reports of directors' examinations, evaluations, and findings in their oversight and review functions.
- Board and committee performance self-assessment reports.
- Management performance assessments.
- Training provided to directors prior to joining the board and periodically thereafter.

5.1.12) Disclosure and Transparency:

Financial information provided to investors should have the following characteristics:

- Quality
- Clarity
- Timeliness
- Completeness

The above-mentioned four characteristics help investors in valuing securities and assessing their risks. Hiding or misrepresenting essential financial information can lead to mispricing of securities and misallocation of capital which reduces the effectiveness and efficiency of capital markets.

Non-Financial disclosures should include the following items:

- Governance policies & procedures.
- Organizational structure.
- Corporate strategies, goals and objectives.
- Competitive threats.
- Insider and related party transactions.*
- Compensation policies.
- Changes to governance structure, corporate charter and by-laws.

***NOTE:**

Any related party transaction should require the prior approval of the board of directors and a statement that such transactions are consistent with company policy.

5.1.14) Responsiveness of Board of Directors to Shareholders Proxy Votes:

Management's response to shareholder proxy matters represents the seriousness of management working in the best interests of shareholders. When results of the votes related to important matters (e.g. governance, executive compensation, mergers & acquisitions) are ignored by the management and board, then it indicates that the managers and directors are not working in the best interests of shareholders.

6. ENVIRONMENTAL, SOCIAL AND GOVERNANCE FACTORS

Company's non-traditional business factors, which include environmental, social and governance (ESG) risk exposures affect the company's long-term sustainability. Therefore, investors should consider the potential effects of ESG factors on companies in which they invest to make sound investment decisions.

The risks resulting from exposure to these ESG factors include:

1) Legislative and regulatory risk:

The risk related to government laws & regulations directly or indirectly affecting a company. The presence of this risk implies that changes in laws and regulations have the potential to significantly impact a company's profitability and long-term sustainability.

2) Legal risk:

The risk related to the failure of company's management to effectively manage ESG factors. This risk may lead to

lawsuits and other judicial remedies i.e. employees' workplace issues and contractual defaults etc.

3) Reputational risk:

The risk of facing fall in market value and reputation relative to other companies due to ineffectively managing ESG factors in the past.

4) Operating risk:

The risk that a company's operations may be negatively affected by ESG factors e.g. closure of a product line to meet ESG requirements.

5) Financial risk:

The risk that ESG factors will result in significant loss to the company.

For Detail, Refer to Volume 3, Reading 24.

7. VALUATION IMPLICATIONS OF CORPORATE GOVERNANCE

Studies have shown that strong corporate governance systems increase profitability and returns to shareholders. Thus, a strong and effective corporate governance system has a direct and significant impact on the value of a company.

Weak corporate governance system increases the risk to an investor and thus reduces the value of the company.

Following are the risks of ineffective and weak corporate governance system:

1) Accounting Risk: The risk that company's financial statements and other non-financial disclosures are incomplete, misleading or materially misstated.

2) Asset Risk: The risk that the firm's assets are not used in the best interests of shareholders i.e. excessive compensation or perquisites of executives and directors.

3) Liability Risk: The risk that managers enter into excessive obligations (such as off-balance sheet obligations) on behalf of shareholders, which may destroy shareholders' value.

4) Strategic policy Risk: The risk that managers may enter into such transactions which are not in the best long-term interest of shareholders e.g. mergers & acquisitions which may result in high management compensation but destroy shareholder value.

Additional Information given in the Reading:

Indicators of good quality Financial Reporting are:

- *Conservative assumptions used for employee benefit plans.*
- *Adequate provisions for lawsuits and other loss contingencies.*
- *Minimal use of off-balance sheet items.*
- *Absence of non-recurring gains.*
- *Absence of non-cash earnings.*
- *Clear and adequate disclosure.*
- *Conservative revenue and expense recognition methods.*
- *Use of LIFO during periods of rising prices.*
- *Adequate bad debt reserves.*
- *Use of accelerated depreciation method and short lives.*
- *Rapid write-off of acquisition related intangible assets.*
- *Minimal capitalization of interest, computer software costs, and overheads.*
- *Use of completed contract method for contracts.*
- *Expensing of start-up cost of new operations.*

Practice: End Of Chapter Practice Problems For Reading 24 & FinQuiz Item-set ID# 15729 & 10856



Types of Business Combinations:

- 1) **Acquisition:** An acquisition is the purchase of some portion of one company by another. The purchase may be for assets, a definable segment of another entity or the purchase of an entire company.
- 2) **Merger:** The absorption of one company by another is known as Merger. One of the companies remains and the other ceases to exist as a separate entity.

Classification of Mergers by the form of Integration:

- 1) **Statutory Merger:** A merger in which the acquiring company acquires all of the target's assets and liabilities. Consequently, the target company ceases to exist as a separate entity.

$$\text{Company X} + \text{Company Y} = \text{Company X}$$

Real life Example: Software maker Adobe Systems' acquisition of Macromedia (another software company). Macromedia's products are now sold from Adobe's website.

- 2) **Subsidiary Merger:** A merger in which the company being purchased (target) becomes a subsidiary of the purchaser. In this case, a company being purchased (target) has a strong brand or good image, which the acquiring company wants to retain.

$$\text{Company X} + \text{Company Y} = (\text{Company X} + \text{Company Y})$$

Real life Example: Proctor & Gamble bought Gillette and made it a subsidiary.

- 3) **Consolidation:** In this merger, both companies cease to exist in their previous legal form and become part of a newly formed company. Consolidation is common in mergers where both companies are approximately of the same size.

$$\text{Company X} + \text{Company Y} = \text{Company Z}$$

Real life Example: Both Daimler-Benz and Chrysler ceased to exist when the two firms merged, and a new company, DaimlerChrysler, was created

Parties to a Merger:

- 1) **Target Company:** The Company that is being acquired is called Target Company.
- 2) **Acquiring Company:** The Company acquiring the target is called the acquiring company.

Types of Transactions:

1. **Hostile Transactions:** A potential business combination that is against the wishes of its managers and board of directors.

2. **Friendly Transactions:** A potential business combination that is approved by the managers of both companies.

Classification of Mergers on the basis of relatedness of the merging companies' business activities:

1. **Horizontal Merger:** It is the merger in which the merging companies are in the same kind of business i.e. between competitors.

Real life Example: Lipton India & Brook bond.

Motivations behind Horizontal Merger:

- Economies of scale i.e. cost savings.
- To increase market power (to reduce competitors & increase size of the acquiring company).

2. **Vertical Merger:** A merger in which companies at different positions of the same production (Value) chain are involved i.e. supplier or distributor. e.g.

A pizza restaurant chain merging with the company that supplies them with pizza bases.

Real life Example: Time Warner Incorporated, a major cable operation and Turner Corporation, which produces CNN, TBS etc.

Motivations behind Vertical Merger:

- Cost savings
- Greater control over the production process in terms of quality or procurement of resources or control over the distribution of the finished goods.
- To increase Operational efficiency.
- To increase profit margins.

Types of Vertical Mergers:
i. Backward Integration:

When the acquirer purchases a target that is ahead of it in the value chain (supplier).

ii. Forward Integration:

When an acquirer purchases a target that is further down the value chain (a distributor).

3. **Conglomerate Merger:** When an acquirer purchases another company that is unrelated to its core business.

Real Life Example:

- Walt Disney Company and American Broadcasting Company.
- The Master Foot Company, a leading manufacturer

of athletic shoes, merges with Juice-up, a soft drink firm.

Motivations behind Conglomerate Merger:

- Company level diversification
 - To reduce volatility of cash flows.

3.

MOTIVES FOR MERGER

Following are some of the motives behind a merger:

3.1 Synergy

It is one of the most common motivations for a merger. Synergy results when the value of the whole of the combined company will be greater than the sum of its parts. There are two types of synergies:

- i. **Cost synergies:** These are the synergies that reduce costs. These synergies are achieved through Economies of scale in:

- R&D.
- Procurement.
- Manufacturing.
- Sales and marketing.
- Distribution.
- Administration.

- ii. **Revenue Synergies:** These are the synergies that increase revenues. These revenue synergies are created through:

- Cross-selling of products.
- Expanded market share.
- Higher prices due to reduced competition.

3.2 Growth

Companies have two options available to grow i.e.

- i. **Organic growth:** Company growth in output or sales that is achieved by making investments internally.
- ii. **External growth:** Company growth in output or sales that is achieved by buying the necessary resources externally i.e. achieved through mergers & acquisitions.

It is typically faster for companies to grow externally. Companies in a **mature industry** usually prefer to grow externally through M&A due to limited growth opportunities available to them. External growth strategy is considered less risky.

3.3 Increasing Market Power

When there are few competitors in the industry then horizontal integration helps in increasing market power.

Increasing market power through horizontal mergers enables the company to influence market prices. An extreme example of horizontal integration is Monopoly. Vertical integration also results in increased market power i.e. by reducing dependence on outside suppliers.

3.4 Acquiring Unique Capabilities and Resources

A company can acquire specific competencies/capabilities essential for its future success or the resources it lacks (i.e. R&D, intellectual capital etc.) through M&A activity when it is difficult to create those capabilities internally in a cost effective manner.

3.5 Diversification

Diversification is done to reduce the variability of the conglomerate's total cash flows. However, company-level diversification is not considered in the shareholders' best interests.

3.6 Bootstrapping Earnings

Bootstrapping effect on earnings is another motivation behind mergers.

When a company's earnings increase as a result of the merger transaction itself, instead of increased economic benefits, which result from combination, this effect is known as "**Bootstrap Effect**" or "**Bootstrapping Earnings**".

Bootstrapping increases current EPS at the expense of lower growth prospects and lower future EPS.

Conditions for Bootstrap Effect to occur:

- The bootstrap effect occurs when the shares of the acquirer trade at a higher price-earnings (P/E) ratio than those of the target.
- The acquirer's P/E does not decline after the merger.

$$\text{New shares issued by Acquirer} = \frac{\text{Market capitalization of Target}}{\text{stock price of Acquirer}}$$

$$\text{Post-merger number of shares outstanding} = \text{Acquirer's pre-merger total shares outstanding} + \text{new shares issued by Acquirer}$$

Post-Merger EPS =

$$\frac{\text{Acquirer's pre-merger Earnings} + \text{Target's pre-merger Earnings}}{\text{Post-merger number of shares outstanding}}$$

- The combined entity has fewer total shares outstanding than the two separate entities, but the same earnings, resulting in a higher Post-Merger EPS.

When Pre-merger market capitalization of the combined company = Post-merger market capitalization of the combined company, the merger creates no economic value.

- When market is efficient, Post-merger P/E is adjusted to the weighted average of the two companies' contributions to the merged company's total earnings, which implies that

$$\text{Post merger P/E} = \frac{\text{Pre-merger stock price of Acquirer}}{\text{Post-merger EPS}}$$

- When there are no expected gains from synergy or other factors, share price is not expected to increase i.e. stock price of Acquirer remains constant and does not increase after the merger.

Thus, in an **efficient market**,

Post-merger P/E of Acquirer < Pre-merger P/E of Acquirer

Practice: Example 3,
Volume 3, Reading 25.



3.7 Managers' Personal Incentives

Corporate executives have tendency to engage in mergers to maximize the size of their company rather than shareholder value because a larger company represents greater power and more prestige.

3.8 Tax Considerations

A profitable company can benefit from merging with a company that has accumulated a large amount of tax losses. These tax losses are used by acquiring company to immediately lower its tax liability. Regulators typically do not approve offsets when the primary reason for the merger is tax avoidance.

3.9 Unlocking Hidden Value

When a potential target is underperforming, an acquirer may believe it can acquire the company cheaply (or < its break up value*) and then unlock hidden value through reorganization, better management or synergy.

*** Break up Value:** It is the value that can be achieved if a company's assets are divided and sold separately.

3.10 Cross-Border Motivations

Cross-border mergers can provide an efficient way of achieving other international business goals.

3.10.1) Exploiting Market Imperfections:

Cross-border transactions can enable companies to take advantage of market imperfections i.e. a manufacturer can purchase a company in a country where the cost of labor is lower as compared to its domestic country.

3.10.2) Overcoming adverse Government Policy:

Cross-border mergers facilitate companies to overcome disadvantageous government policy e.g. tariffs, quotas etc.

3.10.3) Technology Transfer:

A company which has new or superior technology can make acquisitions abroad to introduce this technology in new markets. Conversely a company can acquire the target with superior technology to enhance its competitive position at home and abroad.

3.10.4) Product Differentiation:

Cross-border mergers help companies to introduce their highly differentiated products in new markets.

3.10.5) Following Clients:

Companies may use cross-border mergers as a mean to follow and support domestic clients and to provide services abroad to their domestic clients.

Mergers and the Industry Life Cycle

The motivations that a company may have for entering into a merger and the type of merger significantly depend on the phase of the industry life cycle in which the company operates.

1. Pioneering Development Stage

Industry Descriptions:

- Uncertainty of product acceptance by the market.
- Larger capital requirements and development costs.
- Low but slowly increasing sales growth.
- Zero or low profit margins.

Motives for Merger:

- Younger, smaller companies may sell themselves to larger companies in mature or declining industries to gain access to capital.
- Younger, smaller companies may merge with companies that enable them to pool management and capital resources (cost savings).

Types of Mergers:

- Conglomerate
- Horizontal

2. Rapid Accelerating Growth Stage

Industry Descriptions:

- Product has been accepted by the market.
- Larger capital requirements to expand capacity.
- Accelerating sales & earnings growth.
- High profit margins.
- Little competition in the industry.

Motives for Merger:

- To gain access to capital in order to expand existing capacity.

Types of Mergers:

- Conglomerate
- Horizontal

3. Mature Growth Stage

Industry Descriptions:

- New competition has reduced industry profit margins.
- Growth potential remains.
- The industry starts experiencing drop in the entry of new competitors.

Motives for Merger:

- To achieve economies of scale.
- To achieve cost savings.
- To increase operational efficiencies.

Types of Mergers:

- Horizontal
- Vertical

4. Stabilization and Market Maturity Stage

Industry Descriptions:

- Competition has eliminated industry growth potential.
- Industry faces capacity constraints.
- Industry grows at the same rate as overall economy.

Motives for Merger:

- To achieve economies of scale in research, production & marketing.
- To achieve cost savings.
- To improve management.
- To achieve a broader financial base.

Types of Mergers:

- Horizontal

5. Deceleration of growth and decline Stage

Industry Descriptions:

- Low demand due to change in consumer tastes and technologies.
- The industry faces overcapacity and declining profit margins.

Motives for Merger:

- To ensure survival in the industry.
- To increase operational efficiencies and profit margins.
- To acquire new growth opportunities.
- To exploit synergy.

Types of Mergers:

- Horizontal
- Vertical
- Conglomerate

4.

TRANSACTION CHARACTERISTICS

4.1

Form of Acquisition

There are two basic forms of acquisition:

- 1) Stock Purchase:** An acquisition in which the acquirer gives the target company's shareholders some combination of cash and securities in exchange for shares of the target company's stock.
- 2) Asset Purchase:** An acquisition in which the acquirer purchases the target company's assets and payment is made directly to the target company.

Major Differences of Stock v/s Asset Purchases

	Stock Purchase	Asset Purchase
Payment	Target shareholders receive compensation in exchange for their shares.	Payment is made to the selling company rather than directly to the shareholders.
Approval	At least 50% of target company's	Shareholder approval is not required unless a

	Stock Purchase	Asset Purchase
	shareholders approval is required.	substantial (> 50%) proportion of the assets are being sold.
Tax: Corporate	There are no corporate-level taxes.	Target company pays taxes on any capital gains.
Tax: Shareholder	Target company's shareholders are taxed on their capital gain.	No direct tax consequence for target company's shareholders.
Liabilities	Acquirer assumes both the target's liabilities and assets.	Acquirer generally does not assume the target's liabilities.
Time	Stock purchase is difficult & time consuming due to the requirement of shareholder approval.	Asset purchase can be conducted more quickly and easily.
Advantage	Provides an opportunity to circumvent the target company's management in hostile transactions.	Asset purchase provides an opportunity to focus on buying the parts of a company or specific division rather than the entire company.

NOTE:

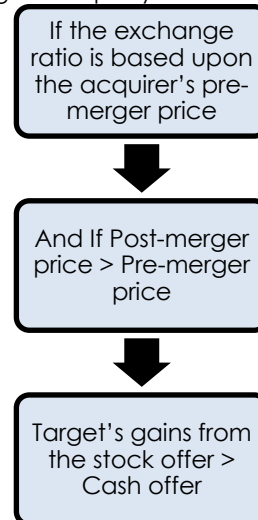
- Use of target's accumulated tax losses is allowable in the U.S. for stock purchases but not for asset purchases.
- An asset purchase for the purpose of avoiding the assumption of liabilities only is generally not allowed from legal standpoint.

NOTE:

- Acquirer can offer preferred shares or debt securities instead of common stock.
- In case of a consolidation, the target company's shareholders may receive new shares in the surviving entity.

3) Mixed Offering: A merger or acquisition that is to be paid for with cash, securities or some combination of the two.

In stock/securities offering, the **Exchange Ratio** determines the number of shares that stockholders in the target company receive in exchange for each of their shares in the target company.



Acquirer's cost = Exchange Ratio × number of outstanding shares of the target company × value of the stock given to target shareholders

Number of shares received by each shareholder of the target company = number of target shares he/she owns × exchange ratio

Practice: Example 5, Volume 3, Reading 25.



4.2 Method of Payment

There are three methods of payment.

- 1) Cash Offering:** A merger or acquisition that is to be paid for with cash. The cash for the merger might come from the acquiring company's existing assets or from a debt issue.
- 2) Securities Offering:** A merger or acquisition in which target shareholders are to receive shares of the acquirer's common stock as compensation.

The **form of payment** has an impact on the distribution of risk and reward between acquirer and target shareholders.

- In a stock offering, target company shareholders share a portion of the reward as well as a portion of the risk related to estimated synergies and the target company's value. Hence, when an acquiring company's management is highly confident both in their ability to complete the merger and in the value to be created by the merger, the target's shareholders prefer to use stock offering.
- When acquirer's shares are considered overvalued

by the market relative to the target company's shares, stock offering is more appropriate to use because shares are more valuable as a currency.

- Borrowing cash to raise funds for cash offering increases the acquirer's financial leverage and risk.
- Issuing a significant number of new common shares for a stock offering can dilute the ownership interests of existing shareholders.

4.3 Mind-Set of Target Management

4.3.1) Friendly Mergers

A potential business combination that is approved by the managers of both companies is known as friendly merger.

Both parties examine each others' books and records in a process called **Due Diligence** before getting into a formal deal.

- Acquirer performs due diligence to ensure that the target's assets exist and are worth approximately what was claimed by the target.
- A target performs due diligence to examine whether the acquirer has the financial capacity to pay for the acquisition or not.

After performing due diligence and completion of negotiations, the companies enter into a Definitive Merger Agreement. **Definitive Merger Agreement** is a contract signed by both parties that clarifies the details of the transaction including the terms, warranties, conditions, termination details and the rights of all parties.

The transaction is announced to the public through a joint press release by the companies only after the definitive merger agreement has been signed. Before it, the deal is kept secret. In cases where shareholder voting is required, the shareholders are given **proxy statements** that contains all material facts concerning

voting. The deal is completed and payment is made after the approval of shareholders and regulators.

4.3.2) Hostile Mergers

It is an attempt to acquire a company against the wishes of the target company's management.

In a hostile transaction acquirers can circumvent target management's objections to a proposed merger by submitting the proposal directly to the target company's board of directors and bypass the CEO. This tactic is known as **Bear Hug**.

If the bear hug is not successful, then the acquirer can directly make an appeal to the target company's shareholders. There are two methods of making a merger appeal directly to shareholders.

- i. **Tender offer:** It is a public offer in which the acquirer invites target shareholders to submit ("tender") their shares in return for the proposed payment.

Modes of payment in Tender Offer:

- Cash
- Shares of the Acquirer's own stock
- Other securities
- Combination of cash & securities.

NOTE:

A cash tender offer is a quick way to gain control of Target Company as compared to cash merger.

- ii. **Proxy fight:** In proxy fight, a company or individual seeks to take control of a company through shareholder vote. The shareholders are asked to vote for the acquirer's proposed list of directors. If the acquirer's proposed directors are selected, then acquirer is able to replace the target company's management.

5.

TAKEOVERS

When a target company is faced with a hostile tender offer (takeover), the target company's management has two choices available:

- It can sell the company to the hostile bidder or third party.
- It can decide to remain independent by resisting the offer with the help of defensive measures available to them.

Uses of Defensive Measures:

- To delay the transaction.
- To negotiate a better deal for shareholders.
- To keep the company independent.

There are two types of Defensive measures:

- 1) Pre-offer Takeover Defensive measures.
- 2) Post-offer Takeover Defensive measures.

5.1 Pre-Offer Takeover Defense Mechanism

These defense mechanisms face less scrutiny by courts than post-offer defense mechanisms.

The two broad varieties of pre-offer defenses are:

- a) Rights-based Defenses: i.e. poison pills and poison puts.

- b) Changes to the corporate charter i.e. staggered boards of directors and supermajority provisions. These are collectively known as **Shark Repellents**.

Types of Pre-offer Takeover Defensive measures:

5.1.1) Poison Pills:

It is a pre-offer takeover defense mechanism in which target's common shareholders have the right to buy the shares of the target company's stock at a substantial discount to market value. This results in dilution and effectively increases the cost to the potential acquirer.

There are two types of poison pills:

- i. **Flip-in Pill:** It is the right given to common shareholders of the target company to buy shares of a target company at a discount. (This pill is triggered when a specific level of ownership is exceeded i.e. > 10%)
- ii. **Flip-over Pill:** It is the right given to common shareholders of the target company to buy shares of the acquiring company at a significant discount from the market price, which results in dilution of ownership of existing acquiring company shareholders.

Dead-Hand Provision: It is the right given to board of directors of target to redeem or cancel the poison pill only by a vote of continuing directors. This provision makes it difficult to take over a target without prior approval of the board.

5.1.2) Poison Puts

Poison puts give the rights to the target company's bondholders to sell their bonds back to the target at a pre-specified redemption price typically at or above par value. This defense measure increases the need for cash and raises the cost of the acquisition.

5.1.3) Incorporation in a State with Restrictive Takeover Laws (U.S.)

Ohio and Pennsylvania are two examples of U.S. states, which are regarded as "target friendly" states. The laws of these states help target companies in defending against hostile takeover attempts.

5.1.4) Staggered Board of Directors:

For Example: a company's board consists of nine directors.

In the staggered elections of board of directors, this company's board can be divided into roughly three equal-sized groups and each group is elected for a 3-year term. Thus, an acquirer can win at most one-third of the board seats in any particular year, which makes this target company less attractive because it would take at least two years to elect enough directors to take control of the board.

5.1.5) Restricted Voting Rights:

This defense measure restricts stockholders who have recently acquired large blocks of stock (i.e. 15-20%) from voting their shares.

5.1.6) Supermajority Voting Provisions:

This provision requires a vote of, for example, 80% (as opposed to > 51%) of the outstanding shares of the target company to approve the merger transaction.

5.1.7) Fair Price Amendments:

Fair price amendment disapproves mergers for which the offer is below some threshold.

For Example:

A fair price amendment requires an acquirer to pay at least as much as the highest stock price at which the target has traded in the public market over a specified period.

This defense measure sets a **floor value** bid for the target company. It also protects Target Company against two-tiered tender offers i.e. where the acquirer offers a higher bid in a first step tender offer with the threat of a lower bid in a second step tender offer for those who do not tender right away.

5.1.8) Golden Parachutes:

These are the compensation arrangements between the target company and its senior managers. These allow the executives to receive attractive payouts i.e. several years' worth of salary if they leave the target company subsequent to a change in corporate control.

5.2 Post-Offer Takeover Defense Mechanisms

5.2.1) "Just Say No" Defense:

The simplest way to deal with a hostile takeover attempt is to decline the offer by saying "No". If potential acquirer attempts a bear hug or tender offer the target's management lobbies the board of directors and shareholders to decline the offer by presenting a case why the offering price is inadequate or why the offer is not in the shareholders' best interests.

5.2.2) Litigation:

Target companies can file a lawsuit against the acquiring company based on alleged violations of securities or anti-trust laws.

5.2.3) Greenmail:

This technique is based on an agreement, which allows the target company to repurchase its own shares back from the acquiring company usually at a premium to the market price. This agreement is usually accompanied by second agreement, which prohibits the acquirer from making another takeover attempt for a specified period of time. But in this defensive measure, shareholders of

the target company do not receive any compensation for their shares.

5.2.4) Share Repurchase:

In this technique, a target company can use a share repurchase to acquire shares from any shareholder (including the acquiring company's shareholders). This increases the potential cost for an acquirer by either increasing the stock's price or by causing the acquirer to increase its bid to remain competitive with the target company's tender offer for its own shares. This also increases the use of leverage in the target's capital structure (greater use of debt increases debt/equity ratio), which can make the target less attractive to the acquirer.

In some cases, a target company buys all of its shares and converts to a privately held company in a transaction called a Leveraged Buyout (LBO).

5.2.5) Leveraged Recapitalization:

This technique involves the use of a large amount of debt that is used to finance share repurchases. But in this case, some shares remain in public hands, unlike LBO where all shares are repurchased. This also increases the use of leverage in the target's capital structure (increasing debt/equity ratio), which can make the target less attractive to the acquirer.

5.2.6) "Crown Jewel" Defense:

In this defensive measure, a target can decide to sell off a subsidiary or asset (which is the major motivation of an

acquirer behind a merger) to a third party. However, this measure faces high scrutiny by courts.

5.2.7) "Pac-Man" Defense

The target can defend itself by making a counter-offer to acquire the hostile bidder (acquirer). But, this technique has a drawback; because once a target uses a Pac-man defense, it is not able to use a number of other defensive strategies.

5.2.8) White Knight Defense

In this technique, Target Company's board seeks a third party, which has a better strategic fit with the target to purchase the company in lieu of the hostile bidder. The third party is known as "White Knight". The third party with a good strategic fit is preferred to a hostile bidder because it can justify a higher price for the target than the hostile bidder's offering.

The use of this defensive measure also creates a "Winner's Curse" situation, in which the winner in some competitive bidding situations tends to over-pay (either because of overestimation of intrinsic value, emotion, or information asymmetries).

5.2.9) White Squire Defense

In this case, a target company's board of directors seeks a third party to purchase a substantial **Minority** stake in the target which is enough to block a hostile takeover without selling the entire company. The use of this defensive measure faces a high litigation risk and scrutiny by courts because the target company's shareholders may not receive any of the proceeds in this transaction.

6.

REGULATION

Besides Target Company's senior management, the board of directors and shareholders, a merger has to be approved by regulatory authorities.

There are two major bodies of Jurisprudence related to mergers:

- i. **Anti-Trust Laws:** These laws are intended to stop mergers and acquisitions that may decrease healthy competition in the market.
- ii. **Securities Laws:** These laws are intended to maintain both fairness in merger activities and confidence in the financial markets.

- The Federal Trade Commission and Department of Justice review mergers for antitrust concerns in the U.S.
- The European Commission reviews transactions in the European Union.

6.1) Anti-Trust

- i. **Sherman Antitrust Act of 1890:** The act was passed to maintain competition in the industry by restraining any attempts, which try to monopolize an industry and damage competition.

Drawbacks:

- This Act was not effective because there was no system to enforce the law rigorously due to the lack of resources.
- The Act had ambiguous wording, which was not clear to common man.

- ii. **Clayton Antitrust Act of 1914:** This act was passed to clarify and strengthen the Sherman Antitrust Act. In order to enforce antitrust law, the legislature also passed the Federal Trade Commission Act of 1914, which established the Federal Trade Commission (FTC) as a regulatory agency.

Drawbacks:

- The act only regulated the acquisition of shares of stock (Stock Purchase), not the acquisition of assets (Asset purchase).
- The act only focused on Horizontal combinations.

iii. Celler-Kefauver Act of 1950: This act was passed to deal with the drawbacks of previous act. It also addressed vertical and conglomerate mergers in addition to horizontal combinations.

iv. Hart-Scott-Rodino Antitrust Improvements Act of 1976: This act brought improvements to previous antitrust laws by making it necessary to get the mergers reviewed and approved in advance (prior to its completion) by FTC and department of Justice. Prior to this act, merged company had to be disassembled after the fact if the merger was considered anti-competitive.

Measures of Market Power**Herfindahl-Hirschman Index (HHI):**

It is a sum of the squares of the market shares for each company in an industry. HHI is calculated based on **post-merger market shares**.

$$HHI = \sum_i^n \left(\frac{\text{Sales or output of Firm } i}{\text{Total Sales or output of market}} \times 100 \right)^2$$

HHI CONCENTRATION LEVEL AND POSSIBLE GOVERNMENT ACTION

HHI concentration Level			
Post-Merger HHI	Concentration	Change in HHI	Government Action
Less than 1,000	Market is Not concentrated	Any amount	There will be no government action

HHI concentration Level			
Post-Merger HHI	Concentration	Change in HHI	Government Action
Between 1,000 & 1,800	Market is moderately concentrated	100 or more	Possible challenge from antitrust bodies is expected.
More than 1,800	Market is highly concentrated	50 or more	There will be government action against anti-competitive activities.

Practice: Example 7, Volume 3, Reading 25.

**6.2****Securities Laws**

The Williams Act is the cornerstone of securities legislation for M&A activities in the U.S. This act ensures a fair tender offer process through the establishment of disclosure requirements and formal tender offer procedures.

- **Disclosure:** Section 13(d) of the Williams Act requires public disclosure whenever a party acquires 5% or more of a target's outstanding common stock.
- **Tender Offer:** Section 14 of the Williams Act creates a tender offer process by establishing various rules and restrictions i.e. an acquirer must file a public statement that contains the details of the offer and information about the acquirer. These rules are established to give target management the time and opportunity to adequately respond to a hostile tender offer.

7.**MERGER ANALYSIS****7.1****Target Company Valuation**

There are three basic valuation techniques, which are used to value companies in an M&A context.

- Discounted cash flow analysis
- Comparable company analysis
- Comparable transaction analysis

7.1.1) Discounted cash flow analysis

In discounted cash flow analysis, the value is estimated by discounting the company's expected future free

cash flows to the present. The relevant measure of cash flows used in this technique is Free Cash Flow (FCF).

The estimated value of the company is the sum of

- The PV of first-stage* expected free cash flows and
- The PV of the company's terminal value (continuing value).

*The first stage includes only those years over which the analyst can generate reasonably accurate estimates of a company's free cash flows. While the second-stage free cash flows correspond to Terminal value of the company.

Steps to estimate value of a company using DCF:

Step 1: Determine which cash flow model to use for the analysis.

Generally two-stage and three-stage cash flow models are used.

Step 2: Develop pro-forma financial estimates.

Step 3: Calculate free cash flows using the pro-forma data.

Calculations are as follows:

Unlevered Net Income = Net Income + Net Interest after-tax

where,

Net interest after-tax = (Interest expense – Interest income) × (1 – Tax rate)

Or

Unlevered Net Income = EBIT × (1 – tax rate)

NOPLAT = Unlevered Net Income + Change in deferred taxes

NOTE:

Increase in deferred taxes increases cash flow while decrease in deferred taxes reduces cash flows.

FCF = NOPLAT + NCC – Change in Net Working Capital – Capex

where,

NCC = noncash charges

Net working capital = current assets (excluding cash & equivalents) – current liabilities (excluding short-term debt)

Capex = capital expenditures

Thus, FCF can be summarized as follows:

FCF = NI + net interest after-tax + change in deferred taxes + net noncash charges – change in NWC – Capex

Step 4: Discount FCF back to the present using an appropriate discount rate.

FCF is discounted back to present at the company's WACC.

NOTE:

- When the target is evaluated from a non-control perspective, target's WACC (which reflects the company's existing business risk and operating environment) is used as a discount rate.
- When the target is evaluated from a merger perspective, target's WACC should be adjusted for expected changes in the target's risk, example:

from changes in capital structure or a redeployment of assets.

Step 5: Determine the Terminal Value and discount it back to present.

Terminal Value:

There are two methods to calculate terminal value.

1) Using constant growth formula.

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

Where,

FCF_T = free cash flow produced during final year of the first stage

g = terminal growth rate

WACC > g

2) Using Market Multiple:

$$\text{Terminal Value}_T = \text{FCF}_T \times \frac{P}{\text{FCF}}$$

The analyst can use a free cash flow or other multiple that reflects the expected risk, growth and economic conditions in the terminal year. Multiples tend to vary by industry.

Step 6: Add the discounted FCF values for the first stage and the discounted terminal value to calculate the value of the target firm.

Advantages of Using Discounted Cash Flow Analysis

- Discounted cash flow analysis allows the analyst to incorporate changes in cash flows and the combined firm's WACC that are likely to result from the change in capital structure.
- The estimated value is based on forecasted fundamentals.
- The model can be easily customized for the changes in assumptions and estimates.

Disadvantages of Using Discounted Cash Flow Analysis

- The model is difficult to apply when company has negative free cash flows.
- Forecasting the earnings and cash flows involve great uncertainty.
- Estimates of discount rates are highly sensitive to changes in capital market developments.
- A large proportion of the company's value is represented by terminal value. Therefore, small changes in the assumed growth and WACC estimates can have a large impact on the terminal value estimates.

NOTE:

If the financially distressed firm can be restored to health and future cash flows and risks are fairly predictable, this implies that discounted cash flow valuation may provide the best results.

To understand the calculations,

Source: Volume 3, Reading 25.

7.1.2) Comparable Company Analysis

In this approach, a company's value is estimated based on relative valuation metrics for similar companies.

NOTE:

In order to calculate the **acquisition value**, a takeover premium is added to the target stock value estimated by using comparable company multiples.

Comparable Company Analysis involves the following steps:

Step 1: Identify the set of comparable firms.

- Similar companies include companies within the target's primary industry as well as companies in similar industries.
- The comparable companies should have similar size and capital structure to the target.

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

- The enterprise value of a company can be estimated using Enterprise multiples i.e. EV/EBITDA, EV/EBIT, EV/Sales.
- The value of equity can be estimated using equity multiples i.e. P/CF, P/S, P/E, P/BV etc.

where,

$EV = \text{Enterprise value} = \text{market value of debt} + \text{market value of equity} - \text{cash \& cash equivalents}$

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

Analysts calculate the mean, median and range for the chosen relative value measures and apply those to the estimates for the target to determine the target's value. For example:

$$\text{Value} = \text{EPS} \times (\text{P/E})$$

Step 4: Estimate a takeover Premium.

Takeover Premium = takeover (deal price) per share of the target company – current stock price of the target company

It is usually expressed in percentage, i.e.

$$\text{Takeover premium (PRM)} = \frac{DP - SP}{SP}$$

where,

DP = deal price per share of the target company

SP = stock price of the target company (price before any speculative influences on the stock price)

Step 5: Calculate the estimated takeover price for the target i.e.

Estimated takeover price of Target = Estimated stock price of Target based on Comparables + Estimated takeover premium

When takeover premium is given in %,

Estimated takeover price of Target = (Estimated stock price of Target based on Comparables) \times (1 + Takeover premium in %)

Advantages of Using Comparable Company Analysis

- This technique is based on law of one price i.e. similar assets should be valued on a similar basis in the market.
- The value is estimated using the actual market data instead of forecasted values, which are based on various estimates and assumptions.
- The data required for estimation is easily available.

Disadvantages of Using Comparable Company Analysis

- This method is sensitive to market mispricing i.e. if comparable companies are overvalued, the estimated value will also be overvalued.
- This method only provides a market estimate of fair stock price. To estimate a fair takeover price, a fair takeover premium is required to be estimated separately and is added to the fair stock price. i.e.

Fair takeover price = Fair stock price + Fair takeover premium

- Comparable company analysis assumes that the capital structure remains fairly constant. Thus, expected changes in the target company's cash flows or capital structure **cannot** be easily modeled.
- The data available for past premiums may not be timely or accurate for the particular target company under consideration.
- If a firm is in financial distress or experiencing earnings problems, this will make it difficult to apply the comparable company approaches.

To understand the calculations,

**Practice: Example 8,
Volume 3, Reading 25.**



7.1.3) Comparable Transaction Analysis

In this approach, a company's value is estimated based on recent takeover transactions for comparable companies.

Comparable Transaction Analysis involves the following steps:

Step 1: Identify the set of recent takeover transactions.

Takeover transactions should be related to the firms in the same or related industry as the target and have similar capital structure.

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

The measures i.e. P/CF, P/S, P/E, P/BV etc. can be used but they are based on prices for the completed M&A transactions instead of current market prices.

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

Analysts calculate the mean, median and range for the chosen relative value measures and apply those to the estimates for the target to determine the target's value.

For example:

$$\text{Value} = \text{EPS} \times (\text{P/E})$$

To understand the calculations,

**Practice: Example 9,
Volume 3, Reading 25.**



Advantages of Using Comparable Transaction Approach

- There is no need to separately estimate a takeover premium in this method.
- The value is based on the actual market data unlike DCF, which is based on assumptions and estimates.
- The value based on recent takeover transactions faces less litigation risk and scrutiny for mispricing the deal.

Disadvantages of Using Comparable Transaction Approach

- If the real takeover values in past transactions were not accurate then it will lead to an inaccurate takeover value of a company when this technique is used.

- When there are few adequate comparable transactions available in the market, the analysts have to use data from related industries, which may not be comparable to the target company.
- Comparable Transaction analysis assumes that the capital structure remains fairly constant. Thus, expected changes in the target company's cash flows or capital structure **cannot** be easily modeled.
- If a firm is in financial distress or experiencing earnings problems, this will make it difficult to apply the comparable transaction approaches.

7.2

Bid Evaluation

When a merger creates economic value, the combined firm value will be greater than the sum of the two separate firms.

$$\text{Target Shareholders' gain} = \text{Premium} = P_T - V_T$$

where,

P_T = price paid for the target company

V_T = pre-merger value of the target company

$$\text{Acquirer's gain} = \text{Synergies} - \text{Premium} = S - (P_T - V_T)$$

where,

S = Synergies created by the business combination i.e. cost reductions and revenue enhancements

In a cash deal, cash paid to target shareholders (**C**) = price paid for the target (**P_T**)

NOTE:

When conducting bid evaluation, the pre-merger value of the target should be the price of the target before any market speculation.

$$\text{Post-merger value of the combined company} = V_A^* = V_A + V_T + S - C$$

where,

V_A = pre-merger value of the acquirer

C = cash paid to target shareholders i.e. cash paid
= cash price paid per share of target company × number of shares outstanding of target company

- The pre-merger value of the target company represents the absolute **minimum** bid that the target shareholders should accept.
- (Pre-merger value of Target Company + value of any expected synergies) represent the absolute **maximum** bid that the acquirer would want to pay.
- If the acquirer pays more than the (Pre-merger value of Target Company + value of any expected synergies), acquirer's post-merger value will be less than acquirer's pre-merger value.

The choice of payment method depends on both parties' confidence in the estimated synergies and the relative value of the acquirer's shares.

- The more confident the managers are about the realization of estimated synergies, the more the acquiring managers will prefer to pay with cash and the more the target managers will prefer to receive stock.
- The more the merger is paid for with the acquirer's stock, the more the risks and benefits of realizing synergies will be passed on to the target shareholders.
- In a cash offer, the target company's shareholders, profit will be "takeover premium".
- In a stock offer, the profit of the target company's shareholders, the premium, is determined by the value of the combined firm.
- In a stock offer,

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

where,

P_T = price paid for the target company

N = number of new shares the target receives

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

Important:

In order to understand the calculations of bid evaluation,

Practice: Example 10,
Volume 3, Reading 25.



8. WHO BENEFITS FROM MERGERS?

Target Company:

- According to empirical evidence, target company shareholders benefit from merger transactions in the short run.
- On average, target shareholders receive 30% premiums over the stock's pre-announcement market price.

- On average, both the acquirer and target get higher stock returns in cash based transactions as compared to share based transactions.
- Managerial hubris* leads to higher-than-market bids, which results in transfer of wealth from the acquiring company's shareholders to the target's shareholders.

Acquirer:

- The acquirer's stock price falls on average between 1-3%.
- Empirical evidence also shows that on the long run basis, the acquirers tend to underperform comparable companies during the three years following an acquisition.
- Average returns to acquiring companies subsequent to merger transactions are negative 4.3% with about 61% of acquirers lagging behind their industry peers.

***Managerial Hubris:** It is the tendency of managers to overestimate the synergies and expected benefits of the merger.

The following factors create value in M&A transactions:

- **Strong buyer (Acquirer)** who has growth rate in earnings and share prices, higher than the industry.
- The **premiums** paid in transaction are relatively **low**.
- There is **small number of bidders** in the market for the target under consideration.
- The **market reacts favorably** to the initial announcement of the merger deal.

9. CORPORATE RESTRUCTURING

Corporate restructuring refers to the ways by which a company can get smaller.

Divestiture:

When a company decides to sell, liquidate, or spin off a division or a subsidiary, it is known as divestiture.

Reasons for Restructuring:

1. Change in strategic focus: A company's management tries to improve performance by eliminating those divisions or subsidiaries, which do not match company's core strategic focus.

2. Poor Fit: When a particular division is a poor fit within the overall company or the division is not profitable enough to cover the cost of capital.

3. Reverse Synergy: When a division does not represent a good strategic fit and when the company is overall facing poor performance, it is possible that the division and the company will be worth more separately than combined.

4. Financial or cash flow needs: When a company faces financial problems and debt is difficult to obtain, then a company can raise cash or reduce debt by selling off portions of the company.

Ways to Divest Assets

There are three basic ways to divest assets:

1. Equity Carve-out: In a sale of a division to another company, a company can either offer to sell the assets of a division or offer an equity carve-out. In equity carve-out, a new separate legal entity is created and its shares are sold to outsiders. It results in cash inflow to the parent company.

2. Spin-off: Shareholders of the parent company receive a proportional number of shares in a new, separate entity. It does not result in any cash inflow to the parent company.

3. Split-off: In split-off, some of the parent's company shareholders are given shares in a newly created entity in exchange for their shares of the parent company. Like spin-off, split-off does not result in any cash inflow to the parent company.

4. Liquidation: Liquidations break up a company, division, or subsidiary and its assets are sold piece by piece. Mostly, the liquidations are associated with bankruptcy.

Practice: End Of Chapter Practice Problems For Reading 25 & FinQuiz Item-set ID# 16590 & 10863.

