WELCOME

Approaches to Finance Function or Financial Management

1. **Traditional Approach to Finance Function** : Under this approach, financial management was used to procure and administer funds for the corporation. The following three things were used to be studied for the procurement of finance.

i. Institutional sources of finance.

ii. Issue of financial instruments to collect necessary funds from the capital market.

iii. Legal and accounting relationship between the business and source of finance.

According to this approach, finance manager was not responsible for the efficient use of funds.

Limitations of Traditional Concept :-

1. One sided Approach
2. More Emphasis on the Financial Problems of Corporations
3. More importance to Sporadic (Long Term effect) Event
4. More Emphasis on Long term funds

Nature And Scope of Financial Management

Financial management is such a managerial process which is concerned with the planning and control of financial resources. In the initial years of its development, financial management was concerned only with collection of funds for business. But according to modern viewpoint, **not only collection of funds but also their proper utilisation are the basic functions of financial management**. Financial manager has become as important constituent of business and he provides his significant contribution to all business activities. He estimates the requirement of funds, plans the different sources of funds and performs the functions of collection of funds and their effective utilisation. As all the business activities like marketing, purchase, production etc include the creation and utilisation of funds, financial manger must be clear about his duties and responsibilities in relation to these activities.

Characteristics of Modern Approach

1. More Emphasis on Financial Decision
2. Financial Management as an Important Component of Business Management
3. Continuous Function
4. Broader View
5. Measure of Performance

Modern Approach to Finance Function

According to this approach, financial management considers the broader and analytical viewpoint. According to this approach, financial management is concerned with both acquisition of funds and their effective and optimum utilisation. This viewpoint not only considers the sporadic events but also the long term and short-term financial problems. Three decisions are taken under financial management :-

i. Investment Decision
ii. Financing Decision
iii. Dividend Decision

Meaning of Financial Management

J.L. Massie :- "Financial Management is the operational activity of a business that is responsible for obtaining and effectively utilising the funds necessary for efficient operations."

Functions of Financial Management

1. Financial Planning
2. Financial Decision
3. Investment Decision
4. Dividend Policy Decision
5. Financial Control
6. Incidental Functions

Objectives of Financial Management

(i) Profit Maximisation Approach
(ii) Wealth Maximisation Approach

(i) **Profit Maximisation Approach** :- According to this approach, a firm should undertake all those activities which add to its profits and eliminates all others which reduce its profits.

Criticism

(i) Ambiguity
(ii) Time Value of Money
(iii) Risk Factor

Wealth Maximisation Approach :- According to this approach, financial management should take such decisions which increase net present value of the firm.

$$W = \frac{A_1}{(1+k)} + \frac{A_2}{(1+k)^2} + \ldots\ldots\ldots\ldots + \frac{A_n}{(1+k)^n} - C$$

W = Net Present Value

$A_1 + A_2 + \ldots\ldots\ldots\ldots + A_n$ = Stream of expected cash benefits from a course of action over a period of time.

K = Appropriate discount rate to measure risk and timing

C = Initial outlay to acquire that asset or pursue the course of action.

If W is positive, the decision should be taken. On the other hand if W is negative, the decision should not be taken.

Importance of Financial Management

(1) Significant part of Business Management
(2) Liquidity and Profitability
(3) Value of firm
(4) Centralised Nature
(5) Benefits to shareholders Benefits to Investors
(6) Other Benefits

Thank You

The Capital Structure Decision
Cost of Capital

First Principles

- Invest in projects that yield a return greater than the minimum acceptable hurdle rate.
  - The hurdle rate should be higher for riskier projects and reflect the financing mix used - owners' funds (equity) or borrowed money (debt)
  - Returns on projects should be measured based on cash flows generated and the timing of these cash flows; they should also consider both positive and negative side effects of these projects.
- Choose a financing mix that minimizes the hurdle rate and matches the assets being financed.
- If there are not enough investments that earn the hurdle rate, return the cash to stockholders.
  - The form of returns - dividends and stock buybacks - will depend upon the stockholders' characteristics.

Objective: Maximize the Value of the Firm

The Choices in Financing

- There are only two ways in which a business can make money.
  - The first is debt. The essence of debt is that you promise to make fixed payments in the future (interest payments and repaying principal). If you fail to make those payments, you lose control of your business.
  - The other is equity. With equity, you do get whatever cash flows are left over after you have made debt payments.
- The equity can take different forms:
  - For very small businesses: it can be owners investing their savings
  - For slightly larger businesses: it can be venture capital
  - For publicly traded firms: it is common stock
- The debt can also take different forms
  - For private businesses: it is usually bank loans
  - For publicly traded firms: it can take the form of bonds`

The Financing Mix Question

- In deciding to raise financing for a business, is there an optimal mix of debt and equity?
  - If yes, what is the trade off that lets us determine this optimal mix?
  - If not, why not?

Measuring a firm's financing mix

- The simplest measure of how much debt and equity a firm is using currently is to look at the proportion of debt in the total financing. This ratio is called the debt to capital ratio:

  Debt to Capital Ratio = Debt / (Debt + Equity)

- Debt includes all interest bearing liabilities, short term as well as long term.
- Equity can be defined either in accounting terms (as book value of equity) or in market value terms (based upon the current price). The resulting debt ratios can be very different.

Costs and Benefits of Debt

- Benefits of Debt
  - Tax Benefits
  - Adds discipline to management
- Costs of Debt
  - Bankruptcy Costs
  - Agency Costs
  - Loss of Future Flexibility

Tax Benefits of Debt

- When you borrow money, you are allowed to deduct interest expenses from your income to arrive at taxable income. This reduces your taxes. When you use equity, you are not allowed to deduct payments to equity (such as dividends) to arrive at taxable income.
- The dollar tax benefit from the interest payment in any year is a function of your tax rate and the interest payment:
  - Tax benefit each year = Tax Rate * Interest Payment

- Proposition 1: Other things being equal, the higher the marginal tax rate of a business, the more debt it will have in its capital structure.

The Effects of Taxes

You are comparing the debt ratios of real estate corporations, which pay the corporate tax rate, and real estate investment trusts, which are not taxed, but are required to pay 95% of their earnings as dividends to their stockholders. Which of these two groups would you expect to have the higher debt ratios?

- ❑ The real estate corporations
- ❑ The real estate investment trusts
- ❑ Cannot tell, without more information

Debt adds discipline to management

- If you are managers of a firm with no debt, and you generate high income and cash flows each year, you tend to become complacent. The complacency can lead to inefficiency and investing in poor projects. There is little or no cost borne by the managers
- Forcing such a firm to borrow money can be an antidote to the complacency. The managers now have to ensure that the investments they make will earn at least enough return to cover the interest expenses. The cost of not doing so is bankruptcy and the loss of such a job.

Debt and Discipline

Assume that you buy into this argument that debt adds discipline to management. Which of the following types of companies will most benefit from debt adding this discipline?

- Conservatively financed (very little debt), privately owned businesses
- Conservatively financed, publicly traded companies, with stocks held by millions of investors, none of whom hold a large percent of the stock.
- Conservatively financed, publicly traded companies, with an activist and primarily institutional holding.

Bankruptcy Cost

- The expected bankruptcy cost is a function of two variables--
  - the cost of going bankrupt
    - direct costs: Legal and other Deadweight Costs
    - indirect costs: Costs arising because people perceive you to be in financial trouble
  - the probability of bankruptcy, which will depend upon how uncertain you are about future cash flows
- As you borrow more, you increase the probability of bankruptcy and hence the expected bankruptcy cost.

The Bankruptcy Cost Proposition

- Proposition 2: Other things being equal, the greater the indirect bankruptcy cost and/or probability of bankruptcy in the operating cashflows of the firm, the less debt the firm can afford to use.

Debt & Bankruptcy Cost

Rank the following companies on the magnitude of bankruptcy costs from most to least, taking into account both explicit and implicit costs:

- ❑ A Grocery Store
- ❑ An Airplane Manufacturer
- ❑ High Technology company

Agency Cost

- An agency cost arises whenever you hire someone else to do something for you. It arises because your interests(as the principal) may deviate from those of the person you hired (as the agent).
- When you lend money to a business, you are allowing the stockholders to use that money in the course of running that business. Stockholders interests are different from your interests, because
  - You (as lender) are interested in getting your money back
  - Stockholders are interested in maximizing your wealth
- In some cases, the clash of interests can lead to stockholders
  - Investing in riskier projects than you would want them to
  - Paying themselves large dividends when you would rather have them keep the cash in the business.
- Proposition 3: Other things being equal, the greater the agency problems associated with lending to a firm, the less debt the firm can afford to use.

Debt and Agency Costs

Assume that you are a bank. Which of the following businesses would you perceive the greatest agency costs?

- ❑ A Large Pharmaceutical company
- ❑ A Large Regulated Electric Utility

Why?

Loss of future financing flexibility

- When a firm borrows up to its capacity, it loses the flexibility of financing future projects with debt.
- Proposition 4: Other things remaining equal, the more uncertain a firm is about its future financing requirements and projects, the less debt the firm will use for financing current projects.

What managers consider important in deciding on how much debt to carry...

- A survey of Chief Financial Officers of large U.S. companies provided the following ranking (from most important to least important) for the factors that they considered important in the financing decisions

Factor	**Ranking (0-5)**
1. Maintain financial flexibility	4.55
2. Ensure long-term survival	4.55
3. Maintain Predictable Source of Funds	4.05
4. Maximize Stock Price	3.99
5. Maintain financial independence	3.88
6. Maintain high debt rating	3.56
7. Maintain comparability with peer group	2.47

Debt: Summarizing the Trade Off

Advantages of Borrowing

1. Tax Benefit:

Higher tax rates --> Higher tax benefit

2. Added Discipline:

Greater the separation between managers and stockholders --> Greater the benefit

Disadvantages of Borrowing

1. Bankruptcy Cost:

Higher business risk --> Higher Cost

2. Agency Cost:

Greater the separation between stock-holders & lenders --> Higher Cost

3. Loss of Future Financing Flexibility:

Greater the uncertainty about future financing needs --> Higher Cost

⌛Application Test: Would you expect your firm to gain or lose from using a lot of debt?

- Considering, for your firm,
  - The potential tax benefits of borrowing
  - The benefits of using debt as a disciplinary mechanism
  - The potential for expected bankruptcy costs
  - The potential for agency costs
  - The need for financial flexibility
- Would you expect your firm to have a high debt ratio or a low debt ratio?
- Does the firm's current debt ratio meet your expectations?

A Hypothetical Scenario

- Assume you operate in an environment, where
  (a) there are no taxes
  (b) there is no separation between stockholders and managers.
  (c) there is no default risk
  (d) there is no separation between stockholders and bondholders
  (e) firms know their future financing needs

The Miller-Modigliani Theorem

- In an environment, where there are no taxes, default risk or agency costs, capital structure is irrelevant.
- The value of a firm is independent of its debt ratio.

Implications of MM Theorem

- Leverage is irrelevant. A firm's value will be determined by its project cash flows.
- The cost of capital of the firm will not change with leverage. As a firm increases its leverage, the cost of equity will increase just enough to offset any gains to the leverage

What do firms look at in financing?

- Is there a financing hierarchy?
- Argument:
  - There are some who argue that firms follow a financing hierarchy, with retained earnings being the most preferred choice for financing, followed by debt and that new equity is the least preferred choice.

Rationale for Financing Hierarchy

- Managers value flexibility. External financing reduces flexibility more than internal financing.
- Managers value control. Issuing new equity weakens control and new debt creates bond covenants.

Preference rankings long-term finance: Results of a survey

Ranking	Source	Score
1	Retained Earnings	5.61
2	Straight Debt	4.88
3	Convertible Debt	3.02
4	External Common Equity	2.42
5	Straight Preferred Stock	2.22
6	Convertible Preferred	1.72

Financing Choices

You are reading the Wall Street Journal and notice a tombstone ad for a company, offering to sell convertible preferred stock. What would you hypothesize about the health of the company issuing these securities?

- ❑ Nothing
- ❑ Healthier than the average firm
- ❑ In much more financial trouble than the average firm

Measuring Cost of Capital

- It will depend upon:
  - (a) the components of financing: Debt, Equity or Preferred stock
  - (b) the cost of each component
- In summary, the cost of capital is the cost of each component weighted by its relative market value.

$$WACC = k_e (E/(D+E)) + k_d (D/(D+E))$$

Recapping the Measurement of cost of capital

- The cost of debt is the market interest rate that the firm has to pay on its borrowing. It will depend upon three components
  (a) The general level of interest rates
  (b) The default premium
  (c) The firm's tax rate
- The cost of equity is
  1. the required rate of return given the risk
  2. inclusive of both dividend yield and price appreciation
- The weights attached to debt and equity have to be market value weights, not book value weights.

Costs of Debt & Equity

A recent article in an Asian business magazine argued that equity was cheaper than debt, because dividend yields are much lower than interest rates on debt. Do you agree with this statement

- ❑ Yes
- ❑ No

Can equity ever be cheaper than debt?

- ❑ Yes
- ❑ No

Fallacies about Book Value

1. People will not lend on the basis of market value.
2. Book Value is more reliable than Market Value because it does not change as much.
3. Using book value is more conservative than using market value.

Issue: Use of Book Value

Many CFOs argue that using book value is more conservative than using market value, because the market value of equity is usually much higher than book value. Is this statement true, from a cost of capital perspective? (Will you get a more conservative estimate of cost of capital using book value rather than market value?)

- ❑ Yes
- ❑ No

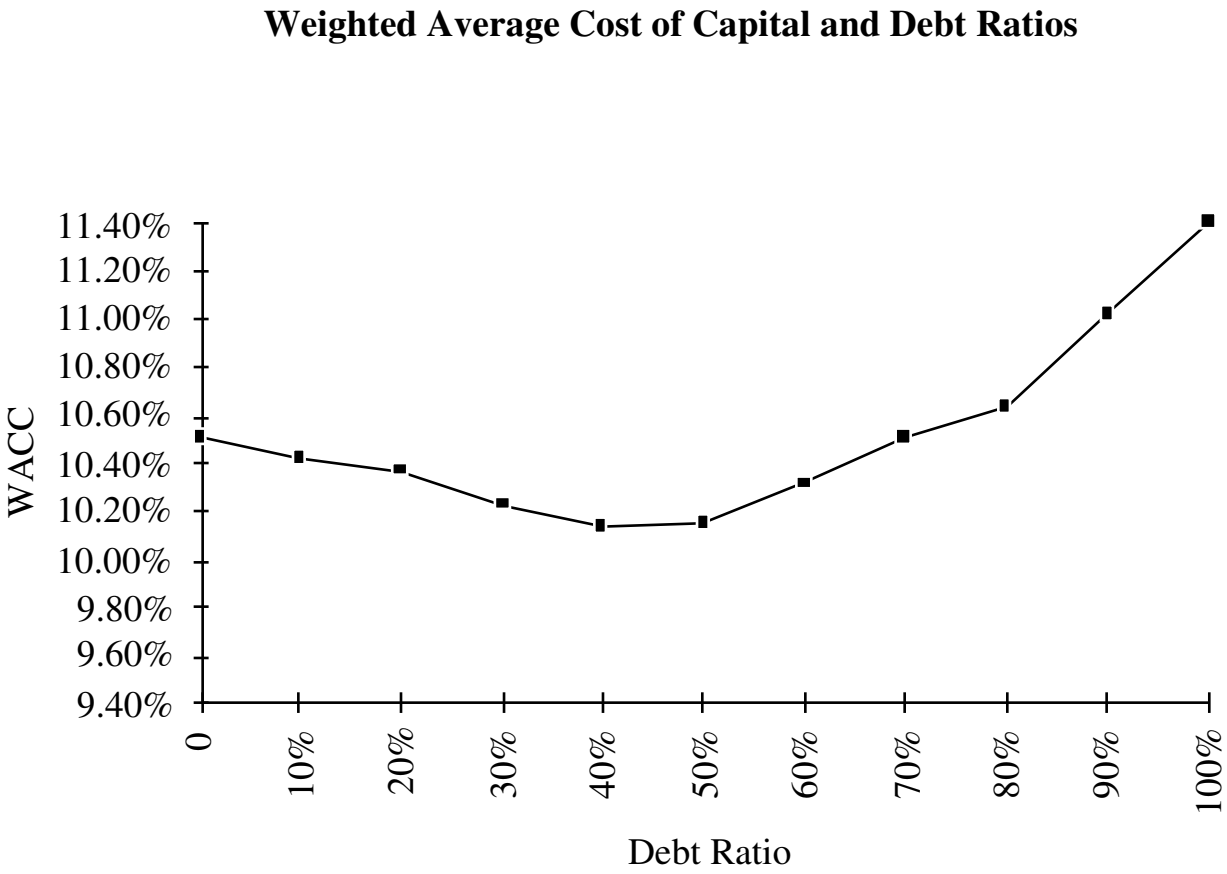
Why does the cost of capital matter?

- Value of a Firm = Present Value of Cash Flows to the Firm, discounted back at the cost of capital.
- If the cash flows to the firm are held constant, and the cost of capital is minimized, the value of the firm will be maximized.

Applying Approach: The Textbook Example

D/(D+E)	ke	kd	After-tax Cost of Debt	WACC
0	10.50%	8%	4.80%	10.50%
10%	11%	8.50%	5.10%	10.41%
20%	11.60%	9.00%	5.40%	10.36%
30%	12.30%	9.00%	5.40%	10.23%
40%	13.10%	9.50%	5.70%	10.14%
50%	14%	10.50%	6.30%	10.15%
60%	15%	12%	7.20%	10.32%
70%	16.10%	13.50%	8.10%	10.50%
80%	17.20%	15%	9.00%	10.64%
90%	18.40%	17%	10.20%	11.02%
100%	19.70%	19%	11.40%	11.40%

WACC and Debt Ratios



Current Cost of Capital: Disney

- Equity
  - Cost of Equity = Riskfree rate + Beta * Risk Premium = 7% + 1.25 (5.5%) = 13.85%
  - Market Value of Equity = $50.88 Billion
  - Equity/(Debt+Equity) = 82%
- Debt
  - After-tax Cost of debt =(Riskfree rate + Default Spread) (1-t) = (7% +0.50) (1-.36) = 4.80%
  - Market Value of Debt = $ 11.18 Billion
  - Debt/(Debt +Equity) = 18%
- Cost of Capital = 13.85%(.82)+4.80%(.18) = 12.22%

50.88/ (50.88+11.18)

Mechanics of Cost of Capital Estimation

1. Estimate the Cost of Equity at different levels of debt:

   Equity will become riskier -> Beta will increase -> Cost of Equity will increase.

   Estimation will use levered beta calculation

2. Estimate the Cost of Debt at different levels of debt:

   Default risk will go up and bond ratings will go down as debt goes up -> Cost of Debt will increase.

   To estimating bond ratings, we will use the interest coverage ratio (EBIT/Interest expense)

3. Estimate the Cost of Capital at different levels of debt

4. Calculate the effect on Firm Value and Stock Price.

Medians of Key Ratios : 1993-1995

	AAA	*AA*	*A*	*BBB*	*BB*	*B*	*CCC*
Pretax Interest Coverage	13.50	9.67	5.76	3.94	2.14	1.51	0.96
EBITDA Interest Coverage	17.08	12.80	8.18	6.00	3.49	2.45	1.51
Funds from Operations / Total Debt (%)	98.2%	69.1%	45.5%	33.3%	17.7%	11.2%	6.7%
Free Operating Cashflow/ Total Debt (%)	60.0%	26.8%	20.9%	7.2%	1.4%	1.2%	0.96%
Pretax Return on Permanent Capital (%)	29.3%	21.4%	19.1%	13.9%	12.0%	7.6%	5.2%
Operating Income/Sales (%)	22.6%	17.8%	15.7%	13.5%	13.5%	12.5%	12.2%
Long Term Debt/ Capital	13.3%	21.1%	31.6%	42.7%	55.6%	62.2%	69.5%
Total Debt/Capitalization	25.9%	33.6%	39.7%	47.8%	59.4%	67.4%	69.1%

Process of Ratings and Rate Estimation

- We use the median interest coverage ratios for large manufacturing firms to develop "interest coverage ratio" ranges for each rating class.
- We then estimate a spread over the long term bond rate for each ratings class, based upon yields at which these bonds trade in the market place.

Interest Coverage Ratios and Bond Ratings

If Interest Coverage Ratio is	Estimated Bond Rating
> 8.50	AAA
6.50 - 8.50	AA
5.50 - 6.50	A+
4.25 - 5.50	A
3.00 - 4.25	A–
2.50 - 3.00	BBB
2.00 - 2.50	BB
1.75 - 2.00	B+
1.50 - 1.75	B
1.25 - 1.50	B –
0.80 - 1.25	CCC
0.65 - 0.80	CC
0.20 - 0.65	C
< 0.20	D

For more detailed interest coverage ratios and bond ratings, try the ratings.xls spreadsheet on my web site.

Spreads over long bond rate for ratings classes: 1996

Rating	*Spread*
AAA	0.20%
AA	0.50%
A+	0.80%
A	1.00%
A-	1.25%
BBB	1.50%
BB	2.00%
B+	2.50%
B	3.25%
B-	4.25%
CCC	5.00%
CC	6.00%
C	7.50%
D	10.00%

See http://www.bondsonline.com for latest spreads

Current Income Statement for Disney: 1996

Revenues		18,739
-Operating Expenses		12,046
EBITDA		6,693
-Depreciation		1,134
EBIT		5,559
-Interest Expense		479
Income before taxes		5,080
-Taxes	847	
Income after taxes		4,233

- Interest coverage ratio= 5,559/479 = 11.61

(Amortization from Capital Cities acquisition not considered)

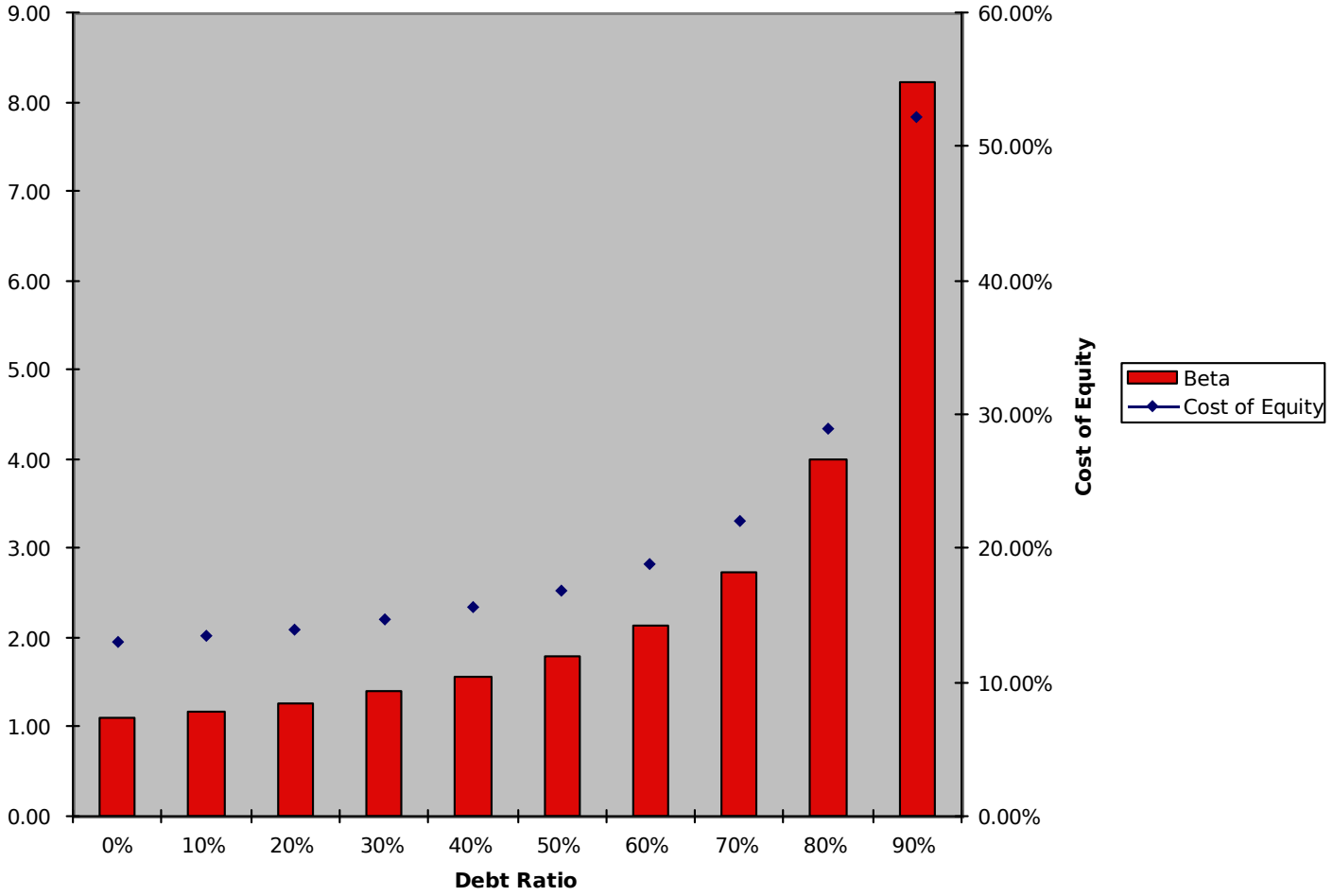
Estimating Cost of Equity

Current Beta = 1.25 Unlevered Beta = 1.09

Market premium = 5.5% T.Bond Rate = 7.00% t=36%

Debt Ratio	*D/E Ratio*	*Beta*	*Cost of Equity*
0%	0%	1.09	13.00%
10%	11%	1.17	13.43%
20%	25%	1.27	13.96%
30%	43%	1.39	14.65%
40%	67%	1.56	15.56%
50%	100%	1.79	16.85%
60%	150%	2.14	18.77%
70%	233%	2.72	21.97%
80%	400%	3.99	28.95%
90%	900%	8.21	52.14%

Disney: Beta, Cost of Equity and D/E Ratio



Estimating Cost of Debt

D/(D+E)		0.00%	10.00%	Calculation Details	Step
D/E		0.00%	11.11%	= [D/(D+E)]/(1 -[D/(D+E)])	
$ Debt		$0	$6,207	= [D/(D+E)]* Firm Value	1
EBITDA		$6,693	$6,693	Kept constant as debt changes.	
Depreciation	$1,134	$1,134	"		
EBIT		$5,559	$5,559		
Interest		$0	$447	= Interest Rate * $ Debt	2
Taxable Income		$5,559	$5,112	= EBIT - Interest	
Tax		$2,001	$1,840	= Tax Rate * Taxable Income	
Net Income	$3,558	$3,272	= Taxable Income - Tax		
Pre-tax Int. cov	∞	12.44	= EBIT/Int. Exp		3
Likely Rating	AAA	AAA	Based upon interest coverage		4
Interest Rate	7.20%	7.20%	Interest rate for given rating		5
Eff. Tax Rate	36.00%	36.00%	See notes on effective tax rate		
After-tax k_d	4.61%	4.61%	=Interest Rate * (1 - Tax Rate)		

Firm Value = 50,888+11,180= $62,068

The Ratings Table

If Interest Coverage Ratio is	Bond Rating	Estimated Default spread
> 8.50	**AAA**	**0.20%**
6.50 - 8.50	AA	0.50%
5.50 - 6.50	A+	0.80%
4.25 - 5.50	A	1.00%
3.00 - 4.25	A–	1.25%
2.50 - 3.00	BBB	1.50%
2.00 - 2.50	BB	2.00%
1.75 - 2.00	B+	2.50%
1.50 - 1.75	B	3.25%
1.25 - 1.50	B –	4.25%
0.80 - 1.25	CCC	5.00%
0.65 - 0.80	CC	6.00%
0.20 - 0.65	C	7.50%
< 0.20	D	10.00%

A Test: Can you do the 20% level?

D/(D+E)	*0.00%*	*10.00%*	*20.00%*	*Second Iteration*
D/E0.00%	11.11%			
$ Debt	**$0**	**$6,207**		
EBITDA	$6,693	$6,693		
Depreciation	$1,134	$1,134		
EBIT	$5,559	$5,559		
Interest Expense	**$0**	**$447**		
Pre-tax Int. cov	**∞**	**12.44**		
Likely Rating	AAA	AAA		
Interest Rate	**7.20%**	**7.20%**		
Eff. Tax Rate	36.00%	36.00%		
Cost of Debt	**4.61%**	**4.61%**		

Bond Ratings, Cost of Debt and Debt Ratios

WORKSHEET FOR ESTIMATING RATINGS/INTEREST RATES										
D/(D+E)	0.00%	10.00%	20.00%	30.00%	40.00%	50.00%	60.00%	70.00%	80.00%	90.00%
D/E	0.00%	11.11%	25.00%	42.86%	66.67%	100.00%	150.00%	233.33%	400.00%	900.00%
$ Debt	$0	$6,207	$12,414	$18,621	$24,827	$31,034	$37,241	$43,448	$49,655	$55,862
EBITDA	$6,693	$6,693	$6,693	$6,693	$6,693	$6,693	$6,693	$6,693	$6,693	$6,693
Depreciation	$1,134	$1,134	$1,134	$1,134	$1,134	$1,134	$1,134	$1,134	$1,134	$1,134
EBIT	$5,559	$5,559	$5,559	$5,559	$5,559	$5,559	$5,559	$5,559	$5,559	$5,559
Interest	$0	$447	$968	$1,536	$2,234	$3,181	$4,469	$5,214	$5,959	$7,262
Taxable Incom	$5,559	$5,112	$4,591	$4,023	$3,325	$2,378	$1,090	$345	($400)	($1,703)
Tax	$2,001	$1,840	$1,653	$1,448	$1,197	$856	$392	$124	($144)	($613)
Pre-tax Int. co		12.44	5.74	3.62	2.49	1.75	1.24	1.07	0.93	0.77
Likely Rating	AAA	AAA	A+	A-	BB	B	CCC	CCC	CCC	CC
Interest Rate	7.20%	7.20%	7.80%	8.25%	9.00%	10.25%	12.00%	12.00%	12.00%	13.00%
Eff. Tax Rate	36.00%	36.00%	36.00%	36.00%	36.00%	36.00%	36.00%	36.00%	33.59%	27.56%
Cost of debt	4.61%	4.61%	4.99%	5.28%	5.76%	6.56%	7.68%	7.68%	7.97%	9.42%

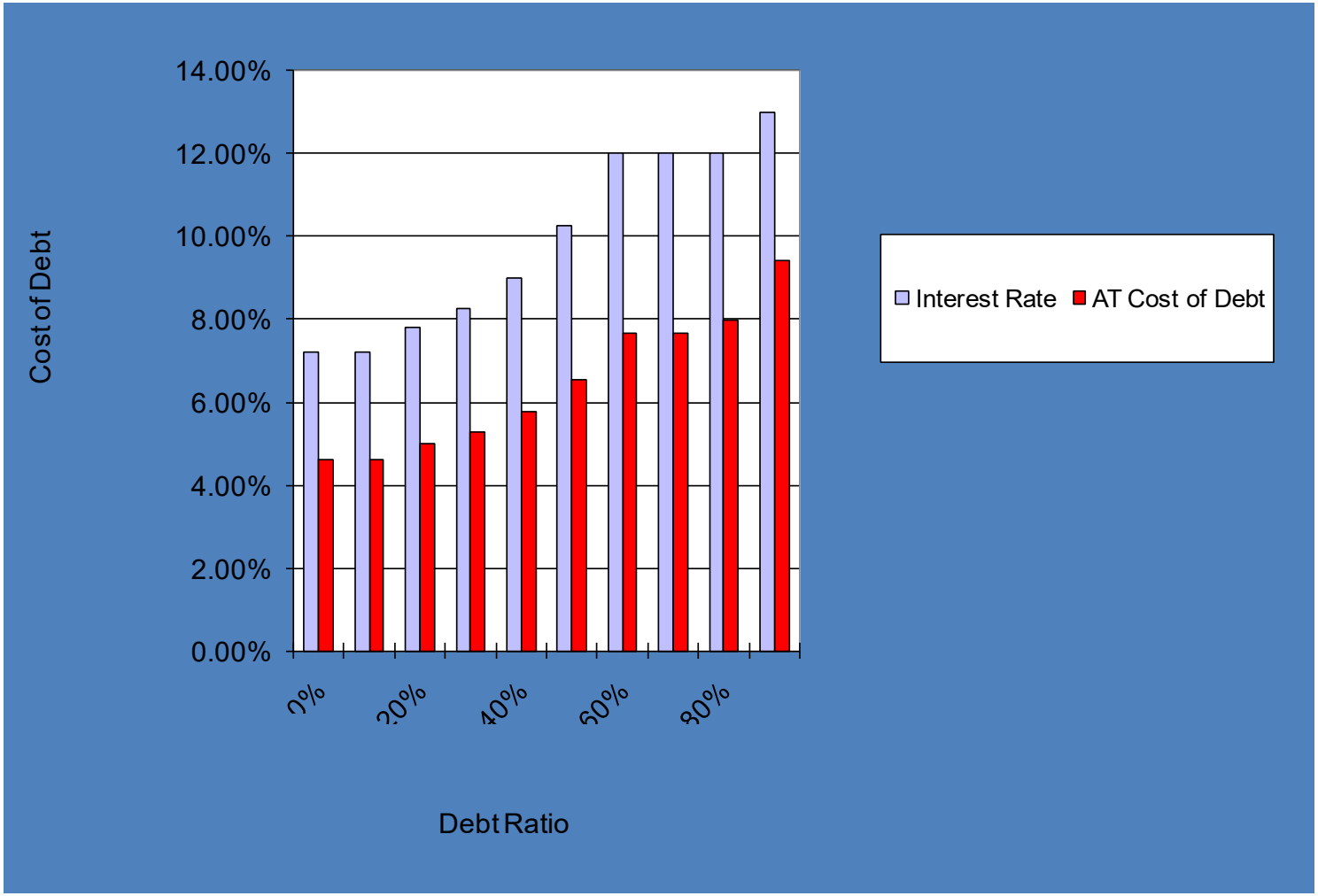
Stated versus Effective Tax Rates

- You need taxable income for interest to provide a tax savings
- In the Disney case, consider the interest expense at 70% and 80%

	70% Debt Ratio	*80% Debt Ratio*
EBIT	$ 5,559 m	$ 5,559 m
Interest Expense	$ 5,214 m	$ 5,959 m
Tax Savings	$ 1,866 m	5559*.36 = $ 2,001m
Effective Tax Rate	36.00%	2001/5959 = 33.59%
Pre-tax interest rate	12.00%	12.00%
After-tax Interest Rate	7.68%	7.97%

- You can deduct only $5,559million of the $5,959 million of the interest expense at 80%. Therefore, only 36% of $ 5,559 is considered as the tax savings.

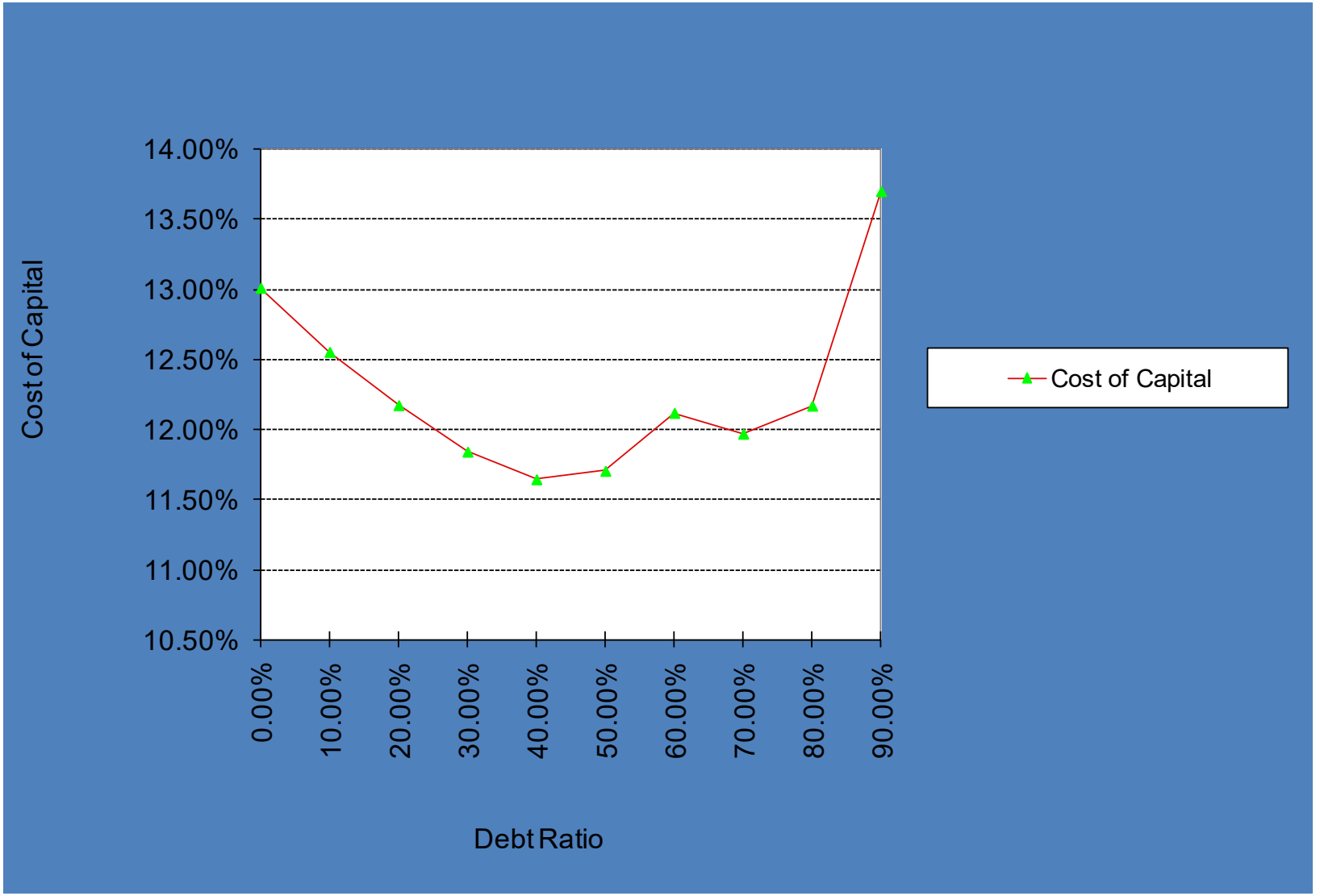
Cost of Debt


14.00%
12.00%
10.00%
8.00%
6.00%
4.00%
2.00%
0.00%
Cost of Debt
Interest Rate
AT Cost of Debt
Debt Ratio

Disney's Cost of Capital Schedule

Debt Ratio	*Cost of Equity*	*AT Cost of Debt*	*Cost of Capital*
0.00%	13.00%	4.61%	13.00%
10.00%	13.43%	4.61%	12.55%
20.00%	13.96%	4.99%	12.17%
30.00%	14.65%	5.28%	11.84%
40.00%	15.56%	5.76%	11.64%
50.00%	16.85%	6.56%	11.70%
60.00%	18.77%	7.68%	12.11%
70.00%	21.97%	7.68%	11.97%
80.00%	28.95%	7.97%	12.17%
90.00%	52.14%	9.42%	13.69%

Disney: Cost of Capital Chart



Effect on Firm Value

- Firm Value before the change = 50,888+11,180= $ 62,068
  $WACC_b$ = 12.22% Annual Cost = $62,068 *12.22%= $7,583 million
  $WACC_a$ = 11.64% Annual Cost = $62,068 *11.64% = $7,226 million
  Δ WACC = 0.58% Change in Annual Cost = $ 357 million
- If there is no growth in the firm value, (Conservative Estimate)
  - Increase in firm value = $357 / .1164 = $3,065 million
  - Change in Stock Price = $3,065/675.13= $4.54 per share
- If there is growth (of 7.13%) in firm value over time,
  - Increase in firm value = $357 * 1.0713 /(.1164-.0713) = $ 8,474
  - Change in Stock Price = $8,474/675.13 = $12.55 per share

Implied Growth Rate obtained by
Firm value Today =FCFF(1+g)/(WACC-g): Perpetual growth formula
$62,068 = $2,947(1+g)/(.1222-g): Solve for g

A Test: The Repurchase Price

- Let us suppose that the CFO of Disney approached you about buying back stock. He wants to know the maximum price that he should be willing to pay on the stock buyback. (The current price is $ 75.38) Assuming that firm value will grow by 7.13% a year, estimate the maximum price.

- What would happen to the stock price after the buyback if you were able to buy stock back at $ 75.38?

The Downside Risk

- Doing What-if analysis on Operating Income
  - A. Standard Deviation Approach
    - Standard Deviation In Past Operating Income
    - Standard Deviation In Earnings (If Operating Income Is Unavailable)
    - Reduce Base Case By One Standard Deviation (Or More)
  - B. Past Recession Approach
    - Look At What Happened To Operating Income During The Last Recession. (How Much Did It Drop In % Terms?)
    - Reduce Current Operating Income By Same Magnitude
- Constraint on Bond Ratings

Disney's Operating Income: History

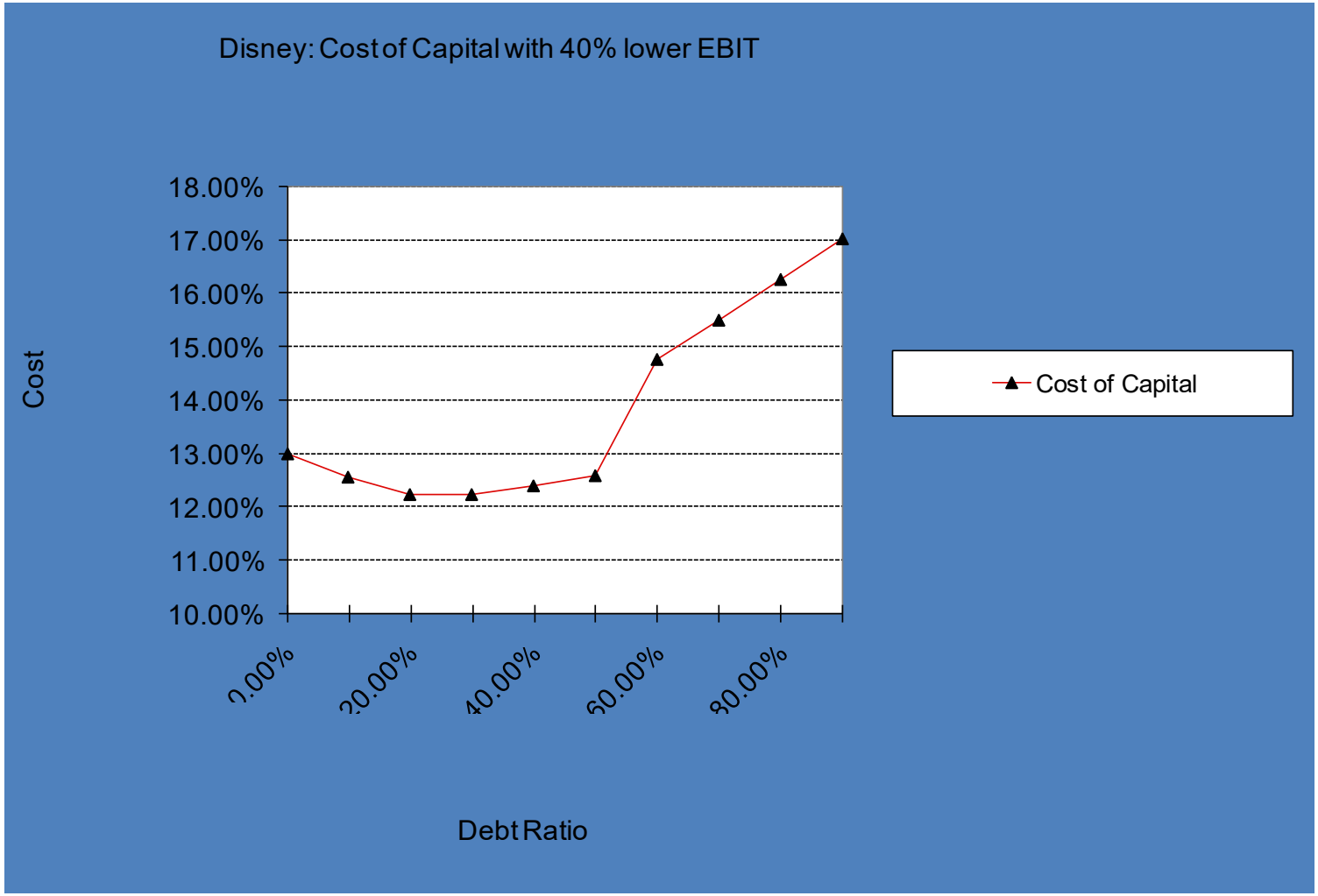
Year	*Operating Income*	*Change in Operating Income*
1981	$ 119.35	
1982	$ 141.39	18.46%
1983	$ 133.87	-5.32%
1984	$ 142.60	6.5%
1985	$ 205.60	44.2%
1986	$ 280.58	36.5%
1987	$ 707.00	152.0%
1988	$ 789.00	11.6%
1989	$ 1,109.00	40.6%
1990	$ 1,287.00	16.1%
1991	$ 1,004.00	-22.0%
1992	$ 1,287.00	28.2%
1993	$ 1,560.00	21.2%
1994	$ 1,804.00	15.6%
1995	$ 2,262.00	25.4%
1996	$ 3,024.00	33.7%

Disney: Effects of Past Downturns

Recession	*Decline in Operating Income*
1991	Drop of 22.00%
1981-82	Increased
Worst Year	Drop of 26%

- The standard deviation in past operating income is about 39%.

Disney: The Downside Scenario



Constraints on Ratings

- Management often specifies a 'desired Rating' below which they do not want to fall.
- The rating constraint is driven by three factors
  - it is one way of protecting against downside risk in operating income (so do not do both)
  - a drop in ratings might affect operating income
  - there is an ego factor associated with high ratings
- Caveat: Every Rating Constraint Has A Cost.
  - Provide Management With A Clear Estimate Of How Much The Rating Constraint Costs By Calculating The Value Of The Firm Without The Rating Constraint And Comparing To The Value Of The Firm With The Rating Constraint.

Ratings Constraints for Disney

- Assume that Disney imposes a rating constraint of BBB or greater.
- The optimal debt ratio for Disney is then 30% (see next page)
- The cost of imposing this rating constraint can then be calculated as follows:

Value at 40% Debt = $ 70,542 million

- Value at 30% Debt = $ 67,419 million

Cost of Rating Constraint = $ 3,123 million

Effect of A Ratings Constraint: Disney

Debt Ratio	Rating	Firm Value
0%	AAA	$53,172
10%	AAA	$58,014
20%	A+	$62,705
30%	A-	$67,419
40%	BB	$70,542
50%	B	$69,560
60%	CCC	$63,445
70%	CCC	$65,524
80%	CCC	$62,751
90%	CC	$47,140

What if you do not buy back stock..

- The optimal debt ratio is ultimately a function of the underlying riskiness of the business in which you operate and your tax rate
- Will the optimal be different if you invested in projects instead of buying back stock?
  - NO. As long as the projects financed are in the same business mix that the company has always been in and your tax rate does not change significantly.
  - YES, if the projects are in entirely different types of businesses or if the tax rate is significantly different.

Analyzing Financial Service Firms

- The interest coverage ratios/ratings relationship is likely to be different for financial service firms.
- The definition of debt is messy for financial service firms. In general, using all debt for a financial service firm will lead to high debt ratios. Use only interest-bearing long term debt in calculating debt ratios.
- The effect of ratings drops will be much more negative for financial service firms.
- There are likely to regulatory constraints on capital

Interest Coverage ratios, ratings and Operating income

Interest Coverage Ratio	Rating is	Spread is	Operating Income Decline
< 0.05	D	10.00%	-50.00%
0.05 - 0.10	C	7.50%	-40.00%
0.10 - 0.20	CC	6.00%	-40.00%
0.20 - 0.30	CCC	5.00%	-40.00%
0.30 - 0.40	B-	4.25%	-25.00%
0.40 - 0.50	B	3.25%	-20.00%
0.50 - 0.60	B+	2.50%	-20.00%
0.60 - 0.80	BB	2.00%	-20.00%
0.80 - 1.00	BBB	1.50%	-20.00%
1.00 - 1.50	A-	1.25%	-17.50%
1.50 - 2.00	A	1.00%	-15.00%
2.00 - 2.50	A+	0.80%	-10.00%
2.50 - 3.00	AA	0.50%	-5.00%
> 3.00	AAA	0.20%	0.00%

Deutsche Bank: Optimal Capital Structure

Debt Ratio	Cost of Equity	Cost of Debt	WACC	Firm Value
0%	10.13%	4.24%	10.13%	DM 124,288.85
10%	10.29%	4.24%	9.69%	DM 132,558.74
20%	10.49%	4.24%	9.24%	DM 142,007.59
30%	10.75%	4.24%	8.80%	DM 152,906.88
40%	11.10%	4.24%	8.35%	DM 165,618.31
50%	11.58%	4.24%	7.91%	DM 165,750.19
60%	12.30%	4.40%	7.56%	DM 162,307.44
70%	13.51%	4.57%	7.25%	DM 157,070.00
80%	15.92%	4.68%	6.92%	DM 151,422.87
90%	25.69%	6.24%	8.19%	DM 30,083.27

Analyzing Companies after Abnormal Years

- The operating income that should be used to arrive at an optimal debt ratio is a "normalized" operating income
- A normalized operating income is the income that this firm would make in a normal year.
  - For a cyclical firm, this may mean using the average operating income over an economic cycle rather than the latest year's income
  - For a firm which has had an exceptionally bad or good year (due to some firm-specific event), this may mean using industry average returns on capital to arrive at an optimal or looking at past years
  - For any firm, this will mean not counting one time charges or profits

Analyzing Aracruz Cellulose's Optimal Debt Ratio

- In 1996, Aracruz had earnings before interest and taxes of only 15 million BR, and claimed depreciation of 190 million Br. Capital expenditures amounted to 250 million BR.
- Aracruz had debt outstanding of 1520 million BR. While the nominal rate on this debt, especially the portion that is in Brazilian Real, is high, we will continue to do the analysis in real terms, and use a current real cost of debt of 5.5%, which is based upon a real riskfree rate of 5% and a default spread of 0.5%.
- The corporate tax rate in Brazil is estimated to be 32%.
- Aracruz had 976.10 million shares outstanding, trading 2.05 BR per share. The beta of the stock is estimated, using comparable firms, to be 0.71.

Setting up for the Analysis

- Current Cost of Capital

  Current Cost of Equity = 5% + 0.71 (7.5%) = 10.33%

  Market Value of Equity = 2.05 BR * 976.1 = 2,001 million BR

  Current Cost of Capital

  = 10.33% (2001/(2001+1520)) + 5.5% (1-.32)
  (1520/(2001+1520) = 7.48%

- 1996 was a poor year for Aracruz, both in terms of revenues and operating income. In 1995, Aracruz had earnings before interest and taxes of 271 million BR. We will use this as our normalized EBIT.

Aracruz's Optimal Debt Ratio

Debt Ratio	*Beta*	*Cost of Equity*	*Rating*	*Cost of Debt*	*AT Cost of Debt*	*Cost of Capital*	*Firm Value*
0.00%	0.47	8.51%	AAA	5.20%	3.54%	8.51%	2,720 BR
10.00%	0.50	8.78%	AAA	5.20%	3.54%	8.25%	2,886 BR
20.00%	0.55	9.11%	AA	5.50%	3.74%	8.03%	3,042 BR
30.00%	0.60	9.53%	A	6.00%	4.08%	7.90%	3,148 BR
40.00%	**0.68**	**10.10%**	**A-**	**6.25%**	**4.25%**	**7.76%**	**3,262 BR**
50.00%	0.79	10.90%	BB	7.00%	4.76%	7.83%	3,205 BR
60.00%	0.95	12.09%	B-	9.25%	6.29%	8.61%	2,660 BR
70.00%	1.21	14.08%	CCC	10.00%	6.80%	8.98%	2,458 BR
80.00%	1.76	18.23%	CCC	10.00%	6.92%	9.18%	2,362 BR
90.00%	3.53	31.46%	CCC	10.00%	7.26%	9.68%	2,149 BR

Analyzing a Private Firm

- The approach remains the same with important caveats
  - It is far more difficult estimating firm value, since the equity and the debt of private firms do not trade
  - Most private firms are not rated.
  - If the cost of equity is based upon the market beta, it is possible that we might be overstating the optimal debt ratio, since private firm owners often consider all risk.

Estimating the Optimal Debt Ratio for a Private Bookstore

- Adjusted EBIT = EBIT + Imputed Interest on Op. Lease Exp.

  = $ 2,000,000 + $ 252,000 = $ 2,252,000
- While Bookscape has no debt outstanding, the present value of the operating lease expenses of $ 3.36 million is considered as debt.
- To estimate the market value of equity, we use a multiple of 22.41 times of net income. This multiple is the average multiple at which comparable firms which are publicly traded are valued.

Estimated Market Value of Equity = Net Income * Average PE

= 1,160,000* 22.41 = 26,000,000

- The interest rates at different levels of debt will be estimated based upon a "synthetic" bond rating. This rating will be assessed using interest coverage ratios for small firms which are rated by S&P.

Interest Coverage Ratios, Spreads and Ratings: Small Firms

Interest Coverage Ratio	*Rating*	*Spread over T Bond Rate*
> 12.5	AAA	0.20%
9.50-12.50	AA	0.50%
7.5 - 9.5	A+	0.80%
6.0 - 7.5	A	1.00%
4.5 - 6.0	A-	1.25%
3.5 - 4.5	BBB	1.50%
3.0 - 3.5	BB	2.00%
2.5 - 3.0	B+	2.50%
2.0 - 2.5	B	3.25%
1.5 - 2.0	B-	4.25%
1.25 - 1.5	CCC	5.00%
0.8 - 1.25	CC	6.00%
0.5 - 0.8	C	7.50%
< 0.5	D	10.00%

Optimal Debt Ratio for Bookscape

Debt Ratio	Beta	Cost of Equity	Bond Rating	Interest Rate	AT Cost of Debt	Cost of Capital	Firm Value
0%	1.03	12.65%	AA	7.50%	4.35%	12.65%	$26,781
10%	1.09	13.01%	AA	7.50%	4.35%	12.15%	$29,112
20%	1.18	13.47%	BBB	8.50%	4.93%	11.76%	$31,182
30%	1.28	14.05%	B+	9.50%	5.51%	11.49%	$32,803
40%	1.42	14.83%	B-	11.25%	6.53%	11.51%	$32,679
50%	1.62	15.93%	CC	13.00%	7.54%	11.73%	$31,341
60%	1.97	17.84%	CC	13.00%	7.96%	11.91%	$30,333
70%	2.71	21.91%	C	14.50%	10.18%	13.70%	$22,891
80%	4.07	29.36%	C	14.50%	10.72%	14.45%	$20,703
90%	8.13	51.72%	C	14.50%	11.14%	15.20%	$18,872

Determinants of Optimal Debt Ratios

- Firm Specific Factors
  - 1. Tax Rate
  - Higher tax rates - - > Higher Optimal Debt Ratio
  - Lower tax rates - - > Lower Optimal Debt Ratio
  - 2. Pre-Tax Returns on Firm = (Operating Income) / MV of Firm
  - Higher Pre-tax Returns - - > Higher Optimal Debt Ratio
  - Lower Pre-tax Returns - - > Lower Optimal Debt Ratio
  - 3. Variance in Earnings [Shows up when you do 'what if' analysis]
  - Higher Variance - - > Lower Optimal Debt Ratio
  - Lower Variance - - > Higher Optimal Debt Ratio
- Macro-Economic Factors
  - 1. Default Spreads

    Higher - - > Lower Optimal Debt Ratio

    Lower - - > Higher Optimal Debt Ratio

Application Test: Your firm's optimal financing mix

- Using the optimal capital structure spreadsheet provided:
  - Estimate the optimal debt ratio for your firm
  - Estimate the new cost of capital at the optimal
  - Estimate the effect of the change in the cost of capital on firm value
  - Estimate the effect on the stock price
- In terms of the mechanics, what would you need to do to get to the optimal immediately?

The APV Approach to Optimal Capital Structure

- In the adjusted present value approach, the value of the firm is written as the sum of the value of the firm without debt (the unlevered firm) and the effect of debt on firm value
- Firm Value = Unlevered Firm Value + (Tax Benefits of Debt - Expected Bankruptcy Cost from the Debt)
- The optimal dollar debt level is the one that maximizes firm value

Implementing the APV Approach

- Step 1: Estimate the unlevered firm value. This can be done in one of two ways:
  - Estimating the unlevered beta, a cost of equity based upon the unlevered beta and valuing the firm using this cost of equity (which will also be the cost of capital, with an unlevered firm)
  - Alternatively, Unlevered Firm Value = Current Market Value of Firm - Tax Benefits of Debt (Current) + Expected Bankruptcy cost from Debt
- Step 2: Estimate the tax benefits at different levels of debt. The simplest assumption to make is that the savings are perpetual, in which case
  - Tax benefits = Dollar Debt * Tax Rate
- Step 3: Estimate a probability of bankruptcy at each debt level, and multiply by the cost of bankruptcy (including both direct and indirect costs) to estimate the expected bankruptcy cost.

Estimating Expected Bankruptcy Cost

- Probability of Bankruptcy
  - Estimate the synthetic rating that the firm will have at each level of debt
  - Estimate the probability that the firm will go bankrupt over time, at that level of debt (Use studies that have estimated the empirical probabilities of this occurring over time - Altman does an update every year)
- Cost of Bankruptcy
  - The direct bankruptcy cost is the easier component. It is generally between 5-10% of firm value, based upon empirical studies
  - The indirect bankruptcy cost is much tougher. It should be higher for sectors where operating income is affected significantly by default risk (like airlines) and lower for sectors where it is not (like groceries)

Ratings and Default Probabilities

Rating	Default Risk
AAA	0.01%
AA	0.28%
A+	0.40%
A	0.53%
A-	1.41%
BBB	2.30%
BB	12.20%
B+	19.28%
B	26.36%
B-	32.50%
CCC	46.61%
CC	52.50%
C	60%
D	75%

Disney: Estimating Unlevered Firm Value

Current Value of the Firm = 50,888 + 11,180 = $62,068

- Tax Benefit on Current Debt = 11,180 * .36 = $4,025

+ Expected Bankruptcy Cost = 0.28% of .25*(62,068-4025) = $41

Unlevered Value of Firm = $58,084

Cost of Bankruptcy for Disney = 25% of firm value

Probability of Bankruptcy = 0.28%, based on firm's current rating

Tax Rate = 36%

Market Value of Equity = $ 50,888

Market Value of Debt = $ 11,180

Disney: APV at Debt Ratios

D/	$ Debt	Tax Rate	Unlevered Firm Value	Tax Benefit	Rating	Prob. Default	Exp Bk Cst	Value of (D+E) Firm
0%	$0	36.00%	$58,084	$0	AAA	0.01%	$2	$58,083
10%	$6,207	36.00%	$58,084	$2,234	AAA	0.01%	$2	$60,317
20%	$12,414	36.00%	$58,084	$4,469	A+	0.40%	$62	$62,491
30%	$18,621	36.00%	$58,084	$6,703	A-	1.41%	$219	$64,569
40%	$24,827	36.00%	$58,084	$8,938	BB	12.20%	$1,893	$65,129
50%	$31,034	36.00%	$58,084	$11,172	B	26.36%	$4,090	$65,166
60%	$37,241	36.00%	$58,084	$13,407	CCC	50.00%	$7,759	$63,732
70%	$43,448	36.00%	$58,084	$15,641	CCC	50.00%	$7,759	$65,967
80%	$49,655	33.59%	$58,084	$16,677	CCC	50.00%	$7,759	$67,003
90%	$55,862	27.56%	$58,084	$15,394	CC	65.00%	$10,086	$63,392

Exp. Bk. Cst: Expected Bankruptcy cost

Relative Analysis

I. Industry Average with Subjective Adjustments

- The “safest” place for any firm to be is close to the industry average
- Subjective adjustments can be made to these averages to arrive at the right debt ratio.
  - Higher tax rates -> Higher debt ratios (Tax benefits)
  - Lower insider ownership -> Higher debt ratios (Greater discipline)
  - More stable income -> Higher debt ratios (Lower bankruptcy costs)
  - More intangible assets -> Lower debt ratios (More agency problems)

Disney's Comparables

Company Name	*Market Debt Ratio*	*Book Debt Ratio*
Disney (Walt)	18.19%	43.41%
Time Warner	29.39%	68.34%
Westinghouse Electric	26.98%	51.97%
Viacom Inc. 'A'	48.14%	46.54%
Gaylord Entertainm. 'A'	13.92%	41.47%
Belo (A.H.) 'A' Corp.	23.34%	63.04%
Evergreen Media 'A'	16.77%	39.45%
Tele-Communications Intl Inc	23.28%	34.60%
King World Productions	0.00%	0.00%
Jacor Communications	30.91%	57.91%
LIN Television	19.48%	71.66%
Regal Cinemas	4.53%	15.24%
Westwood One	11.40%	60.03%
United Television	4.51%	15.11%
Average of Large Firms	**19.34%**	**43.48%**

II. Regression Methodology

- Step 1: Run a regression of debt ratios on proxies for benefits and costs. For example,

  DEBT RATIO = a + b (TAX RATE) + c (EARNINGS VARIABILITY) + d (EBITDA/Firm Value)
- Step 2: Estimate the proxies for the firm under consideration. Plugging into the crosssectional regression, we can obtain an estimate of predicted debt ratio.
- Step 3: Compare the actual debt ratio to the predicted debt ratio.

Applying the Regression Methodology: Entertainment Firms

- Using a sample of 50 entertainment firms, we arrived at the following regression:

Debt Ratio = - 0.1067 + 0.69 Tax Rate+ 0.61 EBITDA/Value- 0.07 σ_{OI}

(0.90) (2.58) (2.21) (0.60)

- The R squared of the regression is 27.16%. This regression can be used to arrive at a predicted value for Disney of:

Predicted Debt Ratio = - 0.1067 + 0.69 (.4358) + 0.61 (.0837) - 0.07 (.2257) = .2314

- Based upon the capital structure of other firms in the entertainment industry, Disney should have a market value debt ratio of 23.14%.

Cross Sectional Regression: 1996 Data

- Using 1996 data for 2929 firms listed on the NYSE, AMEX and NASDAQ data bases. The regression provides the following results –

DFR =0.1906 - 0.0552 PRVAR -.1340 CLSH - 0.3105 CPXFR + 0.1447 FCP
(37.97a) (2.20a) (6.58a) (8.52a) (12.53a)

where,

DFR = Debt / (Debt + Market Value of Equity)
PRVAR = Variance in Firm Value
CLSH = Closely held shares as a percent of outstanding shares
CPXFR = Capital Expenditures / Book Value of Capital
FCP = Free Cash Flow to Firm / Market Value of Equity

- While the coefficients all have the right sign and are statistically significant, the regression itself has an R-squared of only 13.57%.

An Aggregated Regression

- One way to improve the predictive power of the regression is to aggregate the data first and then do the regression. To illustrate with the 1994 data, the firms are aggregated into two-digit SIC codes, and the same regression is re-run.

DFR =0.2370- 0.1854 PRVAR +.1407 CLSH + 1.3959 CPXF -.6483 FCP

(6.06a) (1.96b) (1.05a) (5.73a) (3.89a)

- The R squared of this regression is 42.47%.

Data Source: For the latest regression, go to updated data on my web site and click on the debt regression.

Applying the Regression

Lets check whether we can use this regression. Disney had the following values for these inputs in 1996. Estimate the optimal debt ratio using the debt regression.

Variance in Firm Value = .04

Closely held shares as percent of shares outstanding = 4% (.04)

Capital Expenditures as fraction of firm value = 6.00%(.06)

Free Cash Flow as percent of Equity Value = 3% (.03)

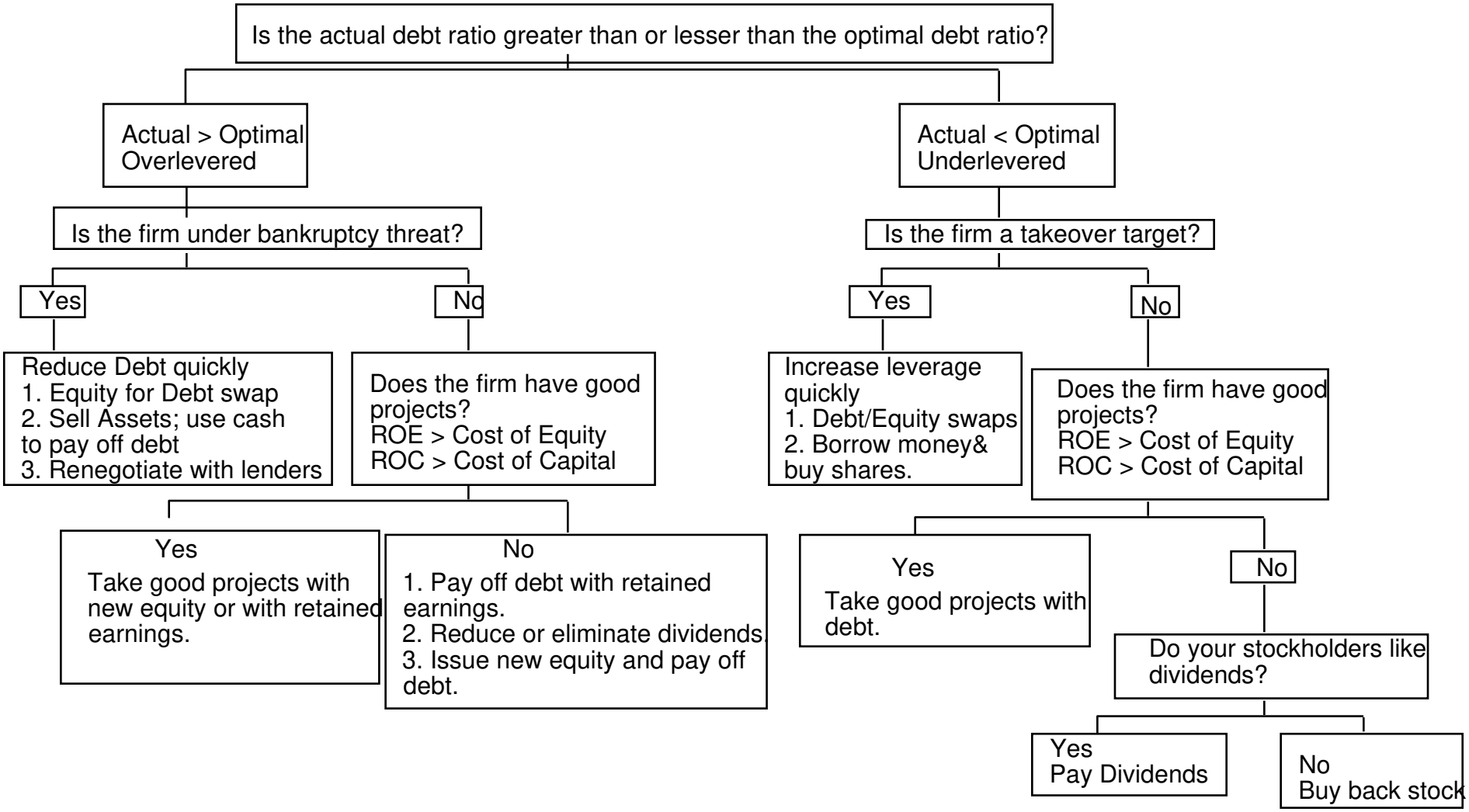
Optimal Debt Ratio

=0.2370- 0.1854 ( ) +.1407 ( ) + 1.3959( ) -.6483 ( )

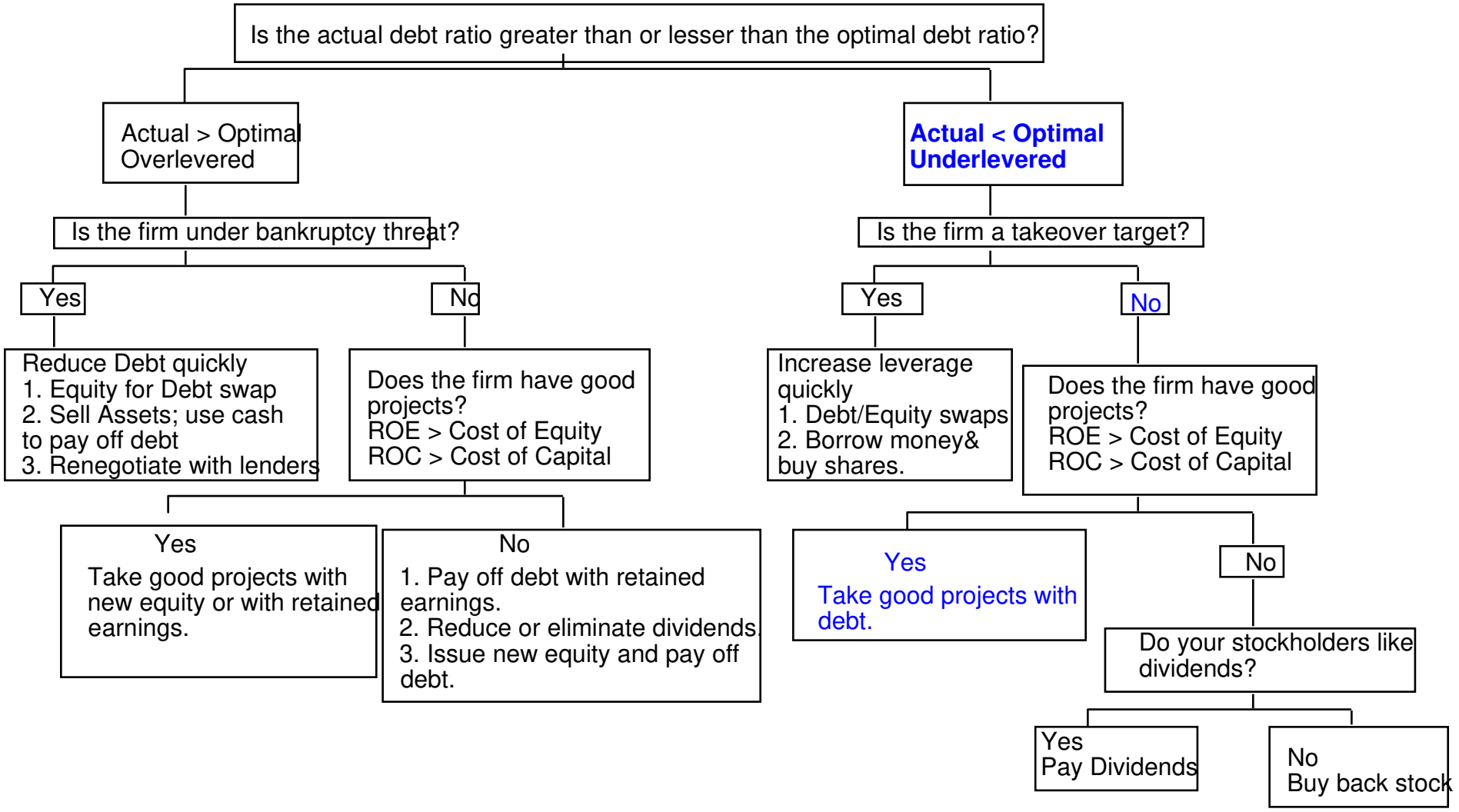
What does this optimal debt ratio tell you?

Why might it be different from the optimal calculated using the weighted average cost of capital?

A Framework for Getting to the Optimal



Disney: Applying the Framework



Designing Debt: The Fundamental Principle

- The objective in designing debt is to make the cash flows on debt match up as closely as possible with the cash flows that the firm makes on its assets.
- By doing so, we reduce our risk of default, increase debt capacity and increase firm value.

Application Test: Getting to the Optimal

- Based upon your analysis of both the firm's capital structure and investment record, what path would you map out for the firm?

❑ Immediate change in leverage

❑ Gradual change in leverage

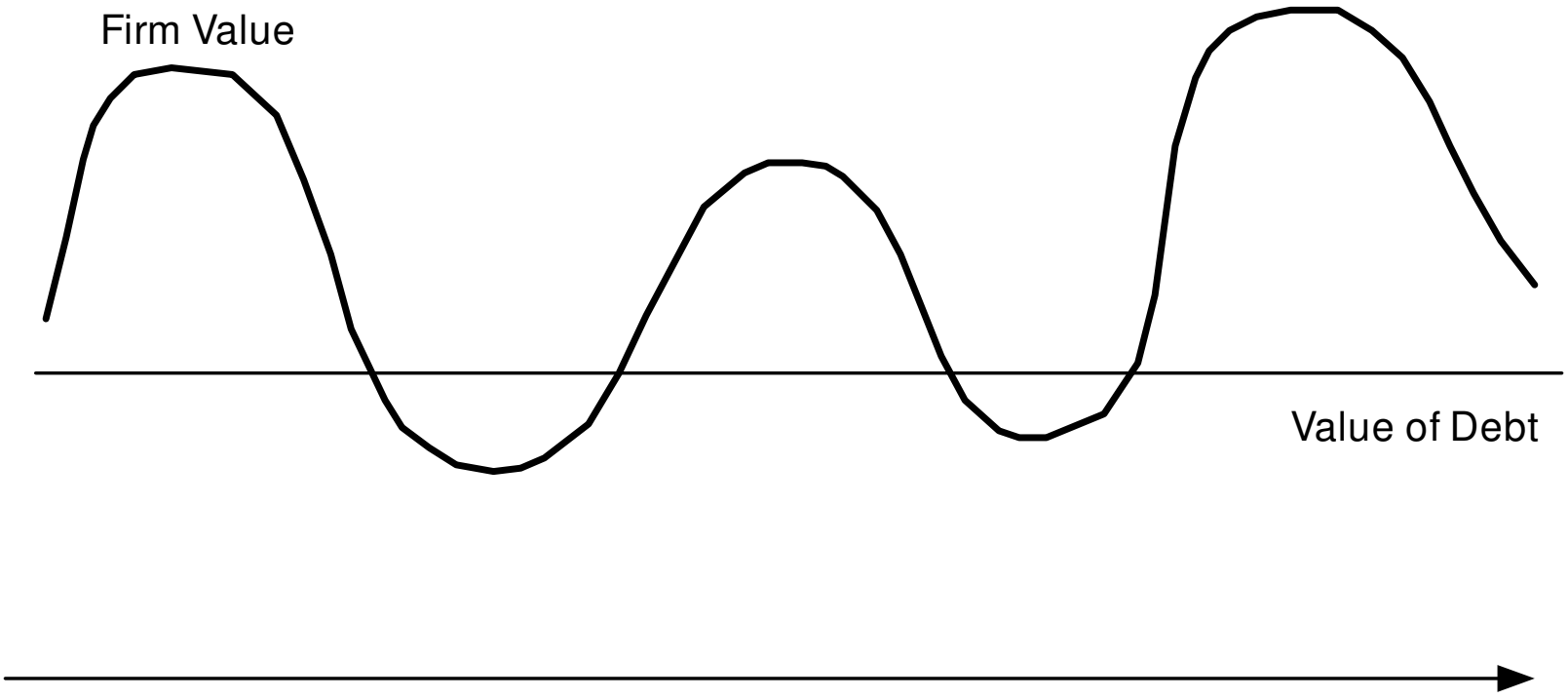
❑ No change in leverage

■ Would you recommend that the firm change its financing mix by

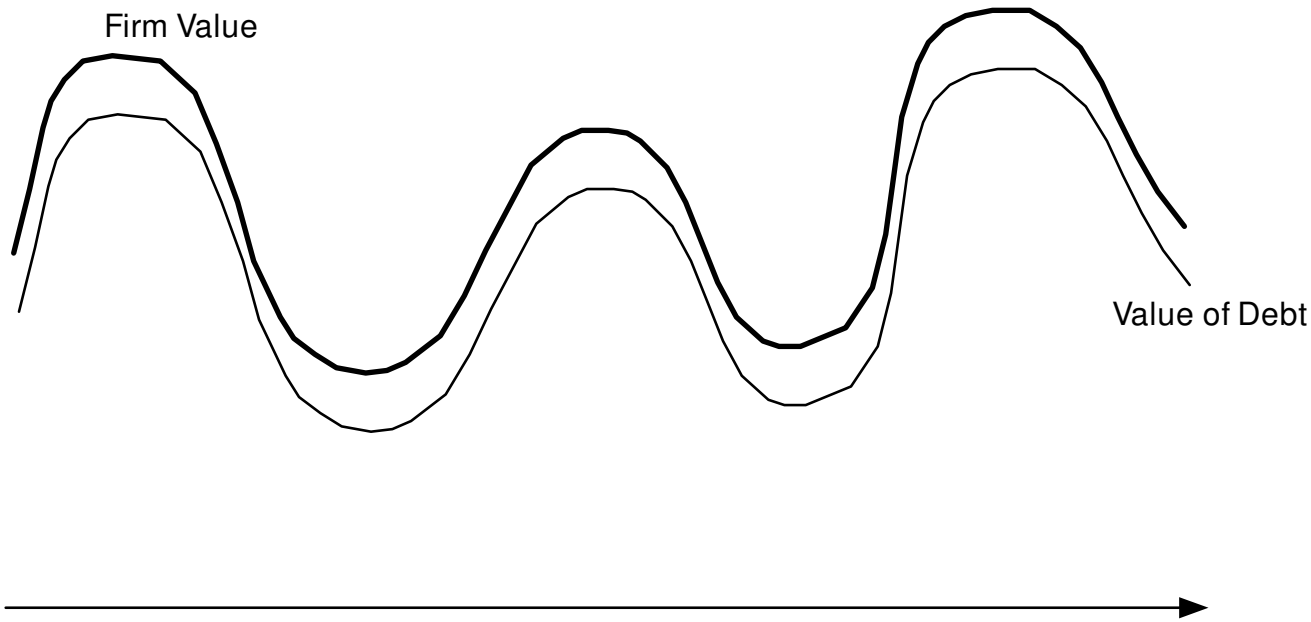
❑ Paying off debt/Buying back equity

❑ Take projects with equity/debt

Firm with mismatched debt

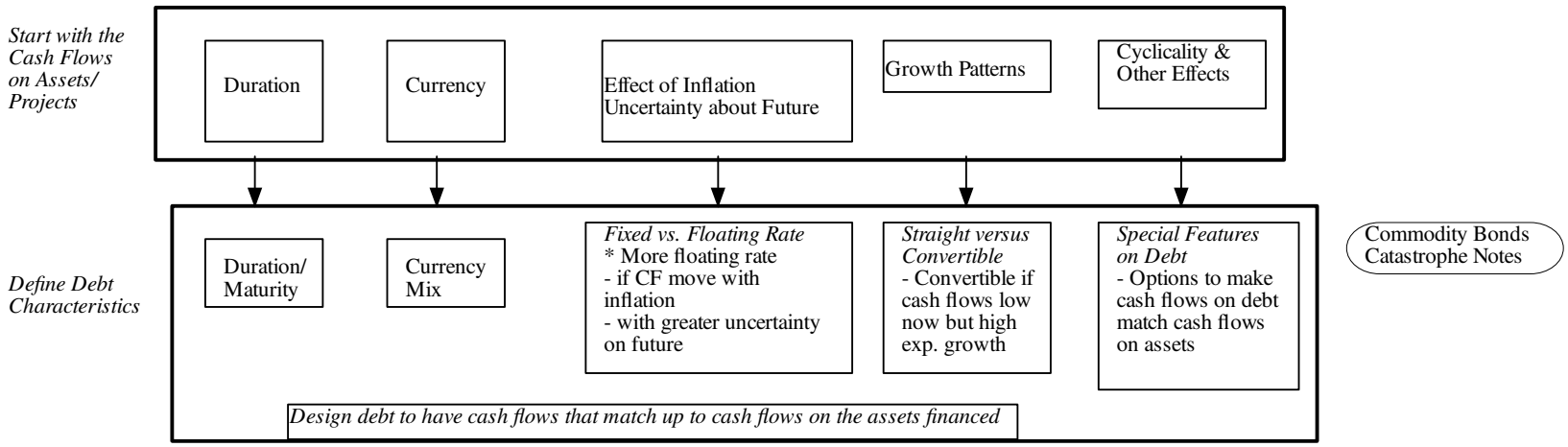


Firm with matched Debt



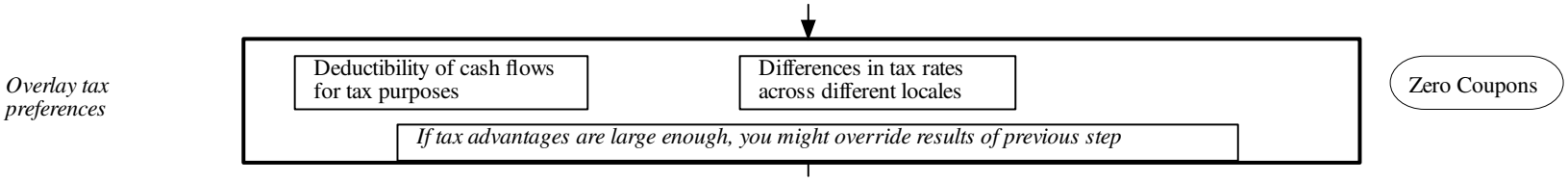
Design the perfect financing instrument

- The perfect financing instrument will
  - Have all of the tax advantages of debt
  - While preserving the flexibility offered by equity



Ensuring that you have not crossed the line drawn by the tax code

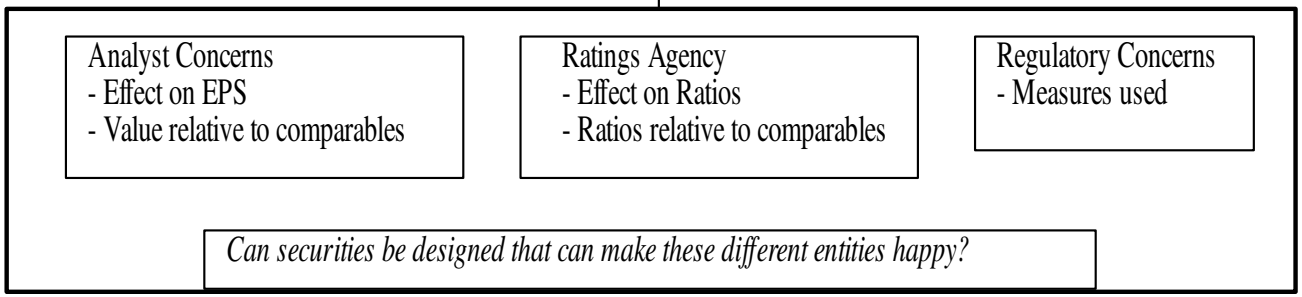
- All of this design work is lost, however, if the security that you have designed does not deliver the tax benefits.
- In addition, there may be a trade off between mismatching debt and getting greater tax benefits.



While keeping equity research analysts, ratings agencies and regulators applauding

- Ratings agencies want companies to issue equity, since it makes them safer. Equity research analysts want them not to issue equity because it dilutes earnings per share. Regulatory authorities want to ensure that you meet their requirements in terms of capital ratios (usually book value). Financing that leaves all three groups happy is nirvana.

Consider ratings agency & analyst concerns



Operating Leases
MIPs
Surplus Notes

Debt or Equity: The Strange Case of Trust Preferred

- Trust preferred stock has
  - A fixed dividend payment, specified at the time of the issue
  - That is tax deductible
  - And failing to make the payment can cause ? (Can it cause default?)
- When trust preferred was first created, ratings agencies treated it as equity. As they have become more savvy, ratings agencies have started giving firms only partial equity credit for trust preferred.

Debt, Equity and Quasi Equity

- Assuming that trust preferred stock gets treated as equity by ratings agencies, which of the following firms is the most appropriate firm to be issuing it?

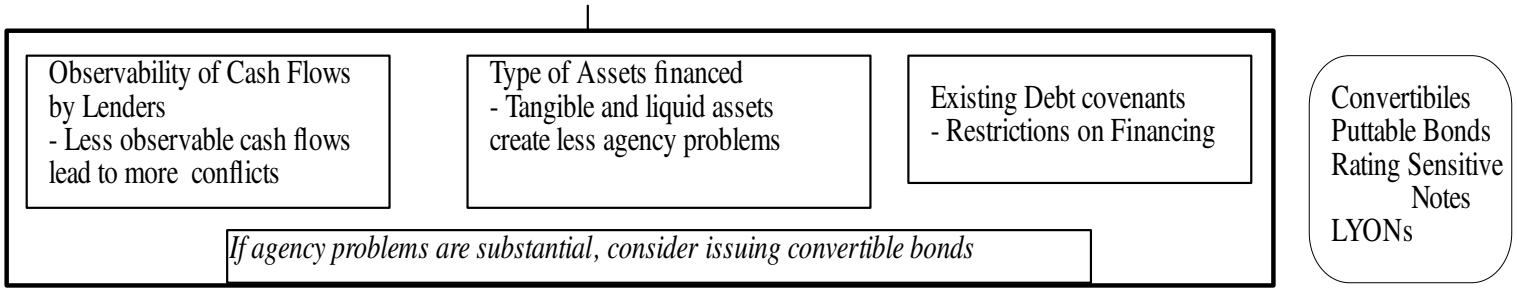
❑ A firm that is under levered, but has a rating constraint that would be violated if it moved to its optimal

❑ A firm that is over levered that is unable to issue debt because of the rating agency concerns.

Soothe bondholder fears

- There are some firms that face skepticism from bondholders when they go out to raise debt, because
  - Of their past history of defaults or other actions
  - They are small firms without any borrowing history
- Bondholders tend to demand much higher interest rates from these firms to reflect these concerns.

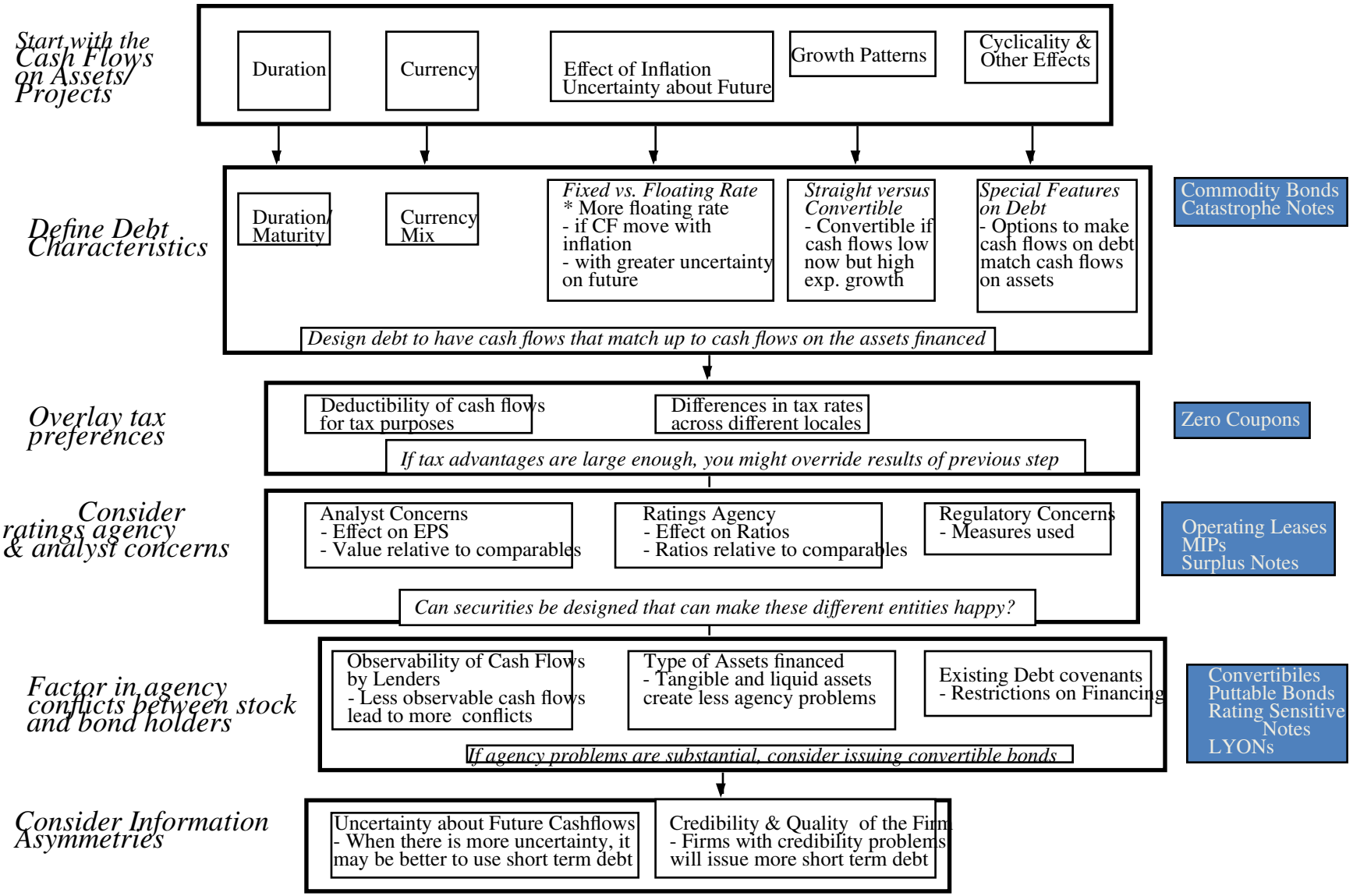
Factor in agency conflicts between stock and bond holders



And do not lock in market mistakes that work against you

- Ratings agencies can sometimes under rate a firm, and markets can under price a firm's stock or bonds. If this occurs, firms should not lock in these mistakes by issuing securities for the long term. In particular,
  - Issuing equity or equity based products (including convertibles), when equity is under priced transfers wealth from existing stockholders to the new stockholders
  - Issuing long term debt when a firm is under rated locks in rates at levels that are far too high, given the firm's default risk.
- What is the solution
  - If you need to use equity?
  - If you need to use debt?

Designing Debt: Bringing it all together



Approaches for evaluating Asset Cash Flows

- I. Intuitive Approach
  - Are the projects typically long term or short term? What is the cash flow pattern on projects?
  - How much growth potential does the firm have relative to current projects?
  - How cyclical are the cash flows? What specific factors determine the cash flows on projects?
- II. Project Cash Flow Approach
  - Project cash flows on a typical project for the firm
  - Do scenario analyses on these cash flows, based upon different macro economic scenarios
- III. Historical Data
  - Operating Cash Flows
  - Firm Value

Coming up with the financing details: Intuitive Approach

Business	*Project Cash Flow Characteristics*	*Type of Financing*
Creative Content	Projects are likely to 1. be short term 2. have cash outflows are primarily in dollars (but cash inflows could have a substantial foreign currency component 3. have net cash flows which are heavily driven by whether the movie or T.V series is a "hit"	Debt should be 1. short term 2. primarily dollar 3. if possible, tied to the success of movies.
Retailing	Projects are likely to be 1. medium term (tied to store life) 2. primarily in dollars (most in US still) 3. cyclical	Debt should be in the form of operating leases.
Broadcasting	Projects are likely to be 1. short term 2. primarily in dollars, though foreign component is growing 3. driven by advertising revenues and show success	Debt should be 1. short term 2. primarily dollar debt 3. if possible, linked to network ratings.

Financing Details: Other Divisions

Theme Parks	Projects are likely to be 1. very long term 2. primarily in dollars, but a significant proportion of revenues come from foreign tourists. 3. affected by success of movie and broadcasting divisions.	Debt should be 1. long term 2. mix of currencies, based upon tourist make up.
Real Estate	Projects are likely to be 1. long term 2. primarily in dollars. 3. affected by real estate values in the area	Debt should be 1. long term 2. dollars 3. real-estate linked (Mortgage Bonds)

⌛ Application Test: Choosing your Financing Type

- Based upon the business that your firm is in, and the typical investments that it makes, what kind of financing would you expect your firm to use in terms of
  - Duration (long term or short term)
  - Currency
  - Fixed or Floating rate
  - Straight or Convertible

II. QUANTITATIVE APPROACH

1. Operating Cash Flows

- The question of how sensitive a firm's asset cash flows are to a variety of factors, such as interest rates, inflation, currency rates and the economy, can be directly tested by regressing changes in the operating income against changes in these variables.
- Change in Operating Income(t)= a + b Change in Macro Economic Variable(t)
- This analysis is useful in determining the coupon/interest payment structure of the debt.

2. Firm Value

- The firm value is clearly a function of the level of operating income, but it also incorporates other factors such as expected growth & cost of capital.
- The firm value analysis is useful in determining the overall structure of the debt, particularly maturity.

The Historical Data

Year	Firm Value	% Change	Operating Income	% Change
1981	$ 1,707		$ 119.35	
1982	$ 2,108	23.46%	$ 141.39	18.46%
1983	$ 1,817	-13.82%	$ 133.87	-5.32%
1984	$ 2,024	11.4%	$ 142.60	6.5%
1985	$ 3,655	80.6%	$ 205.60	44.2%
1986	$ 5,631	54.1%	$ 280.58	36.5%
1987	$ 8,371	48.7%	$ 707.00	152.0%
1988	$ 9,195	9.8%	$ 789.00	11.6%
1989	$ 16,015	74.2%	$ 1,109.00	40.6%
1990	$ 14,963	-6.6%	$ 1,287.00	16.1%
1991	$ 17,122	14.4%	$ 1,004.00	-22.0%
1992	$ 24,771	44.7%	$ 1,287.00	28.2%
1993	$ 25,212	1.8%	$ 1,560.00	21.2%
1994	$ 26,506	5.1%	$ 1,804.00	15.6%
1995	$ 33,858	27.7%	$ 2,262.00	25.4%
1996	$ 39,561	16.8%	$ 3,024.00	33.7%

The Macroeconomic Data

Long Bond Rate	nge in Interest	Real GNP	GNP Growth	Weighted Dolla	Change in Doll	Inflation Rate	Change in Infla
13.98%		3854		115.65		8.90%	
10.47%	-3.51%	3792	-1.6%	123.14	6.48%	3.80%	-5.10%
11.80%	1.33%	4047	6.7%	128.65	4.47%	3.80%	0.00%
11.51%	-0.29%	4216	4.2%	138.89	8.0%	4.00%	0.20%
8.99%	-2.52%	4350	3.2%	125.95	-9.3%	3.80%	-0.20%
7.22%	-1.77%	4431	1.9%	112.89	-10.4%	1.20%	-2.60%
8.86%	1.64%	4633	4.6%	95.88	-15.1%	4.40%	3.20%
9.14%	0.28%	4789	3.4%	95.32	-0.6%	4.40%	0.00%
7.93%	-1.21%	4875	1.8%	102.26	7.3%	4.60%	0.20%
8.07%	0.14%	4895	0.4%	96.25	-5.9%	6.10%	1.50%
6.70%	-1.37%	4894	0.0%	98.82	2.7%	3.10%	-3.00%
6.69%	-0.01%	5061	3.4%	104.58	5.8%	2.90%	-0.20%
5.79%	-0.90%	5219	3.1%	105.22	0.6%	2.70%	-0.20%
7.82%	2.03%	5416	3.8%	98.6	-6.3%	2.70%	0.00%
5.57%	-2.25%	5503	1.6%	95.1	-3.5%	2.50%	-0.20%
6.42%	0.85%	5679	3.2%	101.5	6.7%	3.30%	0.80%

Sensitivity to Interest Rate Changes

- The answer to this question is important because it
  - it provides a measure of the duration of the firm's projects
  - it provides insight into whether the firm should be using fixed or floating rate debt.

Firm Value versus Interest Rate Changes

- Regressing changes in firm value against changes in interest rates over this period yields the following regression –

  Change in Firm Value = 0.22 - 7.43 (Change in Interest Rates)

  (3.09) (1.69)

  T statistics are in brackets.

- Conclusion: The duration (interest rate sensitivity) of Disney's asset values is about 7.43 years. Consequently, its debt should have at least as long a duration.

Regression Constraints

Which of the following aspects of this regression would bother you the most?

- ❑ The low R-squared of only 10%
- ❑ The fact that Disney today is a very different firm from the firm captured in the data from 1981 to 1996
- ❑ Both
- ❑ Neither

Why the coefficient on the regression is duration..

- The duration of a straight bond or loan issued by a company can be written in terms of the coupons (interest payments) on the bond (loan) and the face value of the bond to be –

$$\text{Duration of Bond} = \frac{dP/P}{dr/r} = \frac{\left[\sum_{t=1}^{t=N} \frac{t * \text{Coupon}_t}{(1+r)^t} + \frac{N * \text{Face Value}}{(1+r)^N}\right]}{\left[\sum_{t=1}^{t=N} \frac{\text{Coupon}_t}{(1+r)^t} + \frac{\text{Face Value}}{(1+r)^N}\right]}$$

- Holding other factors constant, the duration of a bond will increase with the maturity of the bond, and decrease with the coupon rate on the bond.

Duration of a Firm's Assets

- This measure of duration can be extended to any asset with expected cash flows on it. Thus, the duration of a project or asset can be estimated in terms of the pre-debt operating cash flows on that project.

$$\text{Duration of Project/Asset} = \frac{dPV/PV}{dr/r} = \frac{\left[\sum_{t=1}^{t=N} \frac{t * CF_t}{(1+r)^t} + \frac{N * \text{Terminal Value}}{(1+r)^N}\right]}{\left[\sum_{t=1}^{t=N} \frac{CF_t}{(1+r)^t} + \frac{\text{Terminal Value}}{(1+r)^N}\right]}$$

where,

CFt = After-tax operating cash flow on the project in year t

Terminal Value = Salvage Value at the end of the project lifetime

N = Life of the project

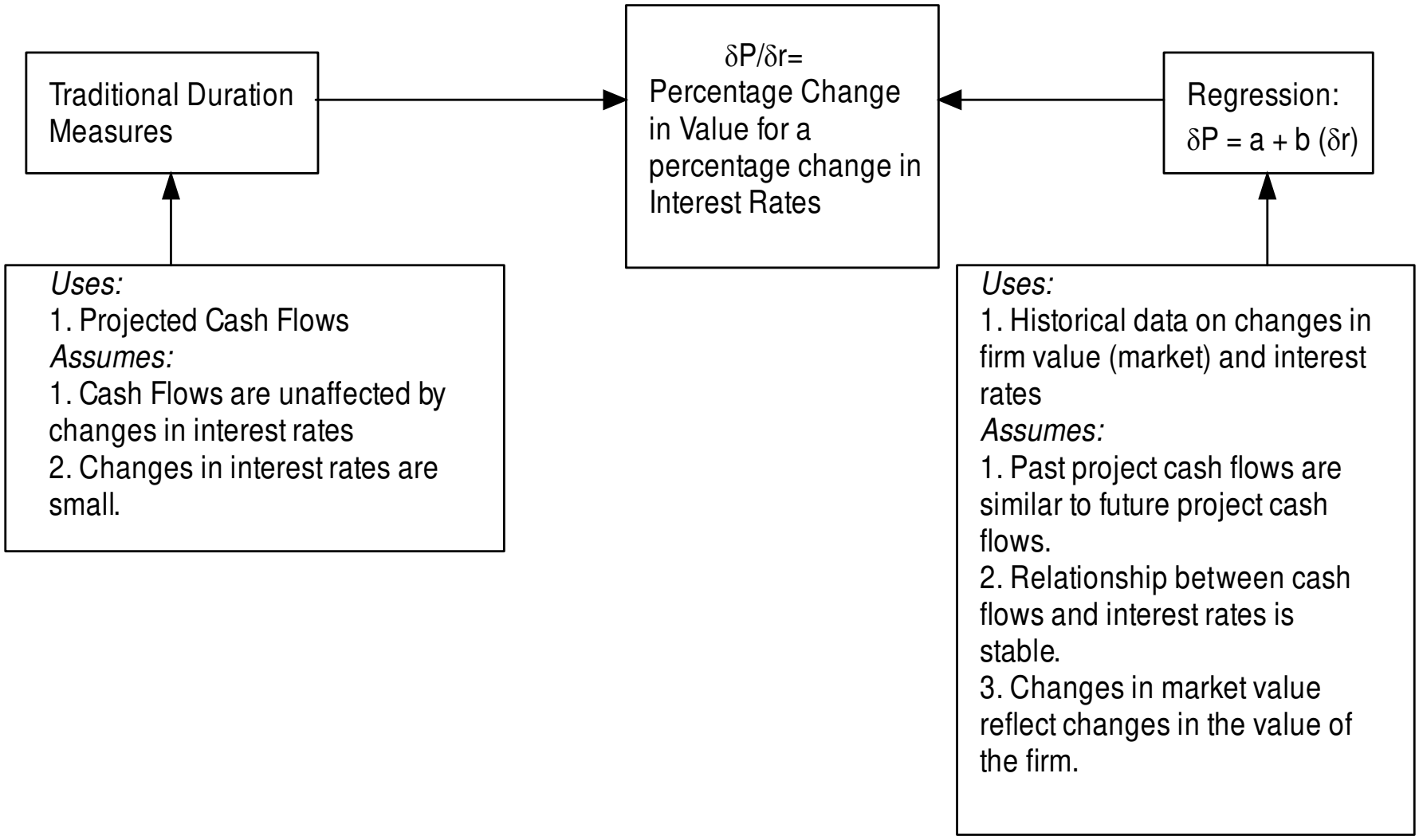
- The duration of any asset provides a measure of the interest rate risk embedded in that asset.

Duration of Disney Theme Park

Year	*FCFF*	*Terminal Value*	*Total FCFF*	*PV of FCFF*	*PV * t*
1	($39,078 Bt)		($39,078 Bt)	(31,180 Bt)	-31180.4
2	($36,199 Bt)		($36,199 Bt)	(23,046 Bt)	-46092.4
3	($11,759 Bt)		($11,759 Bt)	(5,973 Bt)	-17920
4	16,155 Bt		16,155 Bt	6,548 Bt	26193.29
5	21,548 Bt		21,548 Bt	6,969 Bt	34844.55
6	33,109 Bt		33,109 Bt	8,544 Bt	51264.53
7	46,692 Bt		46,692 Bt	9,614 Bt	67299.02
8	58,169 Bt		58,169 Bt	9,557 Bt	76454.39
9	70,423 Bt	838,720 Bt	909,143 Bt	119,182 Bt	1072635
Sum				100,214 Bt	1,233,498

Duration of the Project = 1,233,498/100,214 = 12.30 years

Duration: Comparing Approaches



Operating Income versus Interest Rates

- Regressing changes in operating cash flow against changes in interest rates over this period yields the following regression –

  Change in Operating Income = 0.31 - 4.99 (Change in Interest Rates)

  (2.90) (0.78)

  – Conclusion: Disney's operating income, like its firm value, has been very sensitive to interest rates, which confirms our conclusion to use long term debt.

- Generally speaking, the operating cash flows are smoothed out more than the value and hence will exhibit lower duration that the firm value.

Sensitivity to Changes in GNP

- The answer to this question is important because
  - it provides insight into whether the firm's cash flows are cyclical and
  - whether the cash flows on the firm's debt should be designed to protect against cyclical factors.
- If the cash flows and firm value are sensitive to movements in the economy, the firm will either have to issue less debt overall, or add special features to the debt to tie cash flows on the debt to the firm's cash flows.

Regression Results

- Regressing changes in firm value against changes in the GNP over this period yields the following regression –

Change in Firm Value = 0.31 - 1.71 (GNP Growth)

(2.43) (0.45)

  - Conclusion: Disney is only mildly sensitive to cyclical movements in the economy.

- Regressing changes in operating cash flow against changes in GNP over this period yields the following regression –

Change in Operating Income = 0.17 + 4.06 (GNP Growth)

(1.04) (0.80)

  - Conclusion: Disney's operating income is slightly more sensitive to the economic cycle. This may be because of the lagged effect of GNP growth on operating income.

Sensitivity to Currency Changes

- The answer to this question is important, because
  - it provides a measure of how sensitive cash flows and firm value are to changes in the currency
  - it provides guidance on whether the firm should issue debt in another currency that it may be exposed to.
- If cash flows and firm value are sensitive to changes in the dollar, the firm should
  - figure out which currency its cash flows are in;
  - and issued some debt in that currency

Regression Results

- Regressing changes in firm value against changes in the dollar over this period yields the following regression –

Change in Firm Value = 0.26 - 1.01 (Change in Dollar)

(3.46) (0.98)

  - Conclusion: Disney's value has not been very sensitive to changes in the dollar over the last 15 years.

- Regressing changes in operating cash flow against changes in the dollar over this period yields the following regression –

Change in Operating Income = 0.26 - 3.03 (Change in Dollar)

(3.14) (2.59)

  - Conclusion: Disney's operating income has been much more significantly impacted by the dollar. A stronger dollar seems to hurt operating income.

Sensitivity to Inflation

- The answer to this question is important, because
  - it provides a measure of whether cash flows are positively or negatively impacted by inflation.
  - it then helps in the design of debt; whether the debt should be fixed or floating rate debt.
- If cash flows move with inflation, increasing (decreasing) as inflation increases (decreases), the debt should have a larger floating rate component.

Regression Results

- Regressing changes in firm value against changes in inflation over this period yields the following regression –

Change in Firm Value = 0.26 - 0.22 (Change in Inflation Rate)

(3.36) (0.05)

  - Conclusion: Disney's firm value does not seem to be affected too much by changes in the inflation rate.

- Regressing changes in operating cash flow against changes in inflation over this period yields the following regression –

Change in Operating Income = 0.32 + 10.51 (Change in Inflation Rate)

(3.61) (2.27)

  - Conclusion: Disney's operating income seems to increase in periods when inflation increases. However, this increase in operating income seems to be offset by the increase in discount rates leading to a much more muted effect on value.

Bottom-up Estimates

Business	*Comparable Firms*	*)ivision Weigh*	*Duration*	*Cyclicality*	*Inflation*	*Currency*
Creative Content	Motion Picture and TV program producers	35.71%	-3.34	1.39	2.30	-1.86
Retailing	High End Specialty Retailers	3.57%	-5.50	2.63	2.10	-0.75
Broadcasting	TV Broadcasting companies	30.36%	-4.50	0.70	3.03	-1.15
Theme Parks	Theme Park and Entertainment Complexes	26.79%	-10.47	0.22	0.72	-2.54
Real Estate	REITs specializing in hotel and vacation propertiers	3.57%	-8.46	0.89	-0.08	0.97
	Disney	100.00%	-5.86	0.89	2.00	-1.69

Analyzing Disney's Current Debt

Description	***Amount***	***Duration***	***Floating Rate***	***Non-US $***
Commercial paper	$4,185	0.50	0	0
US $ notes & debentures	$4,399	14.00	0	0
Dual Currency notes	$1,987	1.20	1000	0
Senior notes	$1,099	2.50	0	0
Other	$672	5.00	0	0
Total	**$12,342**	**5.85**	**1000**	**0**

Financing Recommendations

- The duration of the debt is almost exactly the duration estimated using the bottom-up approach, though it is lower than the duration estimated from the firm-specific regression.
- Less than 10% of the debt is non-dollar debt and it is primarily in Japanese yen, Australian dollars and Italian lire, and little of the debt is floating rate debt.
- Based on our analysis, we would recommend more non-dollar debt issues, with a shift towards floating rate debt, at least in those sectors where Disney retains significant pricing power.

THANK YOU

Capital budgeting techniques

Capital budgeting is the process of identifying, analyzing, and selecting investment projects whose returns (cash flows) are expected to extend beyond one year.

The capital budgeting process

- Generate investment proposals consistent with the firm's strategic objectives.
- Estimate after-tax incremental operating cash flows for the investment projects.
- Evaluate project incremental cash flows.
- Select projects based on a value-maximizing acceptance criterion.
- Reevaluate implemented investment projects continually and perform post-audits for completed projects.

Classification of investment project proposals

- New products or expansion of existing products
- Replacement of existing equipment or buildings
- Research and development
- Exploration
- Other (e.g., safety or pollution related)

Project evaluation: different methods

- Payback Period (PBP)
- Discounted Payback Period (DPBP)
- Net Present Value (NPV)
- Internal Rate of Return (IRR)
- Profitability Index (PI)

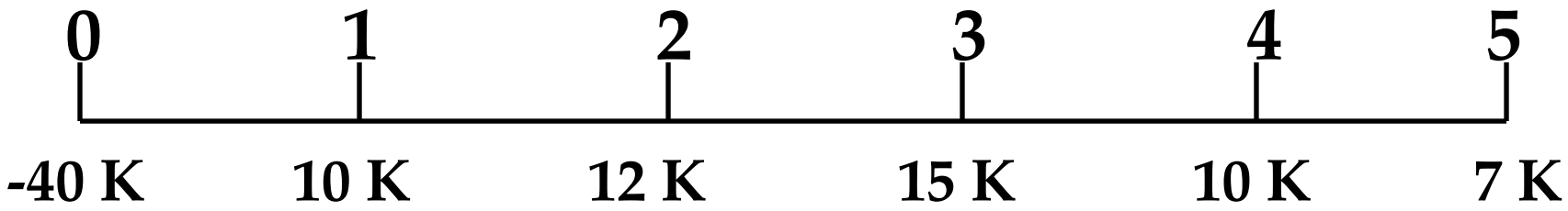
Project evaluation example

Joshimuddin is evaluating a new project for his business, Jambura Farm (JF). He has determined that the after-tax cash flows for the project will be Tk 10,000; Tk 12,000; Tk 15,000; Tk 10,000; and Tk 7,000, respectively, for each of the Years 1 through 5. The initial cash outlay will be Tk 40,000.

Independent project

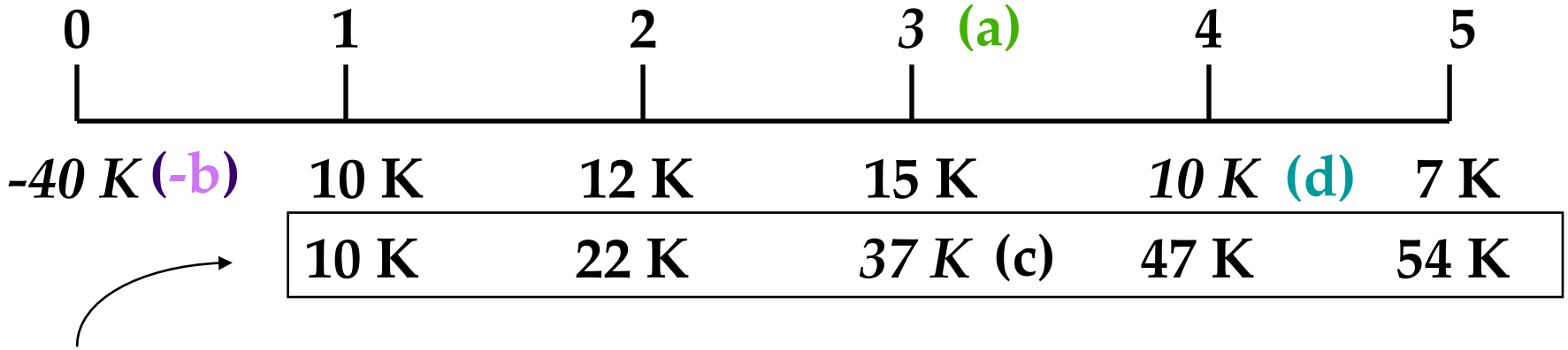
- For this project, assume that it is independent of any other potential projects that *Jambura Farm* may undertake.
- Independent – A project whose acceptance (or rejection) does not prevent the acceptance of other projects under consideration.

Payback period solution



PBP is the period of time required for the cumulative expected cash flows from an investment project to equal the initial cash outflow.

Payback period solution #1



Cumulative Inflows

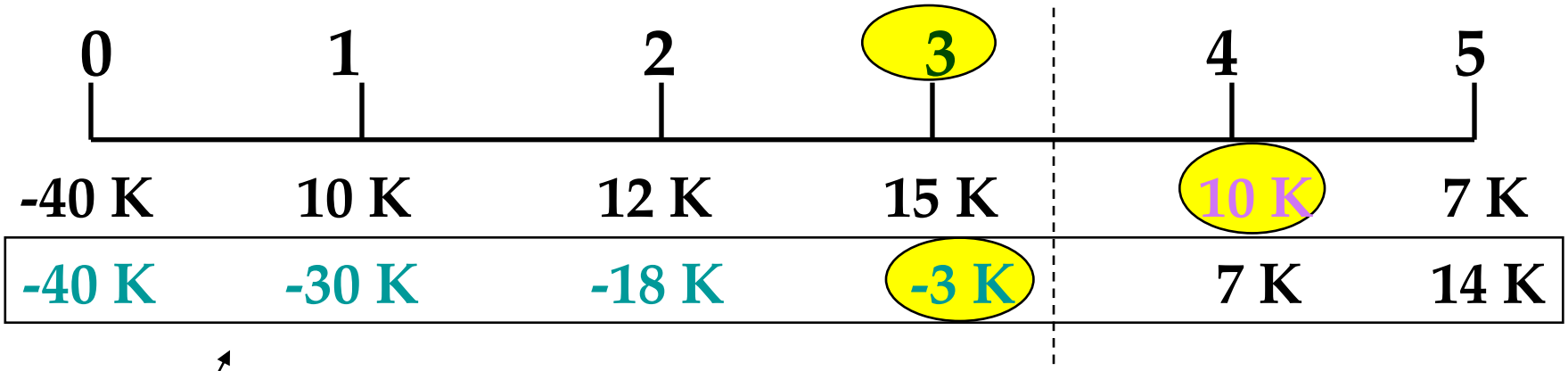
PBP = a + (b - c) / d

= 3 + (40 - 37) / 10

= 3 + (3) / 10

= 3.3 Years

Payback period solution #2



Cumulative Cash Flows

PBP = 3 + (3K) / 10K

= 3.3 Years

Note: Take absolute value of last negative cumulative cash flow value.

Payback period solution # 3

Yr	*Project JF*	
	CF	*Cum CF*
0	-40,000	-40,000
1	10,000	-30,000
2	12,000	-18,000
3	15,000	-3,000
4	10,000	7,000
5	7,000	

Payback Periods: 3 + (3,000/10,000)*

= 3.33 years (*3rd yr Cum CF/4th yr CF)

Payback period example

The management of *Jambura Farm* has set a maximum PBP of 3.5 years for projects of this type.

Should this project be accepted?

Yes! JF will receive back the initial cash outlay in less than 3.5 years. [3.3 Years < 3.5 Year Max.]

PBP Strengths & Weaknesses

Strengths:

- Easy to use and understand
- Can be used as a measure of liquidity
- Easier to forecast ST than LT flows

Weaknesses:

- Does not account for TVM
- Does not consider cash flows beyond the PBP
- Cutoff period is subjective

Net Present Value

NPV is the present value of an investment project's net cash flows minus the project's initial cash outflow.

$$NPV = \frac{CF_1}{(1+k)^1} + \frac{CF_2}{(1+k)^2} + \ldots + \frac{CF_n}{(1+k)^n} - ICO$$

NPV Solution

Jambura Farm has determined that the appropriate discount rate (k) for this project is 13%.

$$NPV = \frac{10{,}000}{(1.13)^1} + \frac{12{,}000}{(1.13)^2} + \frac{15{,}000}{(1.13)^3} + \frac{10{,}000}{(1.13)^4} + \frac{7{,}000}{(1.13)^5} - \text{Tk } 40{,}000$$

NPV Solution

$$NPV = 10{,}000(PVIF_{13\%,1}) + 12{,}000(PVIF_{13\%,2}) + 15{,}000(PVIF_{13\%,3}) + 10{,}000(PVIF_{13\%,4}) + 7{,}000(PVIF_{13\%,5}) - 40{,}000$$

$$NPV = 10{,}000(.885) + 12{,}000(.783) + 15{,}000(.693) + 10{,}000(.613) + 7{,}000(.543) - 40{,}000$$

$$NPV = 8{,}850 + 9{,}396 + 10{,}395 + 6{,}130 + 3{,}801 - 40{,}000$$

$$= -\text{ Tk } 1{,}428$$

NPV Acceptance Criterion

The management of *Jambura Farm* has determined that the required rate is 13% for projects of this type.

Should this project be accepted?

No! The NPV is negative. This means that the project is reducing shareholder wealth. [*Reject* as *NPV* < *0*]

NPV Strengths & Weaknesses

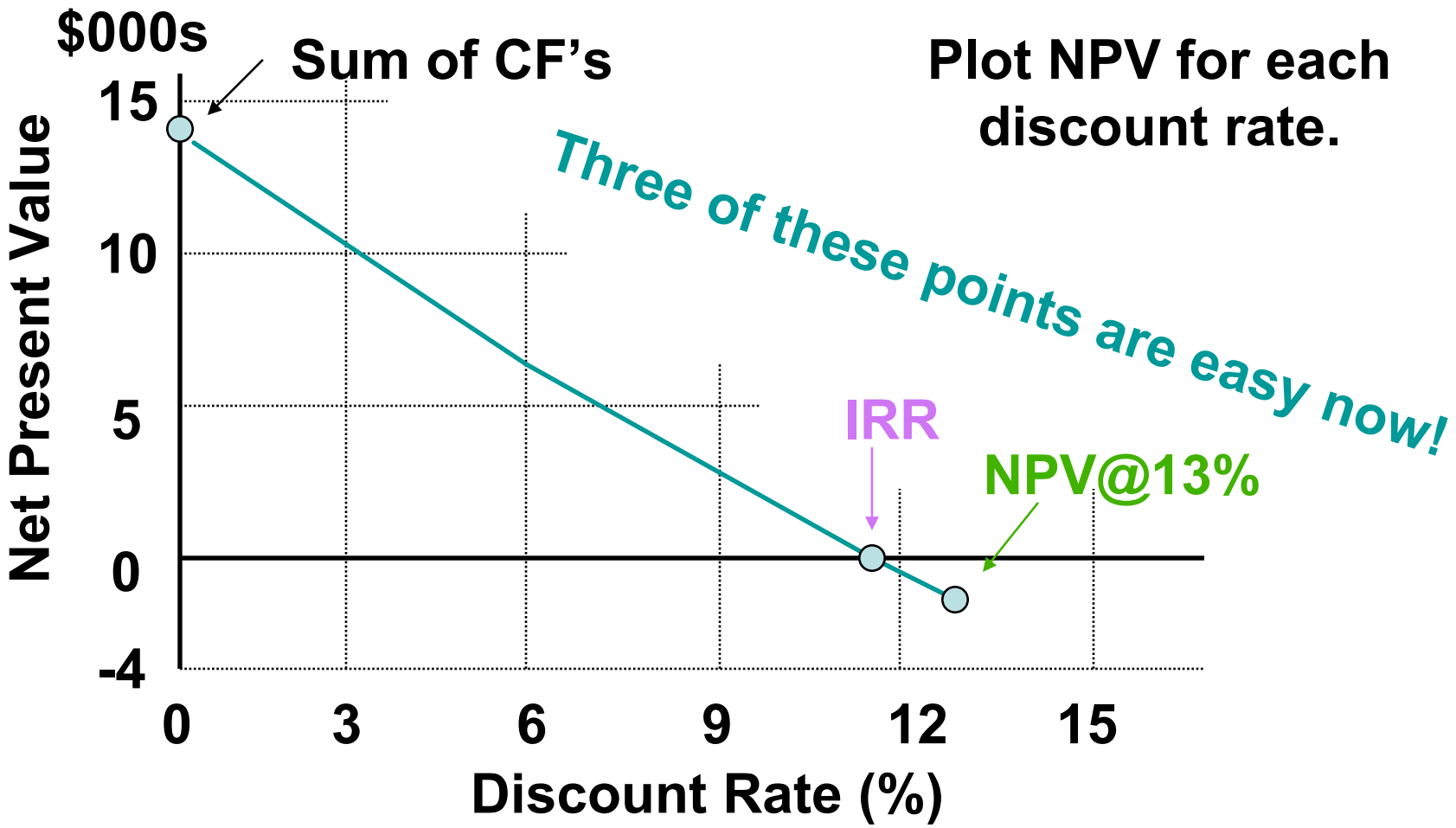
Strengths:

- Cash flows assumed to be reinvested at the hurdle rate.
- Accounts for TVM.
- Considers all cash flows.

Weaknesses:

- A bit complicated than PBP
- May not include managerial options embedded in the project.

NPV Profile


$000s
Sum of CF's
Plot NPV for each discount rate.
Three of these points are easy now!
IRR
NPV@13%
Net Present Value
15
10
5
0
-4
0
3
6
9
12
15
Discount Rate (%)

Internal rate of return

IRR is the discount rate that equates the present value of the future net cash flows from an investment project with the project's initial cash outflow.

$$ICO = \frac{CF_1}{(1+IRR)^1} + \frac{CF_2}{(1+IRR)^2} + \ldots + \frac{CF_n}{(1+IRR)^n}$$

IRR Solution

$$\text{Tk. } 40{,}000 = \frac{10{,}000}{(1+IRR)^1} + \frac{12{,}000}{(1+IRR)^2} + \frac{15{,}000}{(1+IRR)^3} + \frac{10{,}000}{(1+IRR)^4} + \frac{7{,}000}{(1+IRR)^5}$$

Find the interest rate (*IRR*) that causes the discounted cash flows to equal Tk 40,000.

IRR Solution (10%)

Tk 40,000 $= 10{,}000(PVIF_{10\%,1}) + 12{,}000(PVIF_{10\%,2}) + 15{,}000(PVIF_{10\%,3}) + 10{,}000(PVIF_{10\%,4}) + 7{,}000(PVIF_{10\%,5})$

Tk 40,000 $= 10{,}000(.909) + 12{,}000(.826) + 15{,}000(.751) + 10{,}000(.683) + 7{,}000(.621)$

Tk 40,000 / $= 9{,}090 + 9{,}912 + 11{,}265 + 6{,}830 + 4{,}347$

$= 41{,}444$ [*Rate is too low!!*]

IRR Solution (15%)

Tk 40,000 $= 10{,}000(PVIF_{15\%,1}) + 12{,}000(PVIF_{15\%,2}) + 15{,}000(PVIF_{15\%,3}) + 10{,}000(PVIF_{15\%,4}) + 7{,}000(PVIF_{15\%,5})$

Tk 40,000 $= 10{,}000(.870) + 12{,}000(.756) + 15{,}000(.658) + 10{,}000(.572) + 7{,}000(.497)$

Tk 40,000 / $= 8{,}700 + 9{,}072 + 9{,}870 + 5{,}720 + 3{,}479$

$= 36{,}841$ [*Rate is too high!!*]

Interpolate

$$.05 \left[X \left[\begin{array}{ll} .10 & 41{,}444 \\ IRR & 40{,}000 \\ .15 & 36{,}841 \end{array} \right] \mathbf{1{,}444} \right] \quad 4{,}603$$

$$\frac{X}{.05} = \frac{1{,}444}{4{,}603}$$

Interpolate

		.10	41,444		
.05	X	IRR	40,000	1,444	4,603
		.15	36,841		

$$\frac{X}{.05} = \frac{1,444}{4,603}$$

Interpolate

$$.05 \left[X \left[\begin{array}{ll} .10 & 41,444 \\ IRR & 40,000 \\ .15 & 36,841 \end{array} \right] \mathbf{1,444} \right] \quad 4,603$$

$$X = \frac{(1,444)(0.05)}{4,603} \qquad X = .0157$$

IRR = .10 + .0157 = .1157 or 11.57%

IRR Acceptance Criterion

The management of *Jambura Farm* has determined that the hurdle rate is 13% for projects of this type.

Should this project be accepted?

No! JF will receive 11.57% for each dollar invested in this project at a cost of 13%. [IRR < Hurdle Rate]

IRR Strengths & Weaknesses

Strengths:

- Accounts for TVM
- Considers all cash flows
- Less subjectivity

Weaknesses:

- Assumes all cash flows reinvested at the IRR
- Difficulties with project rankings and multiple IRRs

Profitability Index (PI)

PI is the ratio of the present value of a project's future net cash flows to the project's initial cash outflow.

$$PI = \left[\frac{CF_1}{(1+k)^1} + \frac{CF_2}{(1+k)^2} + \ldots + \frac{CF_n}{(1+k)^n} \right] \div ICO$$

<< OR >>

$$PI = 1 + [\ NPV / ICO\ ]$$

PI Acceptance Criterion

PI = 38,572 / 40,000

= .9643

Should this project be accepted?

No! The PI is less than 1.00. This means that the project is not profitable. [Reject as PI < 1.00]

PI Strengths & Weaknesses

Strengths:

- Same as NPV
- Allows comparison of different scale projects

Weaknesses:

- Same as NPV
- Provides only relative profitability
- Potential ranking problems

Evaluation Summary

Jambura Farm's Independent Project

Method	Project	Comparison	Decision
PBP	3.3	3.5	**Accept**
IRR	11.47%	13%	**Reject**
NPV	-1,424	0	**Reject**
PI	.96	1.00	**Reject**

Other Project Relationships

- ***Dependent*** – A project whose acceptance depends on the acceptance of one or more other projects.

- ***Mutually Exclusive*** – A project whose acceptance precludes the acceptance of one or more alternative projects.

INTRODUCTION

- Dividend refers to that part of profits of a company which is distributed among its shareholders.
- Dividend is the right as well as reward of the shareholders.
- Investors → maximum returns
- Company → long term growth

  if a company provide more dividend to its shareholders then it has to meet its future requirement through issue of shares or debt.

- Dividend policy thus affects both the long term financing and wealth of shareholders.

- The firm decision to pay dividends should be in such a manner so as to equitably apportion the distributed profits and retained earnings.

DIVIDEND DECISION AND VALUATION OF FIRMS

- Vale of the firm can be maximized if shareholders wealth is maximized.
- According to 1 school of thought dividend decision does not affect the shareholders wealth and hence the valuation of the firm.
- According to other school of thought dividend decision materially affect the share holders wealth and also the valuation of the firm.

- The views of two school of thought are discussed under two groups –

1. The irrelevance concept of dividend or theory of irrelevance.
2. The relevance concept of dividend or theory of relevance.

THE THEORY OF IRRELAVENCE

(A) RESIDUAL THEORY --

According to this theory, dividend decision has no effect on the wealth of the shareholders or prices of the shares and hence it is irrelevant so far as the valuation of the firm is concerned. This theory regards dividend decision merely as a part of financing decision because the earnings available may be retained in the business for re-investment. But if the funds are not required in the business they may be distributed as dividend. Thus, the decision to pay dividends or retain the earnings may be taken as residual decision.

(B) MODIGLIANI AND MILLER APPROCH (MM MODEL) –

According to this approach, Dividend policy has no effect on the market price of the share and the value of the firm is determined by the earning capacity of the firm or its investment policy.

- **ASSUMPTIONS OF MM HYPOTHESIS –**

1. **There are perfect capital markets.**
2. **Investors behave rationally.**
3. **Information about the company is available to all without any cost.**
4. **There are no floatation cost or transaction cost.**
5. **No investor is large enough to effect the market price of the share.**
6. **There are either no taxes or there are no differences in the tax rates applicable to dividends and capital gains.**
7. **The firm has a rigid investment policy.**
8. **There is no risk or uncertainty. (MM dropped this assumption later)**

- THE ARGUEMENT OF MM –
- MM argued that whatever increase in the value of the firm results from the payment of dividend, will be exactly offset by the decline in the market price of shares because of external financing and there will be no change in the total wealth of the shareholders.

- Example: -

If a company, having investment opportunities, distributes all its earning among the shareholders, it will have to raise additional funds from external sources. This will result in increase in number of shares or payment of interest charges resulting in fall in the earning per share In the future. Thus whatever a shareholder gains on account of dividend payment is neutralised completely by the fall in market price of the share.

- To be more specific the market price of share in the beginning of a period is equal to the present value of the dividends paid at the end of the period plus the market price of the share at the end of the period.
- Following is the formula –

$$Po = \frac{D1 + P1}{1 + Ke}$$

- Po = market price of share at beginning of the period.
- D1 = dividend to be received at the end of the period.
- P1 = market price per shares at the end of the period.
- Ke = cost of equity capital.

value of P1 can be derived as under—

$$P1 = Po (1 + Ke) – D1$$

- It can be explained in another form also presuming that investment required by the firm on account of payment of dividend is financed out of the new issue of equity shares.
- Number of shares can be computed by the following formula --

$$m = \frac{I\,(E - nD1)}{P1}$$

- The value of the firm can be ascertained with the help of the following formula –

$$nPo = \frac{(n+m)P1 - (I - E)}{1+Ke}$$

- M = number of shares to be issued.
- I = investment requirement.
- E = total earnings of the firm during the period.
- P1 = market price per share at the end of the period.
- Ke = cost of equity capital.
- n = no. of shares outstanding at beginning .
- D1 = dividend to be paid at the end of the period.
- nPo = value of the firm.

CRITICISM OF MM APPROACH

1. Perfect capital market does not exist in reality.
2. Information about the company is not available to all persons.
3. The firm have to incur flotation cost.
4. Taxes do exist.
5. Firm do not follow a rigid investment policy.
6. The investors have to pay fees, brokerage etc. while doing any transactions.
7. Shareholders may prefer current income as compare to further gains.

THE THEORY OF RELEVANCE

- The other school of thought on dividend decisions considerably affect the value of the firm.
- The advocates of this school of thought include Myron Gordon, Jone Linter, James Walter and Richardson.
- According to them dividends communicate information to the investors about the firms profitability and hence dividend decisions becomes relevant.

- Those firms which pay higher dividends, will have greater value as compared to those which do not pay dividends or have a lower dividend pay out ratio.
- We have examined below two theories representing this notion:

  (1) Walter's approach, and

  (2) Gordon's approach.

WALTER'S APPROACH

- Prof. Walter's approach supports the doctrine that dividend decisions are relevant and affect the value of the firm. The relationship between the internal rate of return (r) earned by the firm and its cost of capital (k) is very significant in determining the dividend policy to sub serve the ultimate goal of maximising the wealth of the shareholders.

- If r > k, the firm is earning higher rate of return , the firm should retain the earnings. Such firms are termed as growth firms and the optimum pay out would be zero.
- If r < k, the optimum payout would be 100% and the firm should distribute the entire earning as dividend.
- If r = k, the dividend policy will not affect the market value of shares as the shareholders will get the same returns from the firm as expected by them.

Assumptions of walter's model

1. The investment of the firm are financed through retained earnings only and the firm does not use external source of fund.
2. The internal rate of return(r) and the cost of capital(k) of the firm are constant.
3. Earnings and dividends do not changed while determining the value.
4. The firm has a very long life.

Walter's formula for determining the value of shares:

$$P = \frac{D}{Ke - g}$$

- P = price of equity shares.
- D = initial dividend per share.
- Ke = cost of equity capital.
- g = expected growth rate of earnings.

$$P = \frac{D}{Ke} + \frac{r\,(E - D) / Ke}{Ke}$$

- P = market price per share.
- D = dividend per share.
- r = internal rate of return.
- E = earning per share.
- Ke = cost of equity capital.

Criticism of Walter's model

1. The firms do raise funds by external financing.
2. The internal rate of return also does not remain constant.
3. the assumption that cost of capital will remain constant also does not hold good. As a firms risk pattern does not remain constant it is not proper to assume that k will always remain constant.

GORDEN'S APPROACH

- Myron Gordon has also developed a model on the lines of prof. Walter. His basic valuation model is based on the following assumptions;

- The firm is an all equity firm.
- No external financing is available or used. Retained earnings represent the only source of financing investment programs.

- The rate of return on the firms investment is constant.
- The retention ratio, b , once decided upon is constant thus the growth rate of the firm g = br, is also constant.
- The cost of capital of the firm remains constant and it is greater then the growth rate, K > br.
- Corporate taxes do not exist.

Gordon's basic valuation formula

$$P = \frac{E(1 - b)}{Ke - br} \qquad Po = \frac{D1}{Ke - g} = \frac{Do(1 + g)}{Ke - g}$$

- P = price of share
- E = earning per share
- b = retention ratios
- Ke = cost of equity capital
- br = g = growth rate in r
- D0 = dividend per share
- D1 = expected dividend at the end of year 1

Gordon's revised model

- The basic assumption in Gordon's basic valuation model that cost of capital (k) remains constant for a firm is not true in practice . Thus, Gordon revised this basic model to consider his risk and uncertainty. In the revised model he suggested that even when r = k, dividend policy affects the value of shares on account of uncertainty of future , shareholders discount future dividends at higher rate then they discount near dividends.

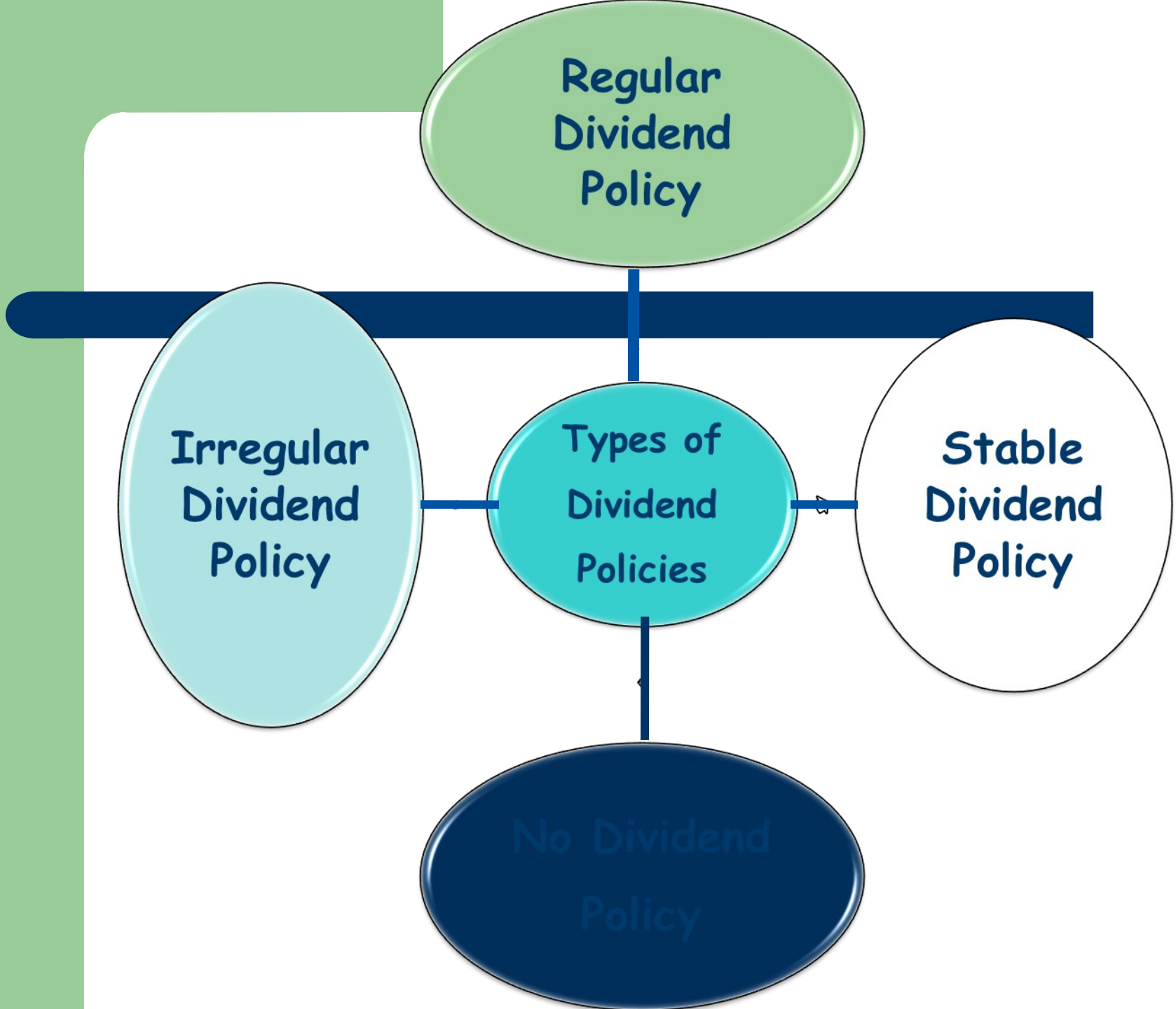
DETERMINANTS OF DIVIDEND POLICY

- Those internal and external factors which are taken into consideration while taking decisions like how much profit is to be distributed to shareholders and when.

FACTORS DETERMINING DIVIDEND POLICY

- Legal, contractual and internal constraints and restrictions
- Magnitude and trend of earnings
- Type of shareholders
- Nature of industry
- Age of the company
- Owner’s considerations

- Future financial requirements
- Capital market considerations
- Dividend pay-out ratio
- Government’s economic policy
- Inflation
- Taxation policy
- Stability of dividends
- Requirements of institutional investors
- Control objectives


Regular Dividend Policy
Irregular Dividend Policy
Types of Dividend Policies
Stable Dividend Policy
No Dividend Policy

Regular Dividend Policy:-

Payment of dividend at usual rates is termed as regular dividend policy

Advantages of Regular Dividend Policies:-

- Establishes profitable record of company.
- Creates confidence among shareholders.
- Helps in long term financing & renders financing easier.
- Stablises market value of shares

Stable Dividend Policy:-

- Lack of variability in dividend payments
- Payment of certain minimum amount of dividend regularly

Advantages of Stable Dividend Policy :-

- Signifies continued normal operations of company
- Stablises market value of shares
- Creates confidence among investors
- Results in continuous flow of national income
- Provides a source of livelihood to many investors

Irregular Dividend Policy:- few companies follow irregular dividend payments because of

- Uncertainty of earnings
- Unsuccessful business operations
- Lack of liquid resources
- Fear of adverse effects of regular dividends payments

No Dividend Policy:- reasons

- Unfavorable working capital position; or
- Requirements of funds for Expansion & Growth

Dividend Policy in Practice

why we determine our dividend policy ?

Normally our Objective →

- maximisation of shareholders wealth
- Firm should retain earnings only if it has profitable investment opportunities & return is higher than cost of retain earnings

In Actual Practice →

- Stable dividend policy → maximise market value of shares
- Image improves → approach market for raising additional funds → for future expansion & growth

AIM → STABLE DIVIDENDS + GROWTH

Forms Of Dividend

- Profit Dividends
- Liquidation Dividends
- Interim Dividends
- Final Dividends

On the basis of medium which they are paid

- Cash Dividend
- Scrip or Bond Dividend
- Property Dividend
- Stock Dividend

Bonus Issue

- A company can pay bonus either in cash or in form of shares
- A company can make partly paid shares as fully paid or they can issue fresh fully paid up shares

Effects of Bonus issue

- When a company has huge profits and reserves, its balance sheets does not depicts a true picture and share holders don’t get fair return on there capital.
- If AOA of a company permits , the excess amount can be distributed among the existing share holders by the way of bonus issue.

- Effects to which are :
- Reduction in accumulated profit
- Increase in paid up share capital of company.

Thus by issue of bonus shares the profits are converted into share capital. This is known as capitalization of profits and reserves.

Objectives of Bonus issue

- To bring the amount of issue and paid up capital in line.
- To bring down high rate of dividend on its capital and avoid labour problems

Advantages of issue of bonus shares

- Advantages from the view point of the company
- Advantages from the view point of investors or shareholders

Disadvantages of issue of bonus shares

- The issue of shares suffers from various disadvantages too which are as follows :-

1. Drastic fall in future rate of dividend as it is only the capital that increases and not the actual resources of the company. The earnings do not usually increase with the issue of bonus shares.
2. The fall in future rate of dividend results in the fall of the market price of shares considerably, this may cause unhappiness among shareholders.
3. The reserves of the company after the bonus issue decline and leave lesser security to investors.

Guidelines for the issue of bonus shares

New guidelines on bonus shares have been issued by the Primary Market Department of SEBI vide press release dated 13.4.1994. modifying the earlier guidelines issued by SEBI on 11.6.1992.

SEBI believes that the following modified guidelines will be observed by the BOD :-

1. These guidelines are applicable to existing limited companies.
2. No bonus issue shall be made which will dilute the value or rights of the holders of debentures convertible fully or partly.

3. The bonus issue is made out of free reserves built out of the genuine profits or share premium collected in cash only.
4. Reserves created by revaluation of fixed assets are not capitalized.
5. The declaration of bonus issue, in lieu of dividend, is not made.
6. The bonus issue is not made unless the partly paid shares, if any existing, are made fully paid.
7. A company which announces its bonus issue after the approval of the BOD must implement the proposals within a period of six months.

8. There should be a provision in the Articles of Association of the company for capitalization of resources, etc.
9. Consequent to the issue of bonus shares, if the subscribed and paid-up capital exceed the authorized share capital, a resolution shall be passed by the company at its general body meeting for increasing the authorized capital.

Sources of bonus issue

1. Balance in the Profit and Loss Account.
2. General Reserve
3. Capital Reserve
4. Balance in the Sinking Fund Reserve for Redemption of Debentures after the debentures have been redeemed.
5. Development Rebate Reserve. Development Allowance Reserve, etc., allowed under the Income Tax Act 1961, after the expiry of the specified period (8 years).
6. Capital Redemption Reserve Account.
7. Premium received in cash.

- However u/s 78 (2) of the Companies Act, 1956 Share Premium Account and u/s 80(5) Capital Redemption Reserve Account can be used to declare fully paid bonus shares only.
- Accumulated Profits are usually used to issue bonus shares although current profits can also be used.
- Bonus shares cannot be issued out of reserves created for specific purposes, premium received in kind and reserves created out of revaluation of assets.

ACCOUNTING TREATMENT FOR THE ISSUE OF BONUS SHARES

When the unissued shares are issued to the existing shareholders as fully paid up bonus shares, the following journal entries are to be recorded.

For the declaration of bonus:

1. Profit and loss appropriation A/c Dr…

OR Share premium A/c

OR Respective reserve A/c

To bonus shareholders A/c

2. For the issue of bonus shares

Bonus to shareholder A/c Dr…

To share capital A/c

To share premium A/c

(if shares are issued at premium)

- When the existing partly paid shares are converted into fully paid shares as a result of bonus issue , the following journal entries shall be made:

FOR THE DECLERATION OF BONUS:-

Profit and loss appropriation A/c Dr…

OR Respective reserve A/c

To bonus to shareholder A/c

FOR MAKING FINAL CALL ON SHARE DUE:-

Share final call A/c Dr…

To share capital A/c

FOR THE ISSUE OF BONUS SHARES:-

Bonus to shareholder A/c Dr…

To share final call A/c

EXAMPLE :-

- **KSB** is one of the world's leading manufacturers of **pumps**, valves and related systems for process engineering applications and building services.

- On 18/4/2011 KSB PUMPS ISSUED BONUS SHARES *IN PROPOTION OF EVERY 1 BONUS SHARE FOR EVERY 1 EXISTING EQUITY SHARE HELD*

BONUS ISSUE Vs. STOCK SPLIT

- Accumulation of the earnings in reserve funds instead of paying it to share-holders in form of dividend and conversion into share-capital by allotment to share-holders in proportion to their existing holding is **bonus issue.**
- So, Share-capital of the company increases with a decrease in its Reserve profits.
- Share-holders get bonus shares in compensation of dividend.

- On the other hand stock split means reducing the par value of the shares by increasing the number of shares.
- It does not effect the accumulated profits.
- ***Example :-*** a share of Rs.100 may be split into 10 shares of Rs.10 each.

Benefit to shareholders after stock split

- Due to stock split, the high priced stocks will be available at lower rates.
- The retailer or small investors can easily afford to buy stocks of low price.
- There is also a probability that after stock split; the stock price may go up as more investors may rush to buy stocks at lower rates.

THANK YOU

Working Capital Management

by

Dr.K.Sudarsan

Working capital

Introduction

- Working capital typically means the firm's holding of current or short-term assets such as cash, receivables, inventory and marketable securities.
- These items are also referred to as circulating capital
- Corporate executives devote a considerable amount of attention to the management of working capital.

Definition of Working Capital

Working Capital refers to that part of the firm's capital, which is required for financing short-term or current assets such a cash marketable securities, debtors and inventories. Funds thus, invested in current assets keep revolving fast and are constantly converted into cash and this cash flow out again in exchange for other current assets. Working Capital is also known as revolving or circulating capital or short-term capital.

Concept of working capital

- There are two possible interpretations of working capital concept:
  1. Balance sheet concept
  2. Operating cycle concept

Balance sheet concept

There are two interpretations of working capital under the balance sheet concept.

a. Excess of current assets over current liabilities

b. gross or total current assets.

- Excess of current assets over current liabilities are called the net working capital or net current assets.
- Working capital is really what a part of long term finance is locked in and used for supporting current activities.
- The balance sheet definition of working capital is meaningful only as an indication of the firm's current solvency in repaying its creditors.
- When firms speak of shortage of working capital they in fact possibly imply scarcity of cash resources.
- In fund flow analysis an increase in working capital, as conventionally defined, represents employment or application of funds.

- Operating cycle concept
- A company's operating cycle typically consists of three primary activities:
  - Purchasing resources,
  - Producing the product and
  - Distributing (selling) the product.

  These activities create funds flows that are both **unsynchronized** and **uncertain.**

  Unsynchronized because cash disbursements (for example, payments for resource purchases) usually take place before cash receipts (for example collection of receivables).

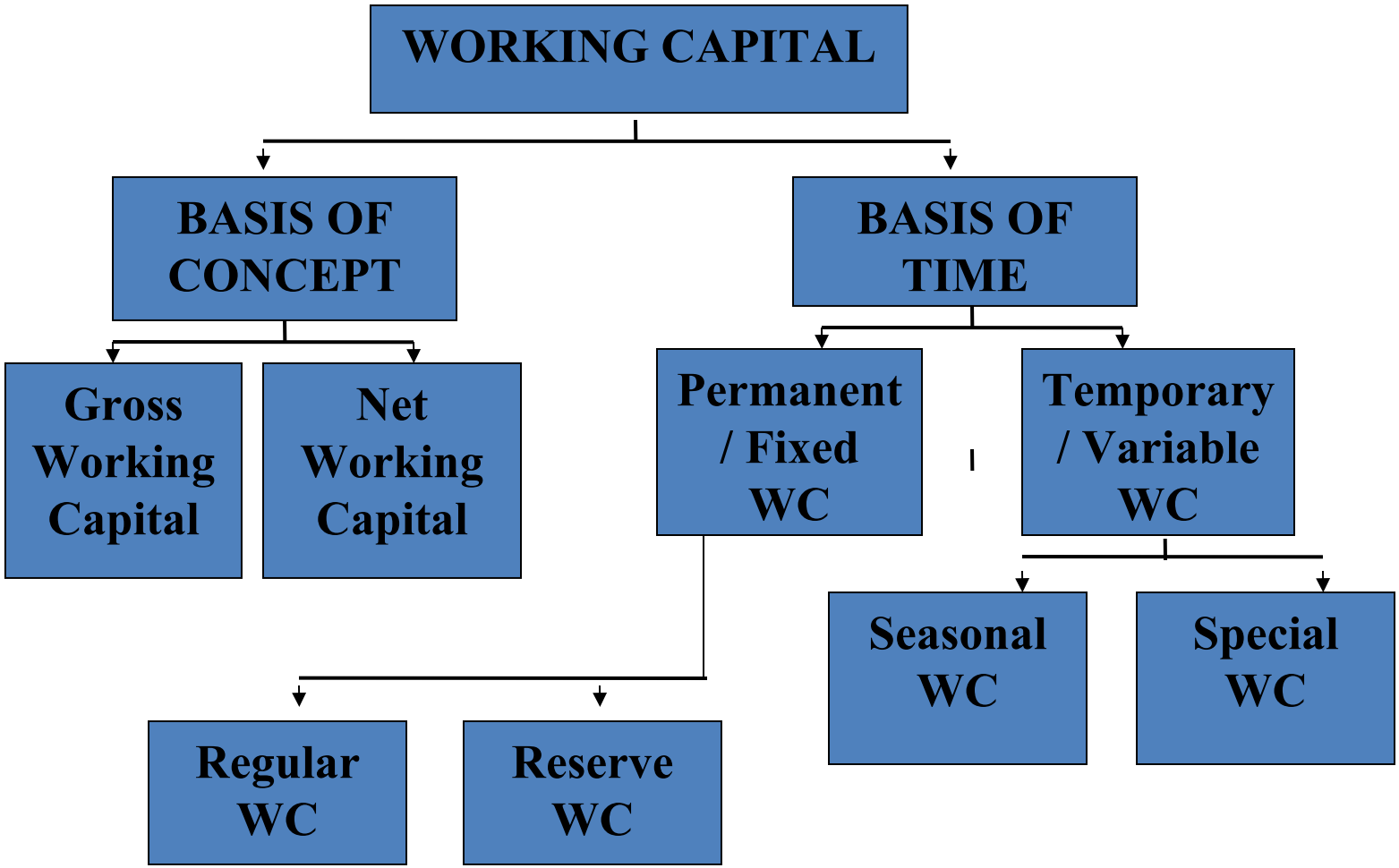
  They are uncertain because future sales and costs, which generate the respective receipts and disbursements, cannot be forecasted with complete accuracy.

" ***circulating capital means current assets of a company that are changed in the ordinary course of business from one form to another, as for example, from cash to inventories, inventories to receivables, receivable to cash"***

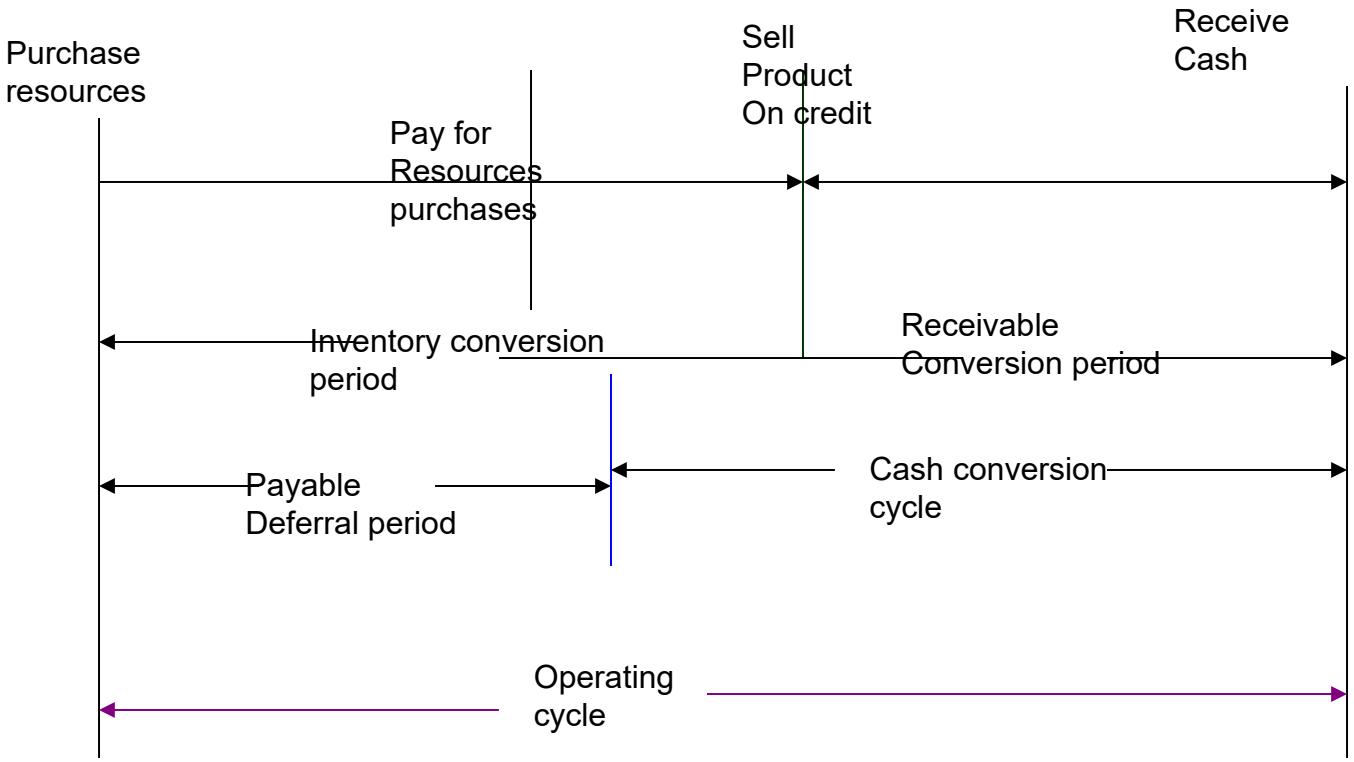
……Genestenbreg

- The firm has to maintain *cash balance* to pay the bills as they come due.
- In addition, the company must invest in *inventories* to fill customer orders promptly.
- And finally, the company invests in *accounts receivable* to extend credit to customers.
- Operating cycle is equal to the length of inventory and receivable conversion periods.

TYPES OF WORKING CAPITAL



Operating cycle of a typical company



- Inventory conversion period

$$= \frac{\text{Avg. inventory}}{\text{Cost of sales/365}}$$

- Receivable conversion period

$$= \frac{\text{Accounts receivable}}{\text{Annual credit sales/365}}$$

- Payables deferral period

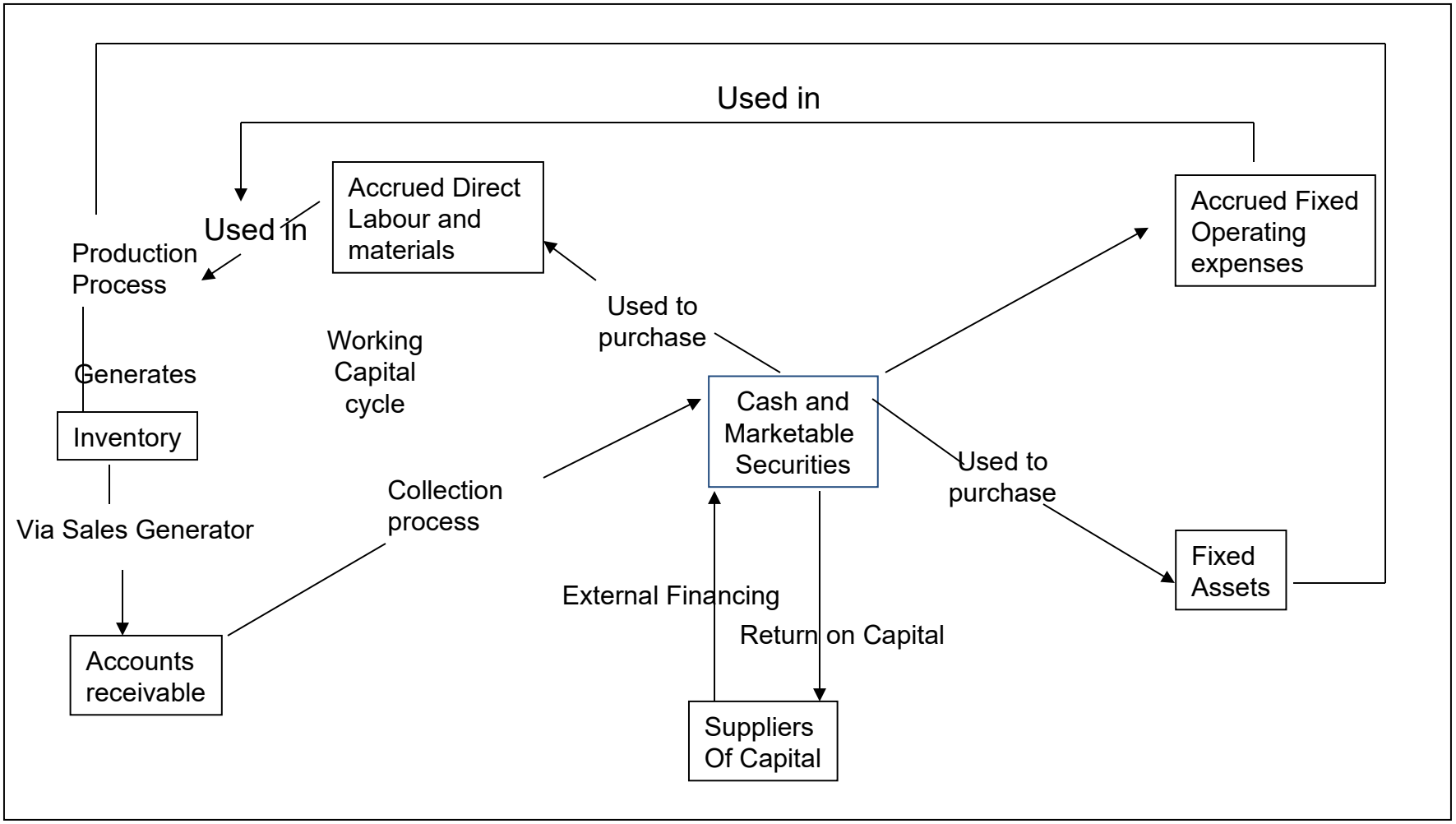
$$= \frac{\text{Accounts payable + Salaries, etc}}{\text{(Cost of sales + selling, general and admn. Expenses)/365}}$$

- *Cash conversion cycle* = operating cycle – payables deferral period.
- Importance of working capital
  - Risk and uncertainty involved in managing the cash flows
  - Uncertainty in demand and supply of goods, escalation in cost both operating and financing costs.
- Strategies to overcome the problem
  - Manage working capital investment or financing such as

- Holding additional cash balances beyond expected needs
- Holding a reserve of short term marketable securities
- Arrange for availability of additional short-term borrowing capacity
- One of the ways to address the problem of fixed set-up cost may be to hold inventory.
- One or combination of the above strategies will target the problem

- Working capital cycle is the life-blood of the firm

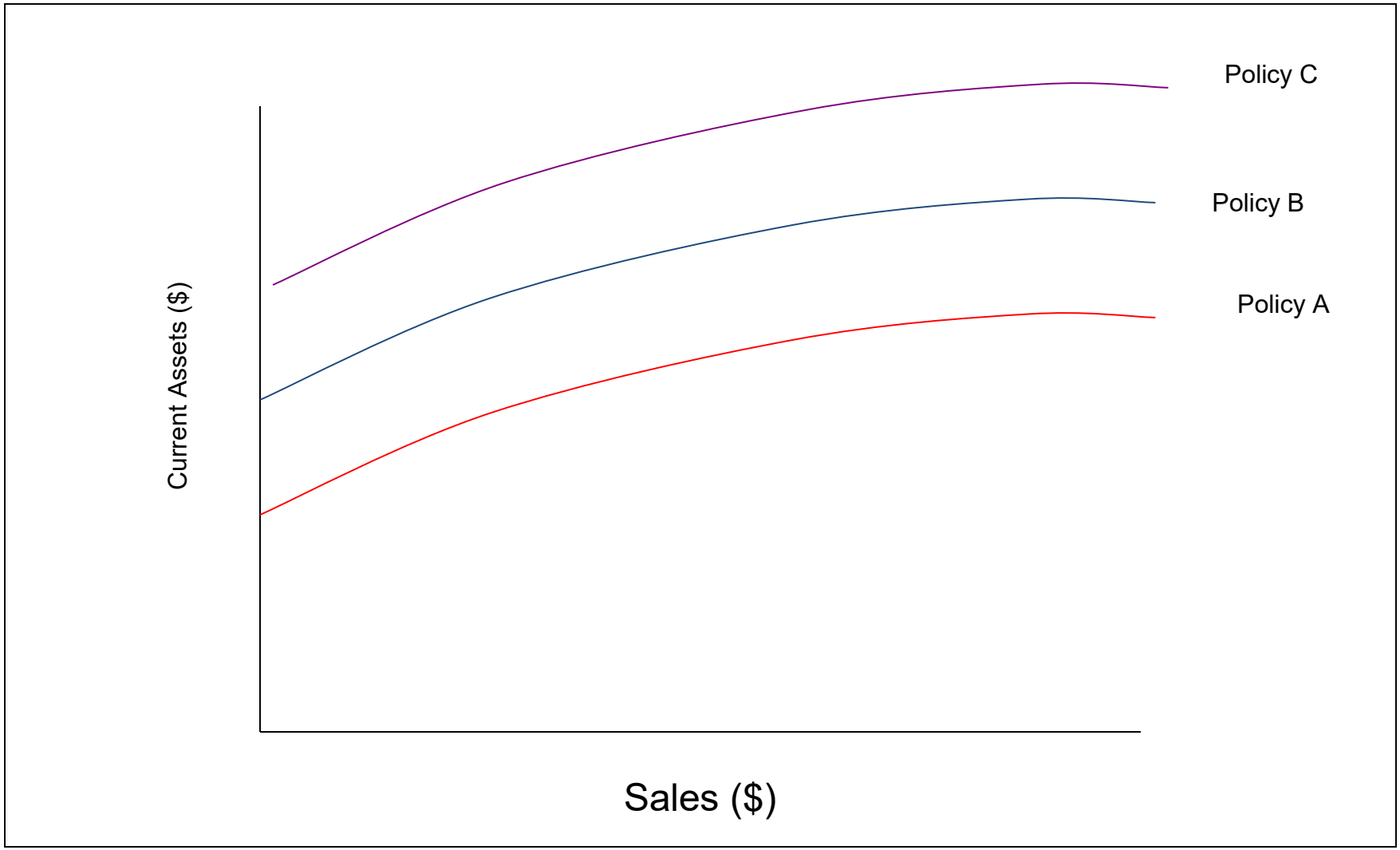
Resource flows for a manufacturing firm



Working capital investment

- The size and nature of investment in current assets is a function of different factors such as type of products manufactured, the length of operating cycle, the sales level, inventory policies, unexpected demand and unanticipated delays in obtaining new inventories, credit policies and current assets.

Three alternative working capital investment policies

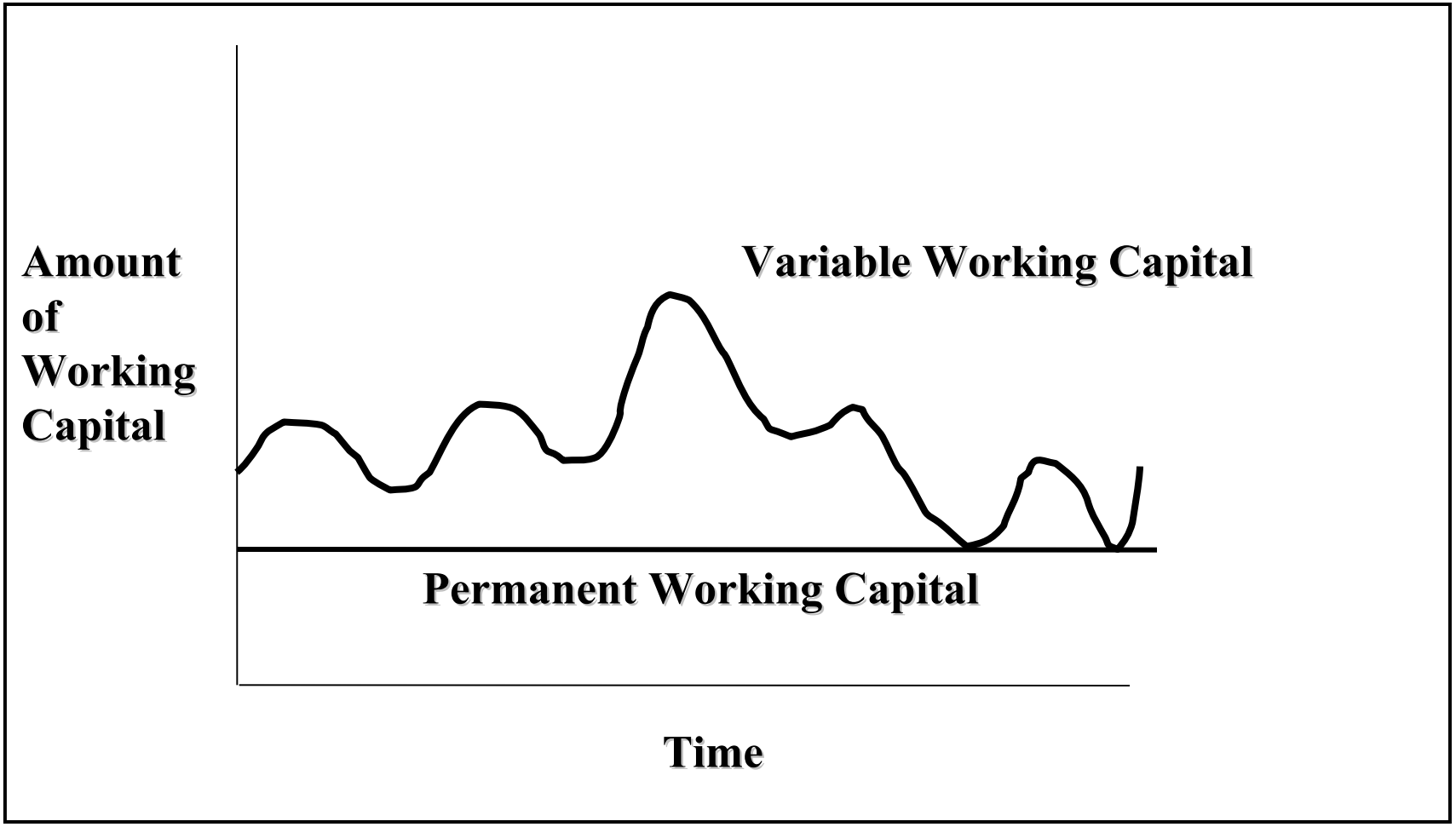


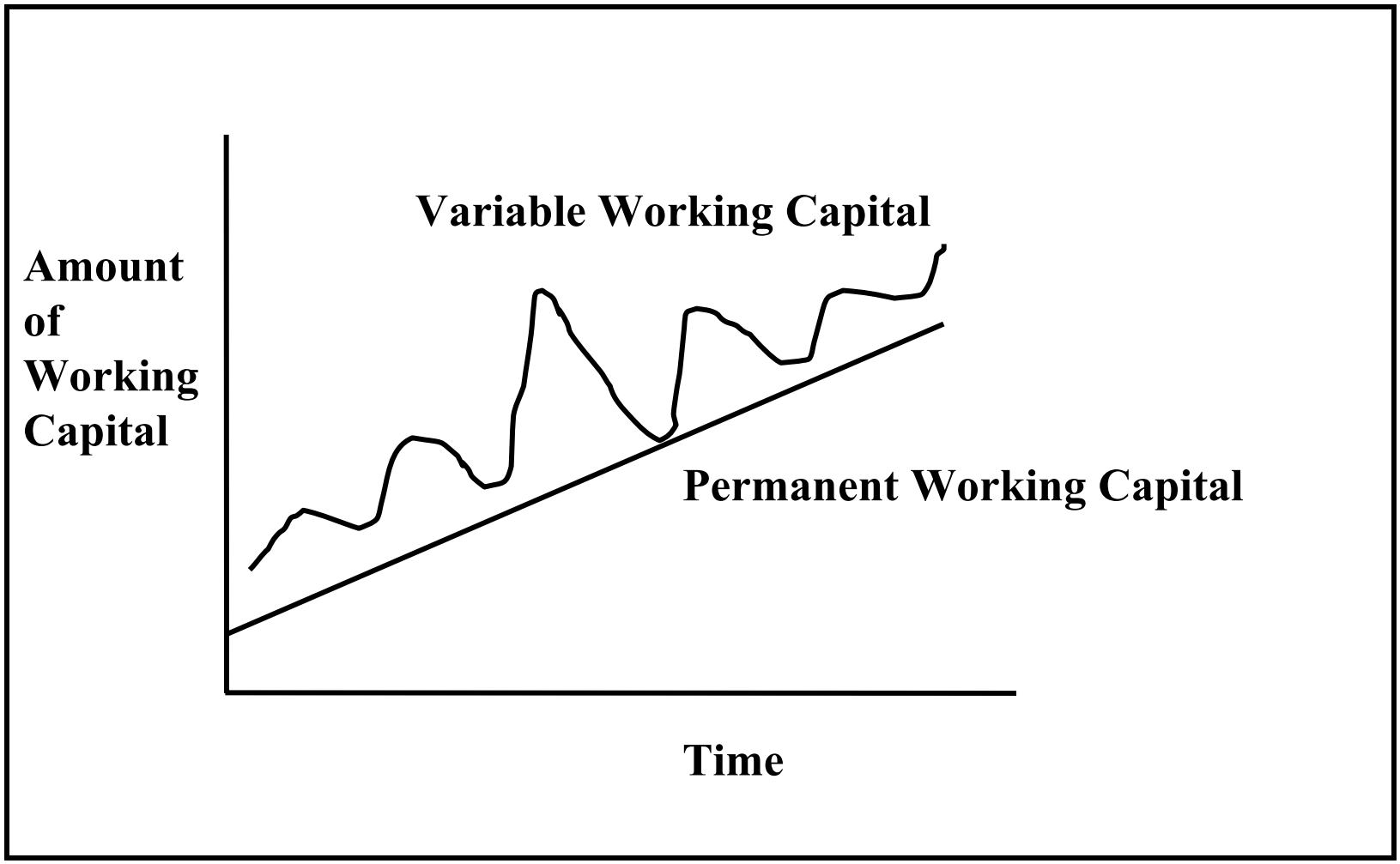
- Policy C represents *conservative* approach
- Policy A represents *aggressive* approach
- Policy B represents a *moderate* approach

- Optimal level of working capital investment

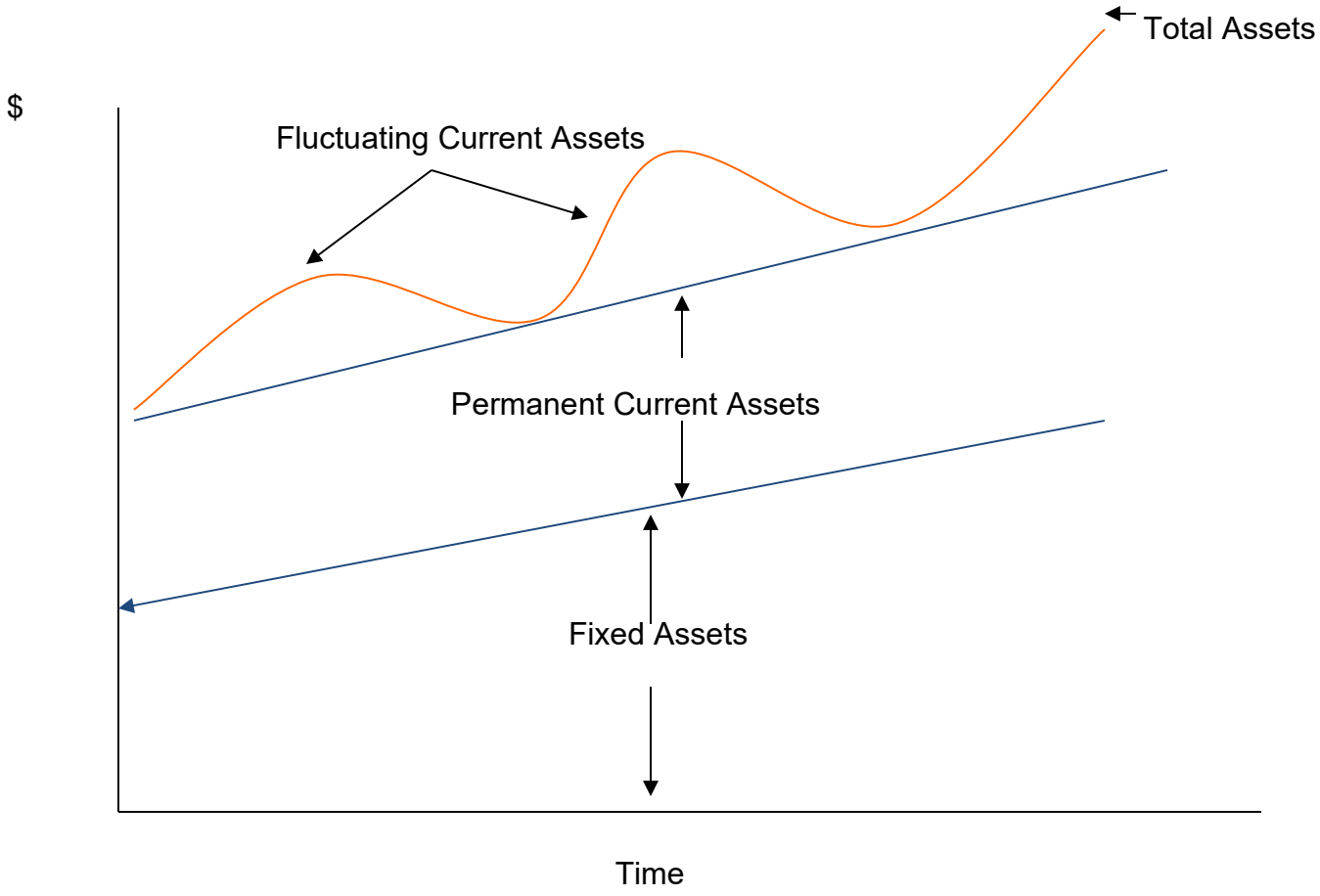
- Risk of long-term versus short-term debt

Difference between permanent & temporary working capital

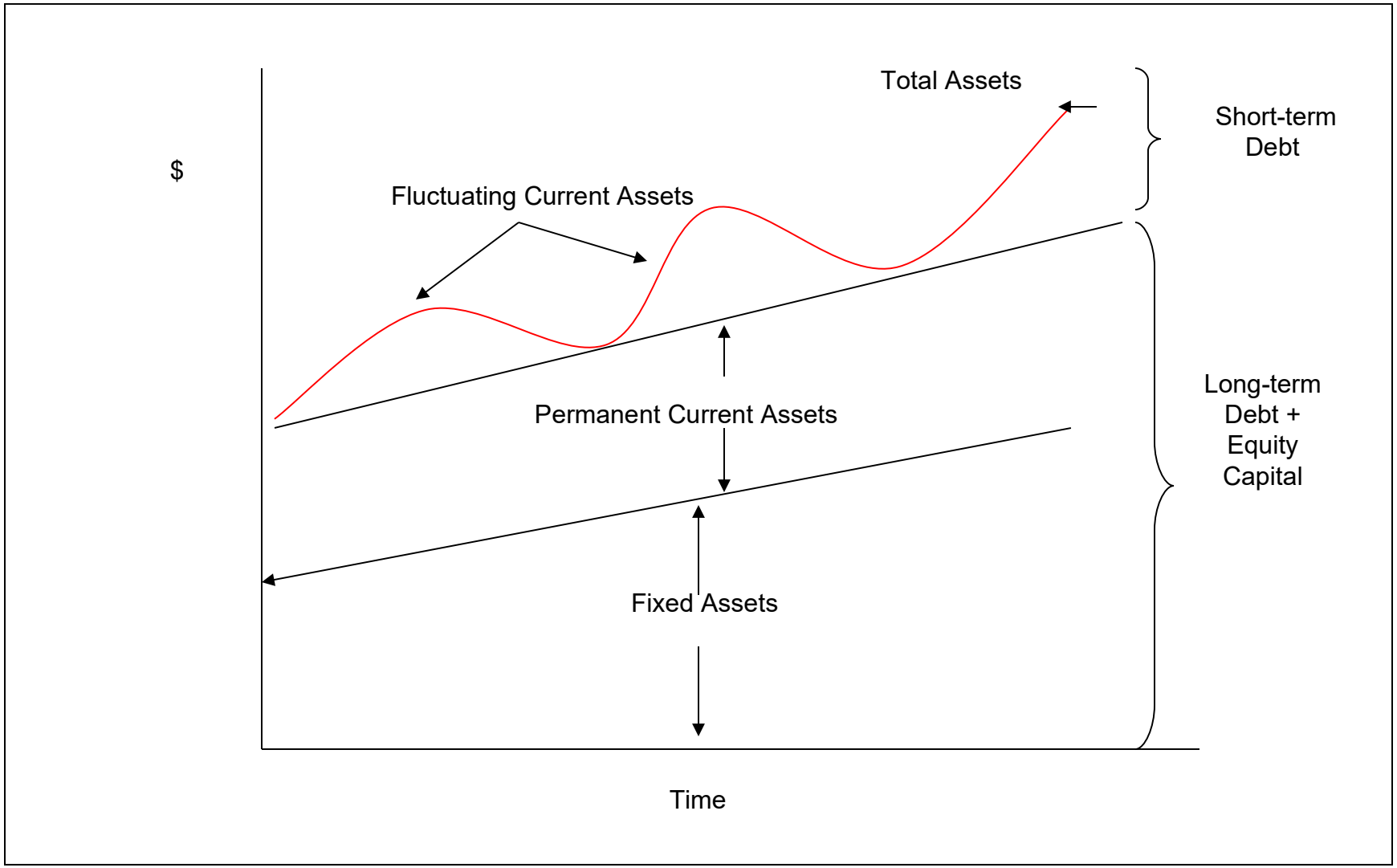



Variable Working Capital
Amount of Working Capital
Permanent Working Capital
Time

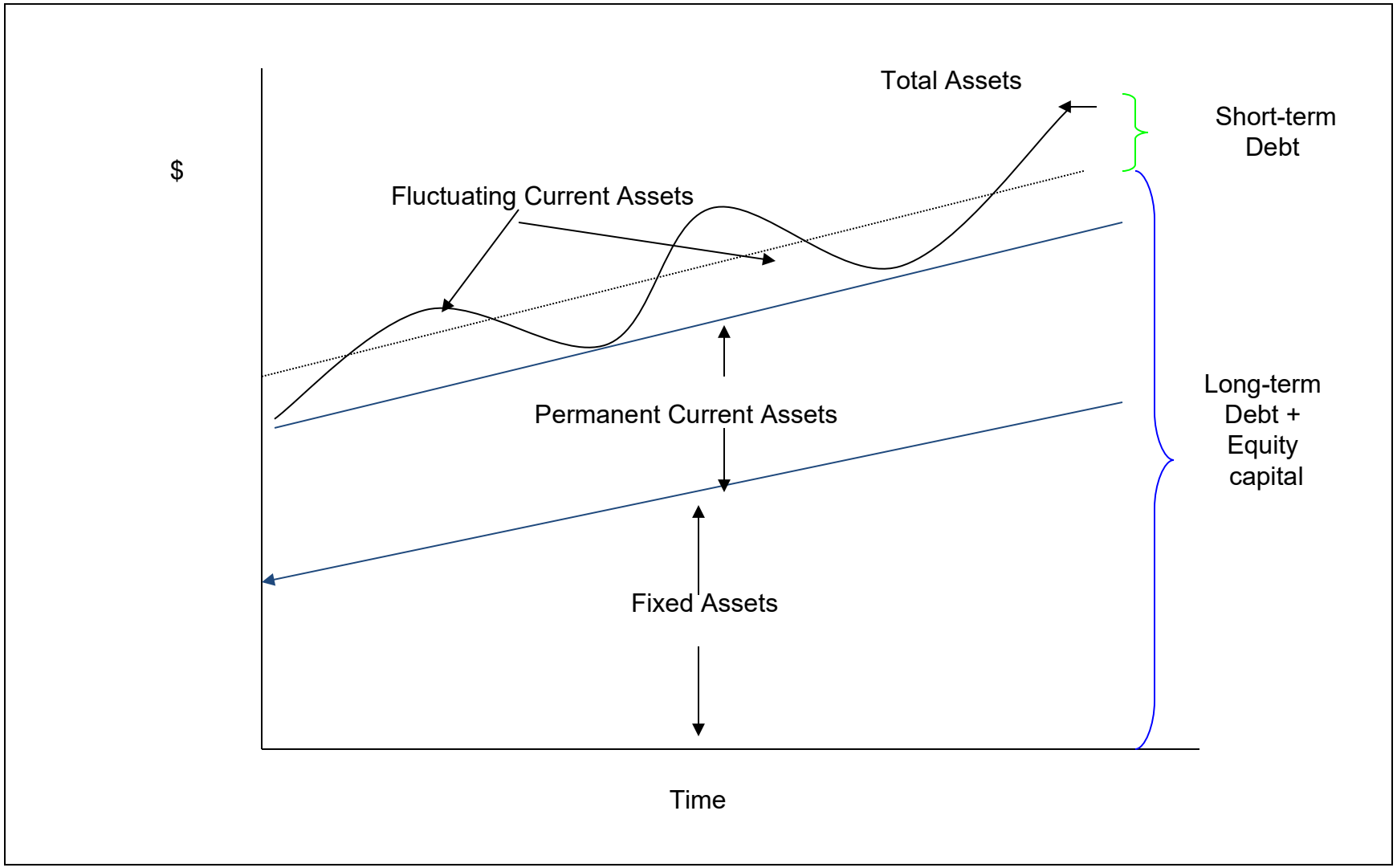
Financing needs over time



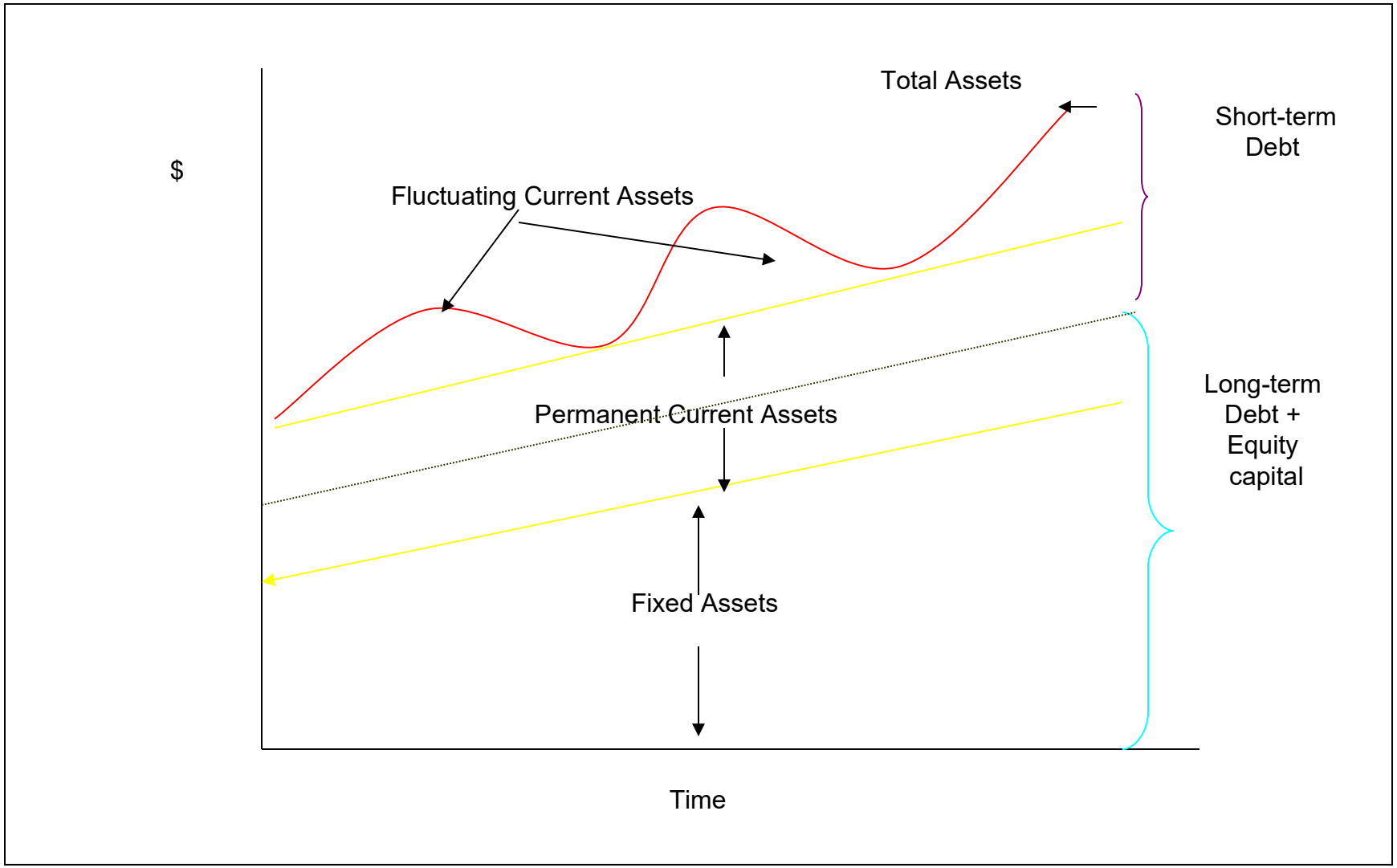
Matching approach to asset financing



Conservative approach to asset financing



Aggressive approach to asset financing



Working capital investment and financing policies

- wc-f-i-p.doc

FACTORS DETERMINING WORKING CAPITAL

1. Nature of the Industry
2. Demand of Industry
3. Cash requirements
4. Nature of the Business
5. Manufacturing time
6. Volume of Sales
7. Terms of Purchase and Sales
8. Inventory Turnover
9. Business Turnover
10. Business Cycle
11. Current Assets requirements
12. Production Cycle

contd…

Working Capital Determinants (Contd…)

13. Credit control
14. Inflation or Price level changes
15. Profit planning and control
16. Repayment ability
17. Cash reserves
18. Operation efficiency
19. Change in Technology
20. Firm’s finance and dividend policy
21. Attitude towards Risk

EXCESS OR INADEQUATE WORKING CAPITAL

Every business concern should have adequate working capital to run its business operations. It should have neither redundant or excess working capital nor inadequate or shortage of working capital.

Both excess as well as shortage of working capital situations are bad for any business. However, out of the two, inadequacy or shortage of working capital is more dangerous from the point of view of the firm.

Disadvantages of Redundant or Excess Working Capital

- Idle funds, non-profitable for business, poor ROI
- Unnecessary purchasing & accumulation of inventories over required level
- Excessive debtors and defective credit policy, higher incidence of B/D.
- Overall inefficiency in the organization.
- When there is excessive working capital, Credit worthiness suffers
- Due to low rate of return on investments, the market value of shares may fall

Disadvantages or Dangers of Inadequate or Short Working Capital

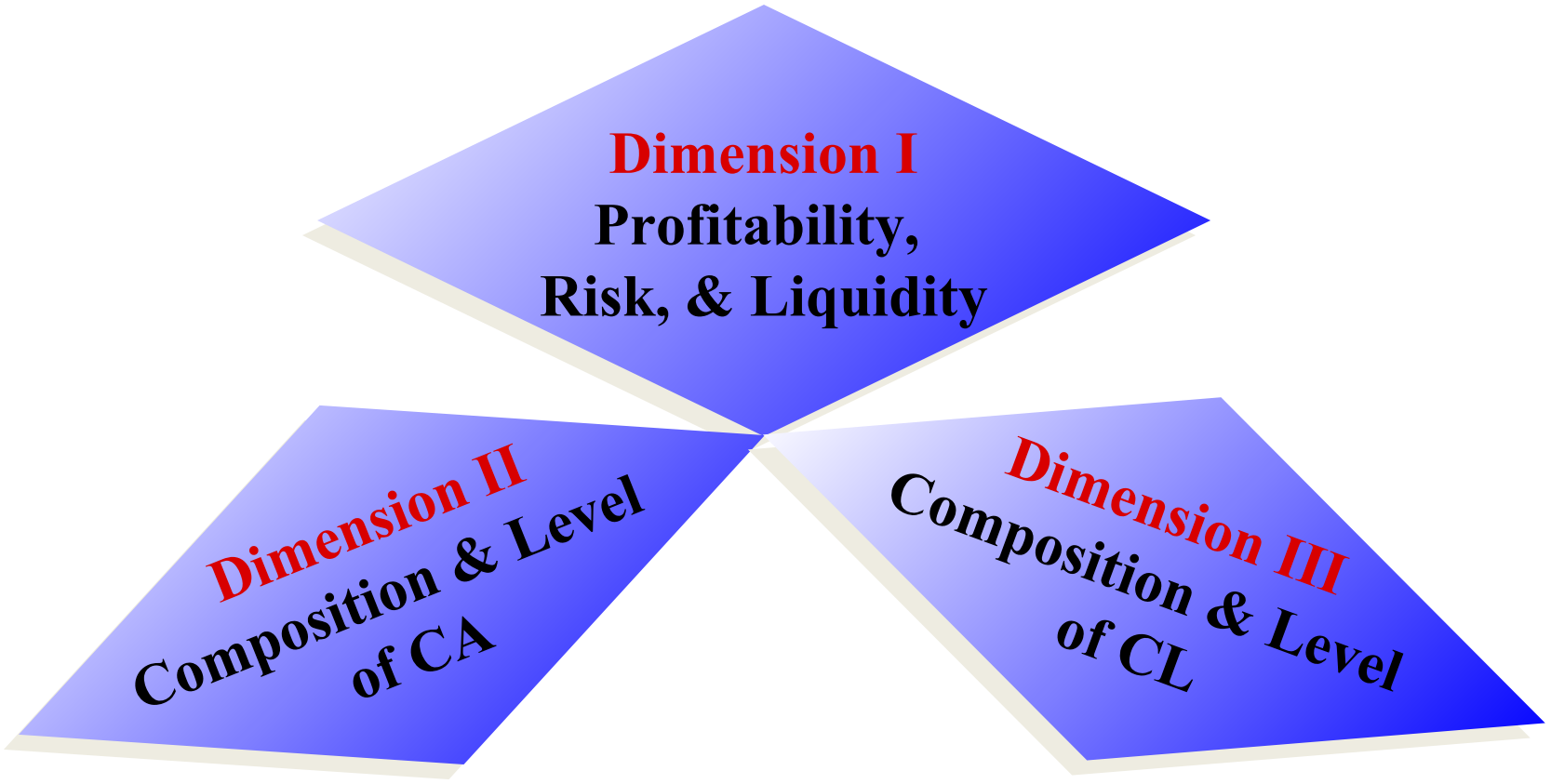
- Can't pay off its short-term liabilities in time.
- Economies of scale are not possible.
- Difficult for the firm to exploit favourable market situations
- Day-to-day liquidity worsens
- Improper utilization the fixed assets and ROA/ROI falls sharply

MANAGEMENT OF WORKING CAPITAL (WCM)

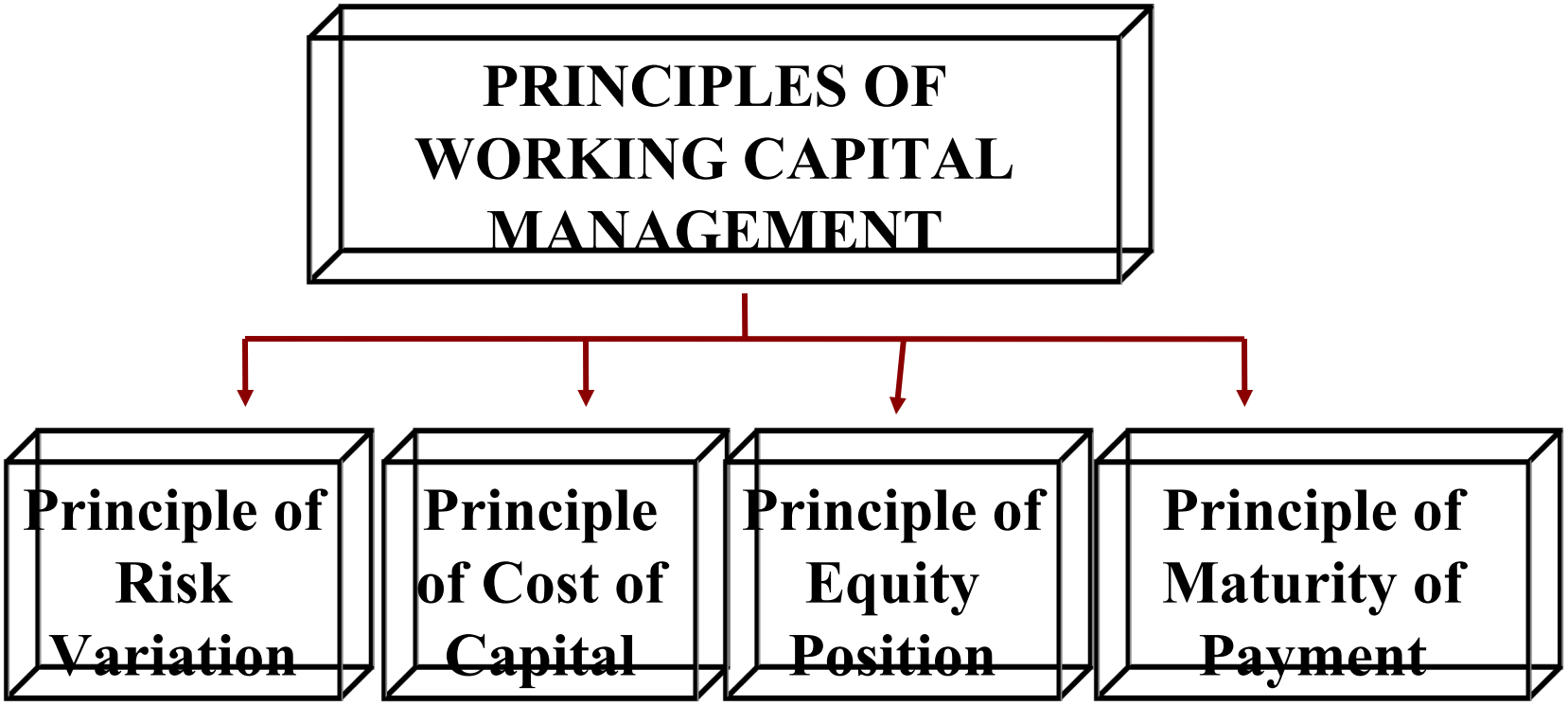
Management of working capital is concerned with the problems that arise in attempting to manage the current assets, the current liabilities and the inter-relationship that exists between them. In other words, it refers to all aspects of administration of CA and CL.

Working Capital Management Policies of a firm have a great effect on its *profitability, liquidity and structural health of the organization.*

3D Nature of Working Capital Management



PRINCIPLES OF WORKING CAPITAL MANAGEMENT / POLICY



FORECASTING / ESTIMATION OF WORKING CAPITAL REQUIREMENTS

Factors to be considered

- **Total costs incurred on *materials, wages and overheads***
- **The *length of time* for which raw materials remain in stores before they are issued to production.**
- **The length of the production cycle or WIP, i.e., *the time taken for conversion of RM into FG.***
- **The *length of the Sales Cycle* during which FG are to be kept waiting for sales.**
- **The average period of *credit allowed to customers.***
- **The *amount of cash required to pay day-to-day expenses of the business.***
- **The *amount of cash required for advance payments if any.***
- **The average period of *credit to be allowed by suppliers.***
- **Time – lag in the payment of wages and other overheads**

PROFORMA - WORKING CAPTIAL ESTIMATES

1. TRADING CONCERN

STATEMENT OF WORKING CAPITAL REQUIREMENTS

	Amount (Rs.)
Current Assets	
(i) Cash	----
(ii) Receivables (For…..Month's Sales)----	----
(iii) Stocks (For……Month's Sales)-----	----
(iv)Advance Payments if any	----
Less : Current Liabilities	
(i) Creditors (For….. Month's Purchases)-	----
(ii) Lag in payment of expenses	-----
WORKING CAPITAL (CA – CL)	**xxx**
Add : Provision / Margin for Contingencies	-----
NET WORKING CAPITAL REQUIRED	**XXX**

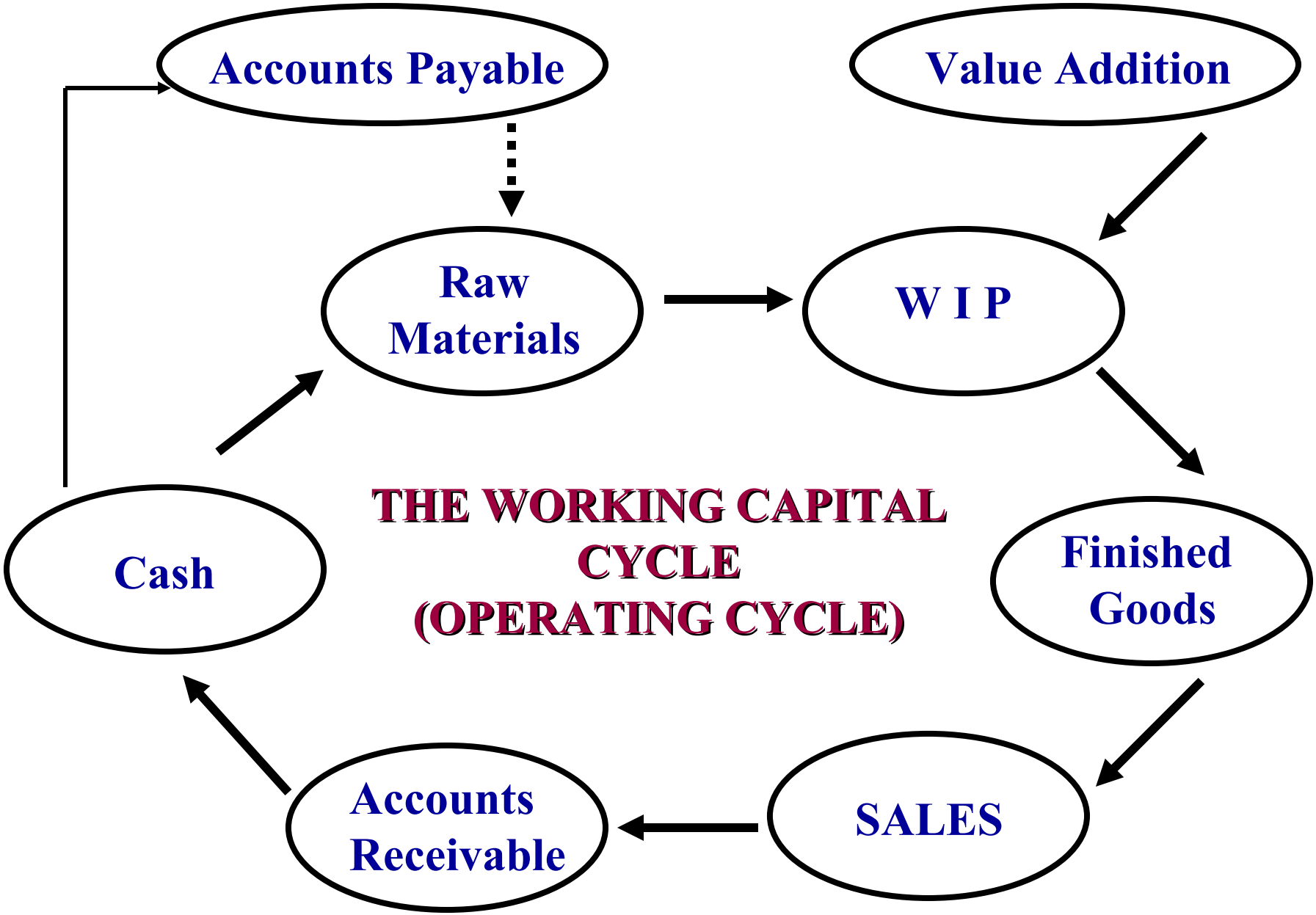
1. MANUFACTURING CONCERN

STATEMENT OF WORKING CAPITAL REQUIREMENTS

	Amount (Rs.)
Current Assets	
(i) Stock of R M(for ….month's consumption)	-----
(ii)Work-in-progress (for…months)	
(a) Raw Materials	-----
(b) Direct Labour	-----
(c) Overheads	-----
(iii) Stock of Finished Goods (for …month's sales)	
(a) Raw Materials	-----
(b) Direct Labour	-----
(c) Overheads	-----
(iv) Sundry Debtors (for …month's sales)	
(a) Raw Materials	-----
(b) Direct Labour	-----
(c) Overheads	-----
(v) Payments in Advance (if any)	-----
(iv) Balance of Cash for daily expenses	-----
(vii)Any other item	-----
Less : Current Liabilities	
(i) Creditors (For….. Month's Purchases)	-----
(ii) Lag in payment of expenses	-----
(iii) Any other	-----
WORKING CAPITAL (CA – CL)xxxx	
Add : Provision / Margin for Contingencies	-----
NET WORKING CAPITAL REQUIRED	XXX

Points to be remembered while estimating WC

- **(1) Profits should be ignored while calculating working capital requirements for the following reasons.**
- **(a) Profits may or may not be used as working capital**
- **(b) Even if it is used, it may be reduced by the amount of Income tax, Drawings, Dividend paid etc.**
- **(2) Calculation of WIP depends on the degree of completion as regards to materials, labour and overheads. However, if nothing is mentioned in the problem, take 100% of the value as WIP. Because in such a case, the average period of WIP must have been calculated as equivalent period of completed units.**
- **(3) Calculation of Stocks of Finished Goods and Debtors should be made at cost unless otherwise asked in the question.**


Accounts Payable
Value Addition
Raw Materials
W I P
Cash
THE WORKING CAPITAL CYCLE (OPERATING CYCLE)
Finished Goods
Accounts Receivable
SALES

Time & Money Concepts in Working Capital Cycle

Each component of working capital (namely inventory, receivables and payables) has two dimensions .....TIME ..... and MONEY, when it comes to managing working capital

TIME IS MONEY

- You can get money to **move faster** around the cycle or **reduce the amount** of money tied up. Then, business will generate more cash or it will need to borrow less money to fund working capital.
- As a consequence, you could **reduce the cost of bank interest** or you'll have additional ***free*** money available to support additional sales growth or investment.
- Similarly, if you can **negotiate improved terms** with suppliers e.g. get longer credit or an increased credit limit, you effectively create ***free*** finance to help fund future sales.

If you	*Then .....*
Collect receivables (debtors) faster	**You release cash from the cycle**
Collect receivables (debtors) slower	**Your receivables soak up cash**
Get better credit (in terms of duration or amount) from suppliers	**You increase your cash resources**
Shift inventory (stocks) faster	**You free up cash**
Move inventory (stocks) slower	**You consume more cash**

MANAGEMENT OF CASH

1. Importance of Cash

When planning the short or long-term funding requirements of a business, it is more important to forecast the likely cash requirements than to project profitability etc.

Bear in mind that more businesses fail for lack of cash than for want of profit.

2. Cash vs Profit

- Sales and costs and, therefore, profits do not necessarily coincide with their associated cash inflows and outflows.

- The net result is that cash receipts often lag cash payments and, whilst profits may be reported, the business may experience a short-term cash shortfall.

- For this reason it is essential to forecast cash flows as well as project likely profits.

Income Statement:	Month 1
Sales ($000)	75
Costs ($000)	65
Profit ($000)	10

CFs relating to Month 1: Amount in ($000)	Month 1	Month 2	Month 3	Total
Receipts from sales	20	35	20	75
Payments to suppliers etc.	40	20	5	65
Net cash flow	(20)	15	15	10
Cumulative net cash flow	(20)	(5)	10	10

Calculating Cash Flows

- Project cumulative positive net cash flow over several periods and, conversely, a cumulative negative cash flow

- Cash flow planning **entails forecasting and tabulating all significant cash inflows** relating to sales, new loans, interest received etc., and then **analyzing in detail the timing of expected payments** relating to suppliers, wages, other expenses, capital expenditure, loan repayments, dividends, tax, interest payments etc.

CASH MANAGEMENT STRATEGIES

Cash Planning

Cash Forecasts and Budgeting

- Receipts and Disbursements Method
- Adjusted Net Income Method (Sources and Uses of Cash)

MANAGING CASH FLOWS

After estimating cash flows, efforts should be made to adhere to the estimates of receipts and payments of cash.

Cash Management will be successful only if cash collections are accelerated and cash payments (disbursements), as far as possible, are delayed.

Methods of ACCELERATING CASH INFLOWS

- Prompt payment from customers (Debtors)
- Quick conversion of payment into cash
- Decentralized collections
- Lock Box System (collecting centers at different locations)

Methods of DECELERATING CASH OUTFLOWS

- Paying on the last date
- Payment through Cheques and Drafts
- Adjusting Payroll Funds (Reducing frequency of payments)
- Centralization of Payments
- Inter-bank transfers
- Making use of Float (Difference between balance in Bank Pass Book and Bank Column of Cash Book)

MANAGEMENT OF RECEVABLES

Receivables (Sundry Debtors) result from CREDIT SALES.

A concern is required to allow credit in order to expand its sales volume.

Receivables contribute a significant portion of current assets.

But for investment in receivables the firm has to incur certain costs (opportunity cost and time value)

Further, there is a risk of BAD DEBTS also.

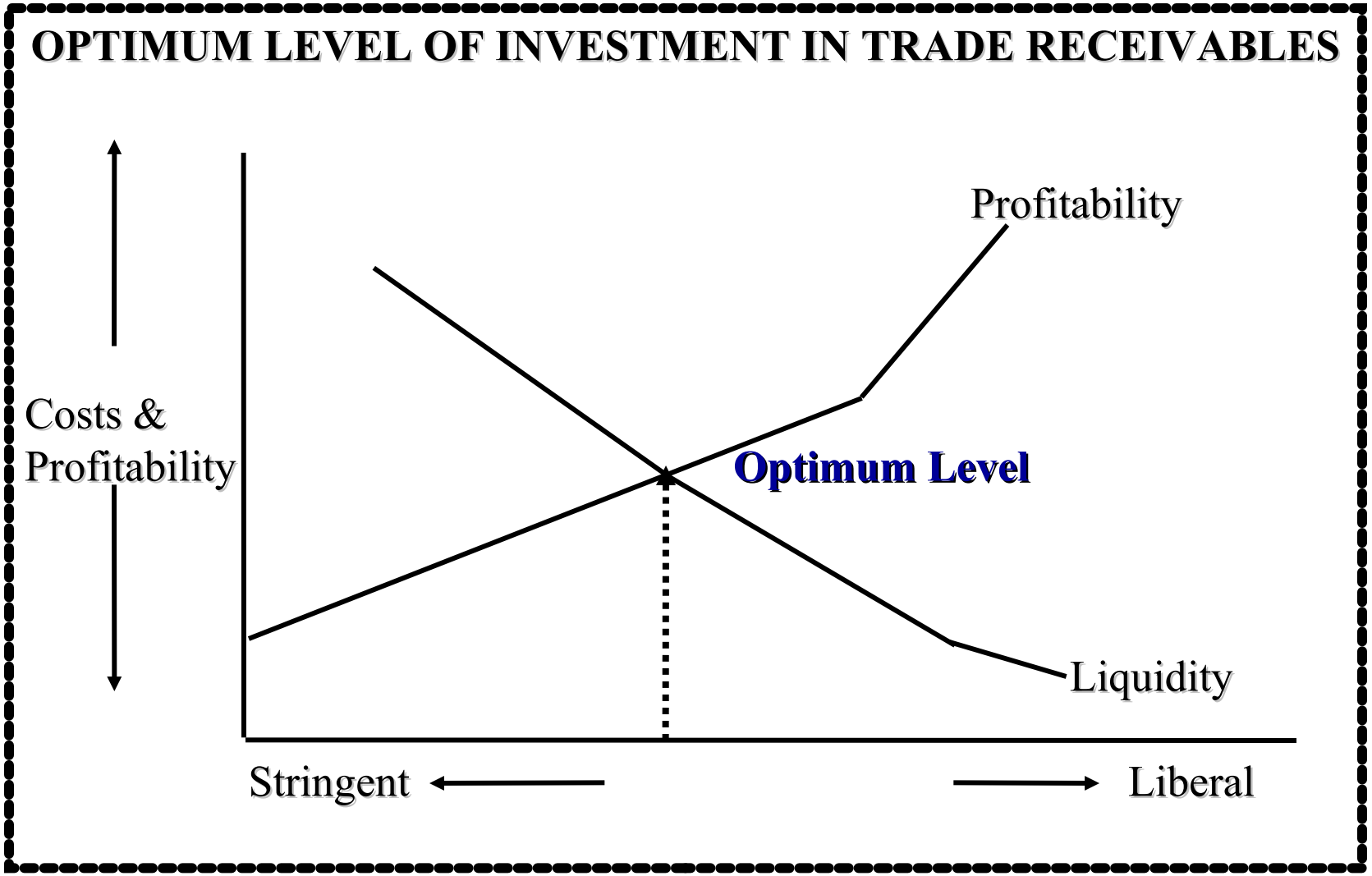
It is, therefore very necessary to have a proper control and management of receivables.

OBJECTIVES

The objective of Receivables Management is *to take sound decision as regards to investment in Debtors.*
In the words of BOLTON S E., the objective of receivables management is

" to promote sales and profits until that point is reached where the return on investment in further funding of receivables is less than the cost of funds raised to finance that additional credit"

DIMENSIONS OF RECEIVABLES MANAGEMENT



AVERAGE COLLECTION PERIOD AND AGEING SCHEDULE

The collection of BOOK DEBTS can be monitored with the use of average collection period and ageing schedule.

The ACTUAL AVERAGE COLLECTION PERIOD IS COMPARED WITH THE STANDARD COLLECTION PERIOD to evaluate the efficiency of collection so that necessary corrective action can be initiated and taken.

THE AGEING SCHEDULE HIGHLIGHTS THE DEBTORS ACCORDING TO THE AGE OR LENGTH OF TIME OF THE OUTSTANDING DEBTORS.

The following table presents the ageing schedule

AGEING SCHEDULE

Outstanding Period	O/s Amount of Debtors	% of Debtors
0 – 30 Days	5,00,000	50
31 – 40 Days	1,00,000	10
41 – 60 Days	2,00,000	20
61 – 90 Days	1,00,000	10
Over 60 Days	1,00,000	10
Total	*10,00,000*	*100*

Guidelines for Effective Receivables Management

1. Have the right mental attitude to the control of credit and make sure that it gets the priority it deserves.
2. Establish clear credit practices as a matter of company policy.
3. Make sure that these practices are clearly understood by staff, suppliers and customers.
4. Be professional when accepting new accounts, and especially larger ones.
5. Check out each customer thoroughly before you offer credit. Use credit agencies, bank references, industry sources etc.
6. Establish credit limits for each customer... and stick to them.

7. Continuously review these limits when you suspect tough times are coming or if operating in a volatile sector.
8. Keep very close to your larger customers.
9. Invoice promptly and clearly.
10. Consider charging penalties on overdue accounts.
11. Consider accepting credit /debit cards as a payment option.
12. Monitor your debtor balances and ageing schedules, and don't let any debts get too large or too old.

MANAGEMENT OF INVENTORIES

Managing inventory is a juggling act.

Excessive stocks can place a heavy burden on the cash resources of a business.

Insufficient stocks can result in lost sales, delays for customers etc.

INVENTORIES INCLUDE
RAW MATERIALS, WIP & FINISHED GOODS

FACTORS INFLUENCING INVENTORY MANAGEMENT

- **Lead Time**
- **Cost of Holding Inventory**
  - Material Costs
  - Ordering Costs
  - Carrying Costs
  - Cost of tying-up of Funds
  - Cost of Under stocking
  - Cost of Overstocking

Contd…

- **Stock Levels**
  - Reorder Level
  - Maximum Level
  - Minimum Level
  - Safety Level / Danger Level
- **Variety Reduction**
- **Materials Planning**
- **Service Levels**
- **Obsolete Inventory and Scrap**
- **Quantity Discounts**

INVENTORY MANAGEMENT TECHNIQUES

MANAGING INVENTORIES EFFICIENTLY DEPENDS ON TWO QUESTIONS

1. **How much should be ordered?**
2. **When it should be ordered?**

The first question *"how much to order"* relates to **ECONOMIC ORDER QUANTITY** and

The second question *"when to order"* arises because of uncertainty and relates to determining the **RE-ORDER POINT**

ECONOMIC ORDER QUANTITY [EOQ]

The ordering quantity problems are solved by the firm by determining the EOQ (or the Economic Lot Size) that is the optimum level of inventory.

There are two types of costs involved in this model.

ordering costs

carrying costs

The EOQ is that level of inventory which MINIMIZES the total of ordering and carrying costs.

ORDERING COSTS	CARRYING COSTS
❖ Requisitioning	❖ Warehousing
❖ Order Placing	❖ Handling
❖ Transportation	❖ Clerical Staff
❖ Receiving, Inspecting & Storing	❖ Insurance
❖ Clerical & Staff	❖ Deterioration & Obsolescence

EOQ FORMULA

For determining EOQ the following symbols are used

C = Consumption /Annual Usage / Demand

Q = Quantity Ordered

O = Ordering Cost per Order

I = Inventory Carrying Cost (as a % on P)

P = Price per Unit

TC = Total Cost of Ordering & Carrying

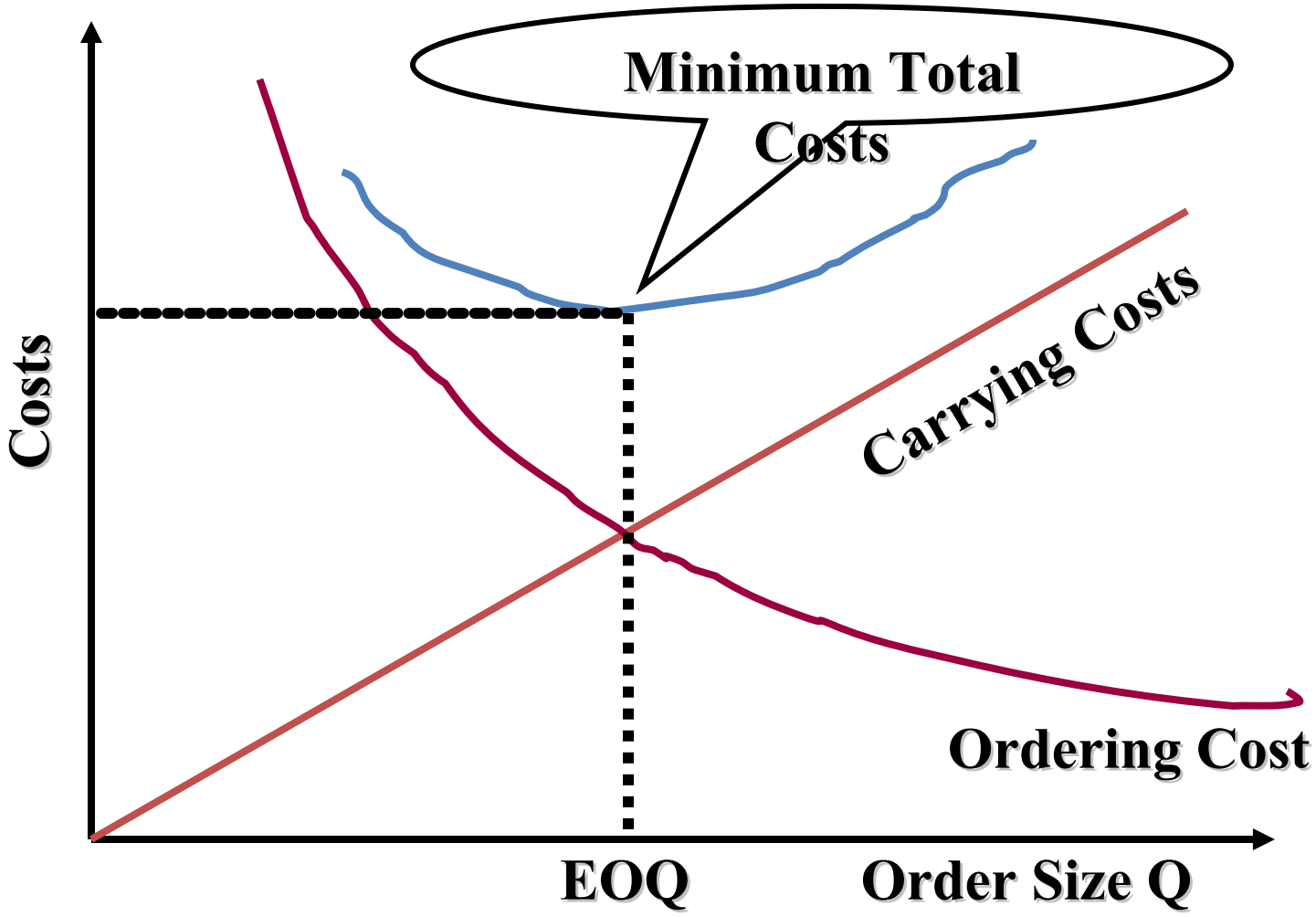
$$\sqrt{2\,CO\,/\,PI}$$

Total Cost of ordering & carrying inventory are equal to (TC) =

$$\frac{C}{Q} \times O + \frac{Q}{2} \times P \times I$$

TC is minimized at EOQ

EOQ – GRAPHICAL APPROACH



QUANTITY DISCOUNTS & EOQ

The standard EOQ analysis is based on the assumption that the price per unit remains constant irrespective of the order size. When quantity discounts are available (very usual) then price per unit is influenced by the order quantity. To determine the optimum lot size with price discounts, the following procedure is adopted

1. Determine the normal EOQ assuming no discount. Call it Q*
2. If Q* enables the firm to get the quantity discount then it represents the optimum lot size.
3. If Q* is less than the minimum order size (Q') required for quantity discount compute the change in profit as a result of increasing Q* to Q'

The formula for change in profit is given as

$$\Delta\lambda = CD + \left[\frac{C}{Q^*} - \frac{C}{Q'} \right] O - \left[\frac{Q'(P-D)I}{2} - \frac{Q^* PI}{2} \right]$$

where

□□Δλ□= change in profit

C	= Annual Consumption / Usage / Demand
D	= Discount per unit when available
Q*	= EOQ without Quantity Discount
Q'	= Min order size required for Discount
O	= Fixed Ordering Cost
P	= Purchase price per unit without discount
I	= Inventory carrying cost (% on Price)

SELECTIVE CONTROL OF INVENTORY

Different classification methods

Classification	Basis
ABC [Always Better Control]	Value of items consumed
VED [Vital, Essential, Desirable]	The importance or criticality
FSN [Fast-moving, Slow-moving, Non-moving]	The pace at which the material moves
HML [High, Medium, Low]	Unit price of materials
SDE [Scarce, Difficult, Easy]	Procurement Difficulties
XYZ	Value of items in storage

An eye-opener to Inventory Management

For better stock/inventory control, try the following:

- **Review the effectiveness of existing purchasing and inventory systems.**
- **Know the stock turn for all major items of inventory.**
- **Apply tight controls to the *significant few* items and simplify controls for the *trivial many*.**
- **Sell off outdated or slow moving merchandise - it gets more difficult to sell the longer you keep it.**
- **Consider having part of your product outsourced to another manufacturer rather than make it yourself.**
- **Review your security procedures to ensure that no stock "is going out the back door !"**

MANAGEMENT OF ACCOUNTS PAYABLE

Creditors are a vital part of effective cash management and should be managed carefully to enhance the cash position.

Purchasing initiates cash outflows and an over-zealous purchasing function can create liquidity problems.

Guidelines for effective management of Accounts Payable……

- Who authorizes purchasing in your company - is it tightly managed or spread among a number of (junior) people?
- Are purchase quantities geared to demand forecasts?
- Do you use order quantities which take account of stock-holding and purchasing costs?
- Do you know the cost to the company of carrying stock ?
- Do you have alternative sources of supply ? If not, get quotes from major suppliers and shop around for the best discounts, credit terms, and reduce dependence on a single supplier.
- How many of your suppliers have a returns policy ?
- Are you in a position to pass on cost increases quickly through price increases to your customers ?
- If a supplier of goods or services lets you down can you charge back the cost of the delay ?
- Can you arrange (with confidence !) to have delivery of supplies staggered or on a just-in-time basis ?

Ratios associated with WCM

Stock Turnover Ratio (Times)	$\frac{\text{COGS}}{\text{AVERAGE STOCK}}$
Stock Turnover Ratio (Days)	$\frac{\text{Average Stock}}{\text{COGS}} \times 365$
Receivables Turnover Ratio (Times)	$\frac{\text{Net Credit Sales}}{\text{Average Accounts Receivable}}$
Average Receivables Period (Days)	$\frac{\text{Avg A/C Receivable}}{\text{Net Credit Sales}} \times 365$
Payables Turnover Ratio (Times)	$\frac{\text{Net Credit Purchases}}{\text{Average Accounts Receivable}}$
Average Payables Period (Days)	$\frac{\text{Avg A/C Receivable}}{\text{Net Credit Sales}} \times 365$

Current Ratio	$\frac{\text{Current Assets}}{\text{Current Liabilities}}$
Quick Ratio	$\frac{\text{CA – Stock}}{\text{Current Liabilities}}$
Working Capital Turnover Ratio	$\frac{\text{Net Sales}}{\text{Net Working Capital}}$