CORPORATE FINANCE AND RISK MANAGEMENT

December 2015 Session
## Syllabus overview

<table>
<thead>
<tr>
<th>Syllabus area</th>
<th>Weightings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corporate finance objectives and measurements</td>
<td>10%</td>
</tr>
<tr>
<td>Corporate financing strategies</td>
<td>30%</td>
</tr>
<tr>
<td>Dividend policy and capital gains</td>
<td>5%</td>
</tr>
<tr>
<td>Corporate investment appraisal</td>
<td>20%</td>
</tr>
<tr>
<td>Corporate growth strategy</td>
<td>20%</td>
</tr>
<tr>
<td>Corporate risk identification and management</td>
<td>15%</td>
</tr>
</tbody>
</table>
### Qualifications
- MBA - Australia
- MAFE - Sri Lanka
- CGMA - USA
- FCCA - UK
- ACMA - UK
- FCMA - Sri Lanka
- CPA - Australia
- MACS - Australia
- Six Sigma GB - India
- Dip. In Psychology

### Areas of expertise
- Strategic planning
- Management Accounting
- BPR and process improvement
- Performance Management
- Strategy Development
- Financial management
- Project Management
- Risk management
- Legal & Regulatory Compliance
- Change Management
- Leadership Development
- Business/ Product Development

### Achievements
- Won the "Highest Achievement Student Award" and Gold Medal for MBA
- Invited to the "Golden Key Club"
- Won the Town Hall Award
- Won the Brainwave Award
- Completed 2 masters degrees together
[CHAPTER 1: OBJECTIVES OF ORGANISATIONS]

Syllabus areas

- Objectives of companies
- Stakeholders and objectives
- Objectives of publicly owned and non-commercial bodies
- Financial management decisions
Chapter 1: Objectives of organisations

Test your understanding

- What is the objective of financial management?
- What types of objectives does an organisation have?
- What are non-financial objectives?
- What is the role of financial management?
- What are the areas considered in the balanced scorecard approach?
- What is agency problem and agency theory?
- How do you measure performance of a not-for-profit organisation?
Chapter 1: Objectives of organisations

**Objective:** Maximise shareholders’ wealth

- Maximise Wealth
  - Considers timing of returns
  - Consider riskiness of returns
  - Considers real cash flows

- Maximise Profit
  - Max. revenue, min. costs

**Financial Targets examples**
EPS, Borrowing levels, profit retention, cash generation, etc.

Firm’s value increases

Market Value of the firm (Share Price) increases
Chapter 1: Objectives of organisations

Non financial objectives

- Customer satisfaction
- Welfare of employees, management and society
- Responsibilities to suppliers
- Leadership in R&D
- Maintaining competitive position and market share
Chapter 1: Objectives of organisations

The balanced scorecard perspective

- Financial (profitability)
- Customer
- People (Innovation and learning)
- Process (Internal business perspective)

Problems using the balanced scorecard

- Conflicting measures
- Selecting measures
- Expertise
- Interpretation
- Management commitment
Stakeholders
Those parties with a legitimate interest in how the organisation behaves
- Internal
- Connected
- External

Stakeholders’ interests are liable to conflict.

Internal
- Owners/Founders
- Management
- Staff

Connected
- Shareholders
- Customers
- Suppliers
- Lenders
- Trade unions
- Competitors

External
- Government
  - Local government
- Public
- Pressure groups
- Opinion leaders
Chapter 1: Objectives of organisations

The Agency Theory

Main concepts
- Conflict of interest
- Goal congruence
Chapter 1: Objectives of organisations

Not-for-profit organisations

Value for money

- Economical
- Efficient
- Effectiveness
Chapter 1: Objectives of organisations

Financial Management Role

Financial Decision Making

Investment Decision
- Should the company invest in a new product?
- Should the company expand operations?
- How often to replace machinery?

Financing Decision
- Where is the capital coming from?
- How much equity?
- How much debt?

Payout/Dividend Decision
- How to distribute earnings?
- Cash dividends, bonus shares, rights offers
- How much do we keep for next year’s investment decision?
CHAPTER 2: FINANCIAL STRATEGY

Syllabus areas

- Constraint on financial strategy
- Regulatory bodies
- Economic constraints
- International constraints
- The treasury function
Chapter 2: Financial Strategy

Constraint on financial strategy

- Funding constraint
- Investor relations – keep investor happy
- Agency theory
- Business strategy – investment opportunities, lack of funds/ access to funds, capacity issues, availability of skills
Chapter 2: Financial Strategy

Regulatory bodies

- **Impact of legislation** – Companies Acts, H&S regulations, consumer protection laws, employment laws, environment protection laws, etc.

- **Compliance with legislations** – extra cost, barriers to entry, penalties, bad publicity

- **Corporate governance** – how companies are directed and controlled. Responsibilities of the board include; setting company’s strategic aims; providing the leadership to put them into effect; Supervising the management of the business; Reporting to shareholders on their stewardship

- **Competition regulation** – industry regulators (i.e. price control, profit control), regulation of takeover (i.e. effective competition within the industry, consumers – quality, price and variety, the reduction of costs)
Chapter 2: Financial Strategy

Economic constraint

- **Effects of inflation** – effects on factors of production, regular price revisions, high level of uncertainty, pressure on cash flow, increase investments in working capital, effects on financial reporting, etc.

- **Interest rates** – affects the cost of borrowing, impact on foreign exchange value, act as a guide for short term returns

\[
(1 + \text{nominal rate of interest}) = (1 + \text{real rate of interest}) \times (1 + \text{inflation rate})
\]

**The general level of interest rates** – earn a real rate of return, cover expected rates of inflation, liquidity preferences of investors and the demand for borrowing, effects on balance of payment, monetary policy, interest rates influenced by other countries
Chapter 2: Financial Strategy

**Interest rates in different markets and market segments**

- Risk
- The need to make a profit on re-lending
- The duration of the lending
- The size of the loan
- Different types of financial assets

**The yield curve**
Chapter 2: Financial Strategy

**Downward yield curve**

- Future expectation – when interest rates are expected to fall
- Government policy of keeping interest rates relatively high might have the effect of forcing short-term interest rates higher than long-term rates
- The market segmentation theory – the slope of the yield curve will reflect different conditions in different segments of the market

**Exchange rates**

Effects the

- The cost of imports
- The value of exports
- The costs and benefits of international borrowing and lending
Chapter 2: Financial Strategy

International constraints

- **Trading abroad** – foreign exchange constraints, political issues, geographical separation (i.e. issues in management control, language and cultural barriers), litigation (i.e. legislations and regulations in selling products in different countries. Eg. Shariah compliant in the Middle East)

- **Multinationals** – one which owns or controls production facilities or subsidiaries or service facilities outside the country in which it is based. Eg. Carson and Cumberbatch PLC in Sri Lanka
Chapter 2: Financial Strategy

Treasury management

A separate treasury department is set up in large companies to manage cash (funds) and currency efficiently.

Motives for holding cash

- Transaction motive – to meet day-to-day obligations
- Precautionary motive – hold cash as a safety net
- Speculative motive – to exploit investment opportunities
Chapter 2: Financial Strategy

The role of treasurer

- **Corporate financial objectives** – aims, policies and strategies, systems

- **Liquidity management** – working capital management, money transmission management, money management and investment, banking relationships

- **Funding management** – funding policies, sources, types, security, interest rates, duration, etc.

- **Currency management** – exposure policies and procedures, exchange dealings (i.e. futures and options), exchange regulations

- **Corporate finance** – raising equity, dividend policy, obtaining stock exchange listing, M&A, business sales, project finance and joint ventures, etc.
Chapter 2: Financial Strategy

**Treasury policy**

Aims of a treasury policy is to establish direction, specify parameters and exercise control, and also provide a clear framework and guidelines for decisions.

The areas covered are:

- Counterparty exposure – i.e. counterparty limits and monitoring
- Currency and interest rate risk
- Funding risk- i.e. limits and targets for different sources of funding
- Liquidity management
- Investment management
- Bank relationships

**Treasury function as a cost centre or a profit centre?**
Chapter 2: Financial Strategy

Q1 of the revision kit HG
[CHAPTER 3: FORECASTING & ANALYSIS]

Syllabus areas

- Performance analysis
- Cash forecasts
- Forecasting financial statements – detailed example
- Sensitivity analysis and changes in variations
- Financing requirements
**Performance analysis**

**Ratio analysis** is the process of **comparing and quantifying relationships** between financial variables, such as those variables found in the statement of financial position (i.e. the balance sheet) and income statement of a company.

They are **important** in the following areas.

- Measuring the achievement of corporate objectives
- Investment appraisal
- Working capital management
- Capital structure
- Business valuations
Performance analysis

Limitations of ration analysis

- Availability of corporate information
- Use of historical/out of date information
- Ratios are not definitive
- Need for careful interpretation
- Manipulation
- Other information – ratios alone are not sufficient
Performance analysis

Financial ratios can be categorised as follows.

1. **Profitability** ratios – GP/ NP Margin, ROCE, ROE, etc
2. **Liquidity** ratios – Current Ratio & Quick Ratio
3. **Gearing** and Capital structure/ Debt ratios – Capital Gearing, Interest Cover, Debt Ratio, etc.
4. **Operating/ activity** ratios – Inventory days, Debtor days, Creditor Days, Inv. T/O, etc
Performance analysis

Profitability and return ratios

Return on Capital Employed (ROCE)
ROCE gives a measure of how efficiently a business is using the funds available. It measures how much is earned per Rs. 1 invested.

\[
ROCE = \frac{\text{Profit before interest and tax (PBIT)}}{\text{Capital Employed (CE)}} \times 100\%
\]

\[\text{PBIT} = \text{Operating profit}\]
\[\text{CE} = \text{Non Current assets} + \text{Current Assets} - \text{Current Liabilities}; \quad \text{or}\]
\[= \text{Share Capital} + \text{Reserves} + \text{Long Term Loans}\]

Return on Equity (ROE)
ROE measures how much profit a company generates for its ordinary shareholders with the money they have invested in the company.

\[
ROE = \frac{\text{Profit after tax and preference dividends}}{\text{Book value of Shareholders’ Funds}} \times 100\%
\]

Please refer p.65 for DuPont model where ROCE = Asset Turnover x Profit Margin
Performance analysis

Please refer p. 66 for **debt and gearing** ratios, p. 67 for **liquidity** ratios and p. 68 for **investor** ratios

**Overtrading** is when a business is trying to support too large a volume of trade with the capital resources at its disposal

**Symptoms of overtrading**

- Rapid increase in revenue
- Rapid increase in current assets
- Increase in non-current assets
- Asset increases financed by trade payables/bank overdraft
- Little/no increase in proprietors’ capital
- Decrease in current/quick ratios
- Liquidity deficit
Performance analysis

**Other information** which gives a company’s performance

- The revaluation of non-current assets
- Share capital and reserves
- Loans and other liabilities
- Contingencies
- Events after the statement of financial position date

**Cash forecasts**

**Cash budgets** – is a detailed budget of estimated cash inflows and outflows incorporating both revenue and capital items
Performance analysis

Estimating a forecast of financial position

Can be used to assess the scale of funding requirements or cash surpluses expected over time, and to act as a check on the realism of cash flow based forecast.

- Trying to predict the cash and short-term investments
- Each item should be estimated with its future value at a future date
- Intangible non-current assets and long-term investments
- Property, plant and equipment – purchases and disposals. Revaluations are ignores
- Current assets – inventory and receivables (can increase, decrease, remains the same, can be in line with sales, etc.)
- Current liabilities – trade payables and accruals, bank loans/overdraft, taxation, dividends payables
- Non-current creditors and Accumulated profits
### QUESTION

**JK Co: forecast financial statements**

JK Co produces smoke alarms for residential and office premises. The most recent statement of financial position of the company is set out below.

**STATEMENT OF FINANCIAL POSITION AS AT 30 NOVEMBER 20X2**

<table>
<thead>
<tr>
<th></th>
<th>Rs Mn</th>
<th>Rs Mn</th>
<th>Rs Mn</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Non-current assets</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Freehold buildings at cost</td>
<td>24.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less accumulated depreciation</td>
<td>(4.4)</td>
<td>20.0</td>
<td></td>
</tr>
<tr>
<td>Plant and machinery at cost</td>
<td>37.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less accumulated depreciation</td>
<td>(12.9)</td>
<td>25.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>45.0</td>
</tr>
<tr>
<td><strong>Current assets</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inventory</td>
<td>39.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trade receivables</td>
<td>20.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bank</td>
<td>67.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less payables: amounts falling due within one year</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trade payables</td>
<td>12.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Taxation</td>
<td>4.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dividends</td>
<td>7.8</td>
<td>(24.3)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>43.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>88.0</td>
</tr>
<tr>
<td><strong>Capital and reserves</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ordinary Rs. 1 shares</td>
<td>20.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accumulated profits</td>
<td>68.0</td>
<td></td>
<td>88.0</td>
</tr>
</tbody>
</table>
During the year to 30 November 20X2, the sales revenue for the business was Rs. 240m.

As a result of recent changes in government legislation, it has been predicted that the market for smoke alarms will increase significantly in the short term. The directors of JK Co are planning to expand the business significantly during the forthcoming year in order to exploit these new market conditions. The following forecasts and assumptions for the forthcoming year have been prepared by the directors.

(a) Sales for the forthcoming year will be 25% higher than the previous year. Sales are expected to be spread evenly over the year.

(b) The gross profit margin will be 30% of sales.

(c) To prepare for the expansion in output, new machinery costing Rs. 57m will be purchased at the beginning of the year and a long-term loan will be taken out immediately to help finance this purchase. At the end of the year, the long-term debt to equity ratio is planned to be 1:3.

(d) The average receivables collection period will be three times that of previous years and the average payment period for creditors will be one and a half months.

(e) The value of inventory at the end of the year will be Rs. 18m lower than at the beginning of the year.
Question on forecasting from the study text

(f) Depreciation charges for freehold buildings and plant and machinery are calculated using the reducing balance method and will be 5% and 20% respectively. Other expenses for the period will be Rs. 54.6m. There will be no prepayments or accruals at the end of the year.

(g) Dividends will be announced at the end of the year and the dividend payout ratio will be 50% which is in line with previous years. The tax rate will be 30% of net profits before taxation. The dividend and tax will be paid after the year end.

All workings should be in Rs. millions and should be made to one decimal place. Workings must be clearly shown.

Required

(a) Prepare in as much detail as the information allows:

(i) A forecast statement of comprehensive income for the year ended 30 November 20X3

(ii) A forecast balance statement of financial position sheet as at 30 November 20X3
CHAPTER 4: SHORT-TERM FINANCIAL STRATEGY

Syllabus areas

- Short-term financial strategy
- Working capital management
- Cash operating cycle
- Managing inventories
- Managing account receivables
- Managing accounts payables
- Working capital financing
- Other factors to consider
Chapter 4: Short-term Financial Strategy

- Short-term financial strategy
- Working capital management
- Cash operating cycle
- Managing inventories
- Managing account receivables
- Managing accounts payables
- Working capital financing
- Other factors to consider
Short-term Financial Strategy

**Short-term financial strategy** – is to strike a balance between liquidity and profitability

**Working capital** is the capital available for running the day to day operations of an organisation. It can be calculated as follows.

\[
\text{Working Capital} = \text{Current assets} - \text{Current Liabilities}
\]

The amount tied up in working capital is equal to the value of raw materials, work-in-progress, finished goods inventories and accounts receivable less accounts payable. The size of this net figure has a direct effect on the **liquidity** of an organisation.

Common causes of **business failure** due to working capital.

- Demands of cash during periods of growth being too great (overtrading) and overstocking
- Inability to meet bills as they fall due
Short-term Financial Strategy

Working capital management: Conservative vs aggressive approach

**Conservative**
Aims to reduce the risk of system breakdown by holding high levels of working capital

- Customers are allowed generous payment terms
- High finished goods inventory – avoid stock out situations to customers
- High raw materials and WIP - avoid stock out situations for production
- Prompt payment for suppliers

**Aggressive**
Aims to reduce the financing cost and increase profitability

- Cutting inventories
- Speeding up collection from customers
- Delaying payments for suppliers
Short-term Financial Strategy

Cash operating cycle

The cash operating cycle is the period of time which elapses between the point at which cash begins to be expended on the production of a product and the collection of cash from a purchaser.

- **Inventory days**
- **Receivable days**
- **Payable days**

Cash Operating Cycle
Managing inventory

Holding costs
- Cost of capital – capital tied up in inventory
- Warehouse/handling costs
- Deterioration/obsolescence
- Insurance
- Pilferage

Procuring costs
- Ordering costs
- Delivery costs

Shortage costs
- Contribution from lost sales
- Emergency inventory
- Stock-out costs
Short-term Financial Strategy

**Economic Order quantity (EOQ)** - is the optimal ordering quantity for an item of inventory which will minimise costs

\[
EOQ = \sqrt{\frac{2Cd}{Ch}}
\]

*Exam formula*

*Where;* 
- \( D \) = Annual demand (in units), \( C_o \) = Cost of placing one order, \( Ch \) = Holding cost

Example on p. 107

**Re-order level** = maximum usage \( \times \) maximum lead time

**Safety inventory** held when demand is uncertain or supply lead time is variable

**Average annual safety inventory cost**

= Safety inventory quantity \( \times \) annual unit inventory holding costs
Short-term Financial Strategy

**Maximum inventory level** = Re-order level + Re-order quantity – (Min. Usage x Min. Lead time)

**Buffer Safety inventory** = Re-order level - (Avg. Usage x Avg. lead time)

**Average inventory** = Buffer safety inventory + (Re-order amount/ 2)

Example on p. 109 of the study text
Short-term Financial Strategy

Just In Time (JIT)
A policy of obtaining goods from suppliers at the latest possible time, avoiding the need to carry materials / component inventory

Benefits of JIT
- Lower inventory holding costs and manufacturing lead times
- Higher labour productivity
- Lower labour / scrap / warranty costs
- Lower material purchase costs (discounts)
- Lower number of transactions
Managing accounts receivable

- The inflow of cash into the organisation comes through debtors’ payments and collections.
- The company should have a credit policy which sets out the credit limit, credit period and payments terms and conditions.
- The company should have a robust system to monitor debtors and make collections on-time when they fall due.
- The debtor outstanding period can be calculated as follows.

\[
\text{Accounts Receivables Period} = \frac{\text{Receivables} \times 365}{\text{Credit Sales}}
\]
Managing accounts receivable

A credit analysis system (credit worthiness)
- Trade references
- Bank references
- Credit rating agency

A credit control system
- Decide on credit limit to be offered for customer
- Review regularly

A credit control policy factors to consider
- Administrative cost of debt collection
- Procedure for controlling credit
- Extra capital required to finance an extension of credit
- Extra capital required to finance an increase of accounts receivable
- Cost savings and additional cost in operating the credit policy
- Implementation of the policy
- Effects of easing credit
Short-term Financial Strategy

Managing accounts receivable

A debt collection system

- Efficient administration
- Aged listing of receivables
- Regular statements and reminders
- Clear procedures for taking legal action or charging interest
- Consider the use of a debt factor
- Analyse whether to use cash discounts to encourage early payment
Short-term Financial Strategy

The benefits of action to collect debts must be greater than the costs incurred

Discounts for early settlement

Calculate:

- **Profits foregone** by offering discount
- **Interest charge** changes because customer paid at different times and sales change
Factoring is debt collection by factor company which advances proportion of money due.

**Advantages of factoring**
- Saving in staff time / admin costs
- New source of finance to help liquidity
- Frees up management time
- Supports a business when sales are rising

**Disadvantages of factoring**
- Can be expensive
- Loss of direct customer contact and goodwill
Short-term Financial Strategy

Managing Accounts Payable

- Attempting to obtain satisfactory credit from suppliers
- Attempting to extend credit during periods of cash shortages
- Maintaining good relations with regular and important suppliers

The cost of lost early payment discounts – (eg. - p. 133)

\[
\left\{ \left( \frac{100}{100-d} \right)^{\frac{365}{t}} \right\} - 1 \%
\]

Where:
- \( d \) is the % discount, \( d = 5 \) for 5%
- \( t \) is the reduction in the payment period in days which would be necessary to obtain the early payment discount, final date to obtain discount – final date for payment
Short-term Financial Strategy

Working Capital Financing

- Conservative financing
- ST financing
- LT financing
- Maximum funds needed
- Fluctuating current assets
- Permanent current assets
- Non-current assets

ST/LT funded by long term sources

ST/LT funded by short term sources
[CHAPTER 5: EQUITY FINANCE]

Syllabus areas

- Capital markets
- Methods of obtaining a listing
- Rights issues
- Scrip dividends, bonus issues and share splits
Overview

Sources of finance

Equity
- Ordinary shares
  - Voting
  - Non voting
- Preference shares
  - Cumulative
  - Non Cum.

Debt
- Short term
- Medium Term
  - Redeemable
  - Irredeemable
- Long Term
Capital markets are markets for trading in long-term finance

- **Stock markets** – raising long-term finance. Eg. CSE in Sri Lanka. Deals with government securities (gilts) as well. Traded through the Central Depository system (CDS)
- **Primary markets** – raise new finance
- **Secondary markets** – trading of existing investments. Essential for marketability
- **Realisation of value** – where owners can realise their investments by offering them to the public by floating
- **Takeover by share exchange** – taking over another company by issuing shares. Only possible if shares offered can be traded in the CSE
- **Institutional investors** – such as pension funds who have large amounts of funds to invest in various assets to obtain a satisfactory return

**Capital market participation**

<table>
<thead>
<tr>
<th>Demand for funds comes from ...</th>
<th>Intermediaries</th>
<th>Suppliers of funds</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>INDIVIDUALS</strong> (e.g., housing/consumer goods finance)</td>
<td>Banks</td>
<td><strong>INDIVIDUALS</strong> (as savers and investors)</td>
</tr>
<tr>
<td><strong>FIRMS</strong> (share capital; loans)</td>
<td>Building societies</td>
<td><strong>FIRMS</strong> (with long-term funds to invest)</td>
</tr>
<tr>
<td><strong>GOVERNMENT</strong> (budget deficit)</td>
<td>Insurance companies and pension funds</td>
<td><strong>GOVERNMENT</strong> (budget surplus)</td>
</tr>
<tr>
<td></td>
<td>Unit trust/investment trust companies</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Stock exchanges</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Venture capital organisations</td>
<td></td>
</tr>
</tbody>
</table>
Advantages of stock market listing

- Access to a wider pool of finance
- Improved marketability of shares
- Easier to seek growth by acquisition
- Original owners selling holding to obtain funds for other projects
- Enhanced public image

Disadvantages of stock market listing

- Greater public regulation, accountability and scrutiny
- Diverse requirements of shareholders
- Additional costs such as brokerage commissions and underwriting
Capital markets

- **Initial public offer (IPO)** - The company sells shares to the public at large
- **Offer for sale by tender** - means allotting shares at the highest price they will be taken up
- **Prospectus issue** – where shares are sold directly to the general public through prospectus. It is known as ‘**offers by prospectus**’
- **Placing** - Means arranging for most of an issue to be bought by a small number of institutional investors. It is cheaper than an IPO
- **An introduction** – is obtained for greater marketability of shares
- **Underwriting** – making an arrangement to raise finance on shares which were not subscribed for a fee. Eg. The fee of 2.25% for the shares not subscribed
Pricing shares for a stock market launch

Venture capital – is risk capital, normally provided in return for an equity stake
Capital markets

Private equity – a group of companies that raises funds from investors, typically pension funds, and uses the money to buy companies which they run privately.

Preference shares – carries a fixed rate of dividends. They can be cumulative and non-cumulative.
Rights issues – raising of new capital by giving existing shareholders the right to subscribe to new shares in proportion to their current holdings.

Offer price will be lower than current market price of existing shares

**Advantages of rights issue**

- Lower issue costs than IPO
- Shareholders acquire more shares at discount
- Relative voting rights unaffected if rights taken up

**Value of rights** - Theoretical ex-rights price – Issue price

TERP example

\[
\begin{align*}
4 \text{ shares} & \times \$2.00 = 8.00 \\
1 \text{ share} & \times \$1.50 = 1.50 \\
5 & = 9.50
\end{align*}
\]

\[
\text{TERP} = \frac{9.50}{5} = \$1.90
\]
Rights Issues

Value of rights - Theoretical ex-rights price – Issue price

An alternative method would be to use the following formula:

Theoretical ex-rights price = \( \frac{1}{N + 1} ((N \times \text{cum rights price}) + \text{issue price}) \)

Where \( N \) = number of shares required to buy one new share.

Theoretical ex-rights price = \( \frac{1}{4 + 1} ((4 \times \text{Rs. 200}) + \text{Rs. 150}) = \frac{\text{Rs. 950}}{5} = \text{Rs. 190} \)

Yield adjusted theoretical ex-rights price

Yield-adjusted theoretical ex-rights price =

\[
\left[ \frac{\text{Cum rights price} \times N}{(N+1)} \right] + \left[ \frac{\text{Issue price}}{(N+1)} \times \frac{\text{Yield on new funds}}{\text{Yield on existing funds}} \right]
\]

The value of a right

Value of a right = \( \frac{\text{Theoretical ex-rights price} - \text{Issue price}}{N} \)

Where \( N \) = the number of shares required to buy one share (right)
Scrip dividends, bonus issues and share splits

**Scrip dividends** – payment of dividends by issuing additional shares rather than cash

**Bonus issues** – a bonus/ scrip/ capitalisation issue is the capitalisation of the reserves of an entity by the issue of new shares to existing shareholders, in proportion to their holdings

**Share splits** – splitting the ordinary shares into larger number with lower nominal value

The **difference between a bonus issue and a share split** is that a bonus issue converts equity reserve into share capital, where as a share split leaves reserves unaffected
CHAPTER 6: DEBT FINANCE

Syllabus areas

- Medium-term finance
- Long-term debt
- Convertible securities
- Warrants
- International debt finance
- Small and medium sized entities
Chapter 6: Debt Finance

Debt Finance

Medium Term
- Term Loans
- Mezzanine Finance

Long Term
- Bonds
- Debentures
- Preference Shares
- Warrants
Medium-term finance

Debt finance

- Availability depends on size of business
- Duration of loan?
- Fixed or floating rate?
- Security and covenants?
- All of these factors will make a difference to the cost of the debt finance
Medium-term finance

- Term loans
- Mezzanine finance
  - It is commonly used for management buy-outs.
  - It is used to bridge the gap between the amount of loans that banks are prepared to make and the amount of equity funding available.
  - It is an unsecured loan that rank after secured debt but ahead of equity in a liquidation.
- Creditworthiness - from the lender’s viewpoint, the interest rate charged on loan finance will normally reflect the risk associated with the loan, and an assessment of a company’s creditworthiness will be based on purpose, amount, repayment terms, duration, and security.
Long-term finance

- **Bonds** – it describes various forms of long-term debt a company may issue
  - Redeemable
  - Irredeemable
  - Floating rate
  - Zero coupon
  - Convertible – i.e. premium or discount

- Debentures/ Bonds involves a series of fixed interest payments and a principal payment to discharge the debt - debt is secured against issuer’s asset

- **Coupons** – periodic cash flows on the bond/debenture, determined by the coupon rate

- **Face Value** – Par value or maturity value, to be repaid upon maturity of the bond/ debenture
Long-term finance

- **Fixed charge** - security would be related to a specific asset or group of assets. Eg. Land and building

- **Floating charge** – security would be related to certain assets where the values might be different at different point in time. Eg. inventory

- **Deep discount bonds** – offered at a large discount on the face value of the debt. The investor is attracted to its large capital gain of the bond.

- **Zero coupon bonds** are issued at a discount, with no interest paid on them

- **Convertible bonds** give the holder the right to convert to other securities, normally ordinary shares, at a pre-determined price / rate and time

<table>
<thead>
<tr>
<th>Fixed charge</th>
<th>Floating charge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Security relates to specific asset/group of assets (land and buildings)</td>
<td>Security in event of default is whatever assets of the class secured (inventory/trade receivables) company then owns</td>
</tr>
<tr>
<td>Company can't dispose of assets without providing substitute/consent of lender</td>
<td>Company can dispose of assets until default takes place</td>
</tr>
<tr>
<td>In event of default lenders appoint receiver rather than lay claim to asset</td>
<td></td>
</tr>
</tbody>
</table>

CA

THE INSTITUTE OF CHARTERED ACCOUNTANTS OF SRI LANKA
Long-term finance

- **Convertible bonds** give the holder the right to convert to other securities, normally ordinary shares, at a pre-determined price / rate and time.

- **Redeemable and irredeemable bonds**

- **Redemption** is the repayment of bonds at its maturity.

- **Yield to maturity** – is the effective yield or internal rate of return of the bond.

- **Preference shares** pay a fixed rate dividend which is not tax-deductible for the company.
  - These are generally riskier than bonds since they rank behind debt in the event of a liquidation, although they rank ahead of ordinary shares.
  - There are cumulative and non cumulative preference shares.
Valuation of redeemable bonds

Value of debt = (Interest earnings \times Annuity factor) + (Redemption value \times Discounted cash flow factor)

Example: Valuation of redeemable bonds

SP Co has in issue 12% bonds with par value Rs. 100,000 and redemption value Rs. 110,000, with interest payable quarterly. The redemption yield on the bonds is 8% annually and 2% quarterly. The bonds are redeemable on 30 June 20X4 and it is now 31 December 20X0.

Calculate the value of the bond
Long-term finance

**YTM of irredeemable bonds**

For example, a five-year unsecured bond with a coupon of 5% per annum, redeemable at par and issued at a 6% discount to par will have a yield to maturity of 6.47%. This is calculated by assuming a nominal value of Rs. 100 and calculating NPVs at 5% and 7% discount rates.

<table>
<thead>
<tr>
<th>Year</th>
<th>Cash flow</th>
<th>Discount factor @ 5%</th>
<th>Present value</th>
<th>Discount factor @ 7%</th>
<th>Present value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>(94)</td>
<td>1.000</td>
<td>(94.00)</td>
<td>1.000</td>
<td>(94.00)</td>
</tr>
<tr>
<td>1–5</td>
<td>5</td>
<td>4.329</td>
<td>21.64</td>
<td>4.100</td>
<td>20.50</td>
</tr>
<tr>
<td>5</td>
<td>100</td>
<td>0.784</td>
<td>78.40</td>
<td>0.713</td>
<td>71.30</td>
</tr>
<tr>
<td>NPV</td>
<td></td>
<td></td>
<td><strong>6.04</strong></td>
<td></td>
<td><strong>(2.20)</strong></td>
</tr>
</tbody>
</table>

Yield to maturity = 5% + \left( \frac{6.04}{6.04 + 2.20} \right) \times 2% = 6.47%.

For irredeemable debt, the yield to maturity (YTM) can be calculated as:

\[ \text{YTM} = \left( \frac{\text{Annual interest}}{\text{Current market value}} \right) \times 100\% \]
Long-term finance

YTM of foreign currency bonds

The yield to maturity becomes more complicated if a company issues foreign currency bonds. First, let's consider a company that is based in Europe, but issues irredeemable bonds denominated in Rs. 100. Assume the coupon rate is 6%. If the exchange rate is expected to remain constant, then the calculation is as before. However, if the Rs is expected to strengthen by 2% per year against the euro, the cost of the interest to the company will be 2% higher each year.

Therefore the YTM would be:

\[
[(1.06 \times 1.02) - 1] = 0.0812 = 8.12\%
\]

The calculation for redeemable foreign currency bonds is more complicated, as the cash flows need to be converted into the home currency first before the IRR calculation is made. This will be demonstrated by the use of an example.
Example: YTM of foreign currency bonds

ZP Co has in issue 6% bonds with par value (in Hungarian forints) of HUF 100 and redemption value HUF 108, with interest payable annually. ZP Co’s home currency is SL rupees. The bonds are redeemable on 30 September 20X8 and it is now 30 September 20X4. The current market value is equal to the par value of the bonds. The current spot rate is HUF 1.6000/Rs. The forint is expected to strengthen against the rupee by 2% per year.

Required

Calculate the yield to maturity (in Rs) of the bonds.
Example: YTM of foreign currency bonds

First you need to calculate the Rs cash flows for each year.

<table>
<thead>
<tr>
<th>Period</th>
<th>HUF cash flow</th>
<th>Exchange rate</th>
<th>Rs cash flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Market value</td>
<td>1.6000</td>
<td>(62.50)</td>
</tr>
<tr>
<td>1</td>
<td>Interest</td>
<td>1.6000/1.02 = 1.5686</td>
<td>3.83</td>
</tr>
<tr>
<td>2</td>
<td>Interest</td>
<td>1.5686/1.02 = 1.5378</td>
<td>3.90</td>
</tr>
<tr>
<td>3</td>
<td>Interest</td>
<td>1.5378/1.02 = 1.5076</td>
<td>3.98</td>
</tr>
<tr>
<td>4</td>
<td>Interest and</td>
<td>1.5076/1.02 = 1.4780</td>
<td>77.13</td>
</tr>
<tr>
<td></td>
<td>redemption</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Long-term finance

Example: YTM of foreign currency bonds

Then these cash flows can be used in the IRR calculation.

<table>
<thead>
<tr>
<th>Period</th>
<th>Rs cash flow</th>
<th>DF 8%</th>
<th>PV</th>
<th>DF 10%</th>
<th>PV</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>(62.50)</td>
<td>1.000</td>
<td>(62.50)</td>
<td>1.000</td>
<td>(62.50)</td>
</tr>
<tr>
<td>1</td>
<td>3.83</td>
<td>0.926</td>
<td>3.55</td>
<td>0.909</td>
<td>3.48</td>
</tr>
<tr>
<td>2</td>
<td>3.90</td>
<td>0.857</td>
<td>3.34</td>
<td>0.826</td>
<td>3.22</td>
</tr>
<tr>
<td>3</td>
<td>3.98</td>
<td>0.794</td>
<td>3.16</td>
<td>0.751</td>
<td>2.99</td>
</tr>
<tr>
<td>4</td>
<td>77.13</td>
<td>0.735</td>
<td>56.69</td>
<td>0.683</td>
<td>52.68</td>
</tr>
</tbody>
</table>

\[ \text{IRR} = \frac{\text{PV of cash flows}}{\text{initial investment}} = \frac{52.68}{62.50} = 0.843 \]
Long-term finance

Value of irredeemable bonds

Ignoring tax, the value of irredeemable debt is:

\[ P_0 = \frac{i}{k_d} \]

Where:  
- \( P_0 \) is the ex-interest market value of debt
- \( i \) is the annual interest charge
- \( k_d \) is the cost of debt (required return by debt holders)

With tax, the value of irredeemable debt is:

\[ P_0 = \frac{i(1-t)}{K_{dnet}} \]

Where:  
- \( t \) is the tax rate
- \( K_{dnet} \) is the cost of debt after tax = \( K_{dnet}(1-t) \)

Securitisation – bundling together of financial assets into another financial instrument, often to increase liquidity
Convertible securities

**Convertible bonds** – is a liability that gives the holder the right to convert into another instrument, normally ordinary shares, at a pre-determined price/rate and time

- **Conversion value** = Conversion ratio x Market price per ordinary share
- **Conversion premium** = Current market value – Current conversion value

**Example**

The 10% convertible bonds of PW Co are quoted at Rs. 142 per Rs. 100 nominal. The earliest date for conversion is in four years' time, at the rate of 30 ordinary shares per Rs. 100 nominal. The share price is currently Rs. 4.15. Annual interest on the bonds has just been paid.

**Required**

(a) **Calculate** the current conversion value.
(b) **Calculate** the conversion premium and comment on its meaning.
Convertible securities

When convertible bonds are traded on a stock market, their **minimum market price or floor value** will be the price of straight bonds with the same coupon rate of interest. If the market value falls to this minimum, it follows that the market attaches no value to the conversion rights.

The actual market price of convertible bonds will depend on:

- The **price of straight debt**
- The **current conversion value**
- The **length of time** before conversion may take place
- The **market's expectation** as to future equity returns and the risk associated with these returns
CD has issued 50,000 units of convertible bonds, each with a nominal value of Rs. 100 and a coupon rate of interest of 10% payable yearly. Each Rs. 100 of convertible bonds may be converted into 40 ordinary shares of CD in three years' time. Any bonds not converted will be redeemed at 110 (that is, at Rs. 110 per Rs. 100 nominal value of bond).

Estimate the likely current market price for Rs. 100 of the bonds, if investors in the bonds now require a pre-tax return of only 8%, and the expected value of CD ordinary shares on the conversion day is:

(a) Rs. 2.50 per share
(b) Rs. 3.00 per share
Warrants

- **Warrant** – is a right given by a company to an investor, allowing the investor to subscribe for new shares at a future date at a fixed, pre-determined exercise price

**Advantages**

- Do not involve the payment of any interest or dividends
- Warrants make a bond issue more attractive and may make an issue of unsecured bonds possible where adequate security is lacking
- Provide a means of generating additional equity funds in the future without any immediate dilution in EPS

**Disadvantages**

- When exercised, they will result in dilution of share capital
- May be exercised when a business does not need additional capital
- Has less control over exercise of warrants than it does on the exercise of share capital
International debt finance

- **Eurocurrency** – is currency which is held by individuals and institutions outside the country of issue of that currency

- **Eurodollars** – are US dollars deposited with, or borrowed from, a bank outside the US

- **Eurobonds** – are bonds sold outside the jurisdiction of the country in whose currency the bond is denominated

Please read p.187 and 188 for the steps involved in issuing Eurobonds and for advantages and disadvantages

Please read p.189 for small and medium sized entities
CHAPTER 7: LEASE FINANCE

Syllabus areas

- Leasing as a source of finance
- Lease or buy decisions
Operating lease

There are three types of lease:

1. Operating lease
2. Finance lease
3. Sale and lease back assets

- Operating lease – are rental agreements between the user of the leased assets (the lessee) and a provider of finance (the lessor)
  - Lessor bears most of risk and rewards
  - Lessor responsible for servicing and maintenance
  - Period of lease short, less than useful economic life of asset
  - Asset not shown on lessee’s statement of financial position
Finance lease

- **Finance lease** – is a lease agreement that transfers substantially all the risks and rewards incidental to ownership of an asset from the lessor to the lessee
  - The lessee is normally responsible for the upkeep, servicing and maintenance of the asset
  - The lease has a primary period, which covers all or most of the useful life of the asset
  - The lessee may be able to continue to lease the asset for an indefinite secondary period, in return for a very low nominal rent, sometimes called ‘peppercorn rent’
  - Asset shown on lessee’s statement of financial position
Finance lease

Finance lease – example

On 1 January 20X0, AG Co leased an asset with a fair value of Rs. 38 million. The lease term was five years and the interest rate implicit in the lease was 10%. The company is required to make five annual instalments of Rs. 10 million on 31 December, with the first payment on 31 December 20X0.

Interest is calculated as 10% of the outstanding **capital** balance at the beginning of each year. The outstanding capital balance reduces each year by the capital element comprised in each instalment. The outstanding capital balance at 1 January 20X0 is the Rs. 38 million fair value at which both the asset and liability are initially recorded.

<table>
<thead>
<tr>
<th></th>
<th>Rs Mn</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balance 1 January 20X0</td>
<td>38.0</td>
</tr>
<tr>
<td>Interest 10%</td>
<td>3.8</td>
</tr>
<tr>
<td>Instalment 31 December 20X0</td>
<td>(10.0)</td>
</tr>
<tr>
<td>Balance outstanding 31 December 20X0</td>
<td>31.8</td>
</tr>
<tr>
<td>Interest 10% (rounded)</td>
<td>3.2</td>
</tr>
<tr>
<td>Instalment 31 December 20X1</td>
<td>(10.0)</td>
</tr>
<tr>
<td>Balance outstanding 31 December 20X1</td>
<td>25.0</td>
</tr>
<tr>
<td>Interest 10%</td>
<td>2.5</td>
</tr>
<tr>
<td>Instalment 31 December 20X2</td>
<td>(10.0)</td>
</tr>
<tr>
<td>Balance outstanding 31 December 20X2</td>
<td>17.5</td>
</tr>
<tr>
<td>Interest 10% (rounded)</td>
<td>1.7</td>
</tr>
<tr>
<td>Instalment 31 December 20X3</td>
<td>(10.0)</td>
</tr>
<tr>
<td>Balance outstanding 31 December 20X3</td>
<td>9.2</td>
</tr>
<tr>
<td>Interest 10% (rounded)</td>
<td>0.8</td>
</tr>
<tr>
<td>Instalment 31 December 20X4</td>
<td>(10.0)</td>
</tr>
</tbody>
</table>
Finance lease

Allocating the finance charge

There are two methods to allocate the finance charge

1. Actuarial method
2. Sum of digits method

- **Actuarial method** – the actuarial method of allocating the finance charge uses a periodic interest rate to calculate interest on the outstanding amount of the lease

- At the beginning of the lease, the capital investment is equal to the fair value of the asset (less any initial deposit paid by the lease)
Finance lease

Example on actuarial method

On 1 January 20X5 DT Co acquired a machine from Alice Co under a finance lease. The cash price of the machine was Rs. 7.71 million while the minimum payments in the lease agreement totalled Rs. 10 million. The agreement required the immediate payment of a Rs. 2 million deposit, with the balance being settled in four equal annual instalments commencing on 31 December 20X5. The finance charge of Rs. 2.290 million represents interest of 15% per annum, calculated on the remaining balance of the liability during each accounting period. Depreciation on the plant is to be provided for at the rate of 20% per annum on a straight-line basis assuming a residual value of nil.

Required

Calculate the breakdown of each instalment between interest and capital, using the actuarial method.
Finance lease

**Example on actuarial method**

Interest is calculated as 15% of the outstanding **capital** balance at the beginning of each year. The outstanding capital balance reduces each year by the capital element comprised in each instalment. The outstanding capital balance at 1 January 20X5 is Rs. 5.71 million (Rs. 7.71 million fair value less Rs. 2 million deposit).

<table>
<thead>
<tr>
<th>Total investment</th>
<th>Capital</th>
<th>Interest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rs Mn</td>
<td>Rs Mn</td>
<td>Rs Mn</td>
</tr>
</tbody>
</table>

| Capital balance at 1 Jan 20X5 | 5.71    |          |
| 1st instalment (interest = Rs. 5.71m × 15%) | 2 | 1.144 | 0.856 |
| Capital balance at 1 Jan 20X6 | 4.566  |          |
| 2nd instalment (interest = Rs. 4.566m × 15%) | 2 | 1.315 | 0.685 |
| Capital balance at 1 Jan 20X7 | 3.251  |          |
| 3rd instalment (interest = Rs 3.251m × 15%) | 2 | 1.512 | 0.488 |
| Capital balance at 1 Jan 20X8 | 1.739  |          |
| 4th instalment (interest = Rs. 1.739m × 15%) | 2 | 1.739 | 0.261 |
|                             | 8       | 2.29     |

Capital balance at 1 Jan 20X9 = Rs. nil
Finance lease

- **Sum of digits method** – splits the total interest without reference to a rate of interest in such a way that the greater proportion falls in the earlier years.

  The steps are as follows.

  1. Assign the digits to each installment,
  2. Add the digits [i.e. \( n(n+1)/2 \)], and
  3. Calculate the interest charge for each installment
Finance lease

Sum of digits method – example

Use the same information as the previous example of DT Co.

Required

Calculate the interest payments in each year, using the sum of digits method.

Solution

Assign digits to the borrowing periods:

20X5  4
20X6  3
20X7  2
20X8  1

Add the digits:

1 + 2 + 3 + 4 = 10
Or (4 × 5)/2 = 10

Calculate the interest charge:

The total interest paid is Rs. 10 million - Rs. 7.71 million = Rs. 2.29 million. The amount charged to each year is:

20X5  4/10 × Rs. 2.29 million = Rs. 916,000
20X6  3/10 × Rs. 2.290 million = Rs. 687,000
20X7  2/10 × Rs. 2.29 million = Rs. 458,000
20X8  1/10 × Rs. 2.29 million= Rs. 229,000
Sale and lease back arrangements

- **Sale and leaseback arrangements** - the business sells an asset to a financial institution and leases it back to raise immediate funds

**Disadvantages**

- The company loses ownership of a valuable asset
- The future borrowing capacity of the firm will be reduced
- The company is contractually committed to occupy the property for many years ahead, and this can be restricting
- The real cost is likely to be high – frequent rent reviews
Lease or buy decisions- Example

A company has decided to invest in a machine that would cost Rs. 20,000,000 to buy outright or which could be leased at Rs. 5,000,000 per year for five years. The company's post tax cost of borrowing is 10%.

Should the company buy or lease the machine?
Lease or buy decisions

Lease or buy decisions with taxation

Taxation adds the following complications:

- If the asset is bought, then the owner will enjoy capital allowances (which make buying cheaper). To complete the story, there will usually be disposal proceeds also.

- If the asset is leased, tax relief will be allowed on the lease payments.
Lease or buy decisions with taxation – Example

LW Co have decided to install a new milling machine. The machine costs Rs. 20 million and it would have a useful life of five years with a trade-in value of Rs. 4 million at the end of the fifth year. A decision has now to be taken on the method of financing the project.

(a) The company could purchase the machine for cash, using bank loan facilities on which the current rate of interest is 13% before tax.

(b) The company could lease the machine under an agreement which would entail payment of Rs. 4.8 million at the end of each year for the next five years.

The rate of tax is 30%. If the machine is purchased, the company will be able to claim a tax depreciation allowance of 100% in year 1. Tax is payable with a year's delay.

Cash flows are discounted at the after-tax cost of borrowing, which is at 13% × 70% = 9.1%, say 9%.
Lease or buy decisions

Lease or buy decisions with taxation – Example

The present value (PV) of purchase costs

<table>
<thead>
<tr>
<th>Year</th>
<th>Item</th>
<th>Cash flow</th>
<th>Discount factor @ 9%</th>
<th>PV</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Equipment cost</td>
<td>(20)</td>
<td>1.000</td>
<td>(20)</td>
</tr>
<tr>
<td>5</td>
<td>Trade-in value</td>
<td>4</td>
<td>0.650</td>
<td>2.6</td>
</tr>
<tr>
<td>2</td>
<td>Tax savings, from allowances</td>
<td>6</td>
<td>0.842</td>
<td>5.052</td>
</tr>
<tr>
<td></td>
<td>30% x Rs. 20 million</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>NPV of purchase</td>
<td></td>
<td></td>
<td>(12.348)</td>
</tr>
</tbody>
</table>

The PV of leasing costs

It is assumed that the lease payments are fully tax-allowable.

<table>
<thead>
<tr>
<th>Year</th>
<th>Lease payment</th>
<th>Savings in tax (30%)</th>
<th>Discount factor @ 9%</th>
<th>PV</th>
</tr>
</thead>
<tbody>
<tr>
<td>1–5</td>
<td>(4.8) pa</td>
<td></td>
<td>3.890</td>
<td>(18.672)</td>
</tr>
<tr>
<td>2–6</td>
<td>1.44 pa</td>
<td>3.569 (W)</td>
<td>5.139</td>
<td>(13.533)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NPV of leasing</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Lease or buy decisions

Lease or buy decisions with taxation – Example

An asset costs $100,000 (at the start of an accounting period) and will receive tax allowances on a 25% straight line basis. It can be sold in four years for $10,000.

Alternatively, it can be leased for four years at $30,000 per year, payable in advance.

Post tax cost of capital = 10%; tax = 30% and is paid one year after the end of the accounting period to which it relates.
Lease or buy decisions

Lease or buy decisions with taxation – Example

An asset costs $100,000 and will receive tax allowances on a 25% straight line basis. It can be sold in four years for $10,000.

**Purchasing**

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost</td>
<td>(100,000)</td>
<td></td>
<td></td>
<td></td>
<td>10,000</td>
<td></td>
</tr>
<tr>
<td>TAD/Bal allowance</td>
<td></td>
<td>7,500</td>
<td>7,500</td>
<td>7,500</td>
<td>4,500</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>(100,000)</td>
<td></td>
<td>7,500</td>
<td>7,500</td>
<td>17,500</td>
<td>4,500</td>
</tr>
<tr>
<td>10% factor</td>
<td>1</td>
<td>0.909</td>
<td>0.826</td>
<td>0.751</td>
<td>0.683</td>
<td>0.621</td>
</tr>
<tr>
<td>PV</td>
<td>(100,000)</td>
<td></td>
<td>6,195</td>
<td>5,633</td>
<td>11,953</td>
<td>2,794</td>
</tr>
</tbody>
</table>

PV of purchasing = $73,425, ie $100,000, reduced by capital allowances and scrap value.
Lease or buy decisions

Lease or buy decisions with taxation – Example

Alternatively, it can be leased for four years at $30,000 per year, payable in advance.

Leasing

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lease</td>
<td>(30,000)</td>
<td>(30,000)</td>
<td>(30,000)</td>
<td>(30,000)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tax relief at 30%</td>
<td></td>
<td>9,000</td>
<td>9,000</td>
<td>9,000</td>
<td>9,000</td>
<td>9,000</td>
</tr>
<tr>
<td>Total</td>
<td>(30,000)</td>
<td>(30,000)</td>
<td>(21,000)</td>
<td>(21,000)</td>
<td>9,000</td>
<td>9,000</td>
</tr>
<tr>
<td>10% factor</td>
<td>1</td>
<td>0.909</td>
<td>0.826</td>
<td>0.751</td>
<td>0.683</td>
<td>0.621</td>
</tr>
<tr>
<td>PV</td>
<td>(30,000)</td>
<td>(27,270)</td>
<td>(17,346)</td>
<td>(15,771)</td>
<td>6,147</td>
<td>5,589</td>
</tr>
</tbody>
</table>

PV of leasing = a cost of $78,651.
CHAPTER 8: THE COST OF CAPITAL

Syllabus areas

- Investment decisions, financing and the cost of capital
- The dividend valuation model
- The capital assets pricing model
- The cost of debt
- The weighted average cost of capital
1.1 The cost of capital

Figure 8.1

1.3 The cost of capital and risk

The cost of capital has three elements.

Risk-free rate of return +
Premium for business risk +
Premium for financial risk

= COST OF CAPITAL
The cost of capital

Calculation of cost of capital

- Ord. Shares
  - Div. Growth Model
  - CAPM

- Debt
  - i/ Price
  - YTM

- Pref. Shares
  - div/ Price
Calculating the cost of ordinary shares

Dividend Growth Model

\[ p_0 = \frac{d_0(1 + g)}{k_e - g} \]

\[ k_e = \frac{d_0(1 + g)}{p_0} + g \quad \text{or} \quad k_e = \frac{d_1}{p_0} + g \]

\[ g = n \sqrt[n]{\frac{\text{dividend in year } x}{\text{dividend in year } 1}} - 1 \]

Where:
- \( n \) is the number of years' growth
- \( x \) is the final year's dividend

\[ g = bR \]

Where:
- \( b \) is the proportion of profits retained for reinvestment
- \( g \) is the annual growth rate in dividends
- \( R \) is the yield on new investments (this is often taken to be the accounting rate of return)
### Cost of ordinary shares

#### Estimating the growth rate

The following figures have been extracted from the accounts of CH Co:

<table>
<thead>
<tr>
<th>Year</th>
<th>Dividends</th>
<th>Earnings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rs</td>
<td>Rs</td>
</tr>
<tr>
<td>20X1</td>
<td>100,000</td>
<td>350,000</td>
</tr>
<tr>
<td>20X2</td>
<td>125,000</td>
<td>400,000</td>
</tr>
<tr>
<td>20X3</td>
<td>125,000</td>
<td>370,000</td>
</tr>
<tr>
<td>20X4</td>
<td>160,000</td>
<td>450,000</td>
</tr>
<tr>
<td>20X5</td>
<td>200,000</td>
<td>550,000</td>
</tr>
</tbody>
</table>

**Required**

You have been asked to calculate the cost of equity for the company. What growth rate would you use in the calculations?
Calculating the cost of ordinary shares

Capital Assets Pricing Model (CAPM)

Unsystematic risk
Specific to the company
Can be reduced or eliminated by diversification

Systematic risk
Due to variations in market activity
Cannot be diversified away

\[ k_e = R_f + ((R_m - R_f) \beta) \]

Where:
- \( k_e \) is the cost of equity capital
- \( R_f \) is the risk-free rate of return
- \( R_m \) is the return from the market as a whole
- \( \beta \) is the beta factor of the individual security
Calculating the cost of debt

Cost of irredeemable debt

\[ k_d = \frac{i}{P_0} \text{ (given in the exam as } P_0 = \frac{i}{k_d}) \]

\[ k_{d\text{net}} = \frac{i(1-t)}{P_0} \]

Cost of redeemable debt

\[ \text{IRR} \approx a + \left( \frac{\text{NPV}_a}{\text{NPV}_a - \text{NPV}_b} \right)(b-a) \% \]

Where:

- \( a \) = the lower of the two rates of return used
- \( b \) = the higher of the two rates of return used
- \( \text{NPV}_a \) = the NPV obtained using rate \( a \)
- \( \text{NPV}_b \) = the NPV obtained using rate \( b \)
Cost of debt

Example on calculating cost of debt

GD Co has Rs. 100,000 6% redeemable bonds in issue. Interest is paid annually on 31 December. The ex-interest market value of the bonds on 1 January 20X5 is Rs. 93 and the bonds are redeemable at a 10% premium on 31 December 20X9. The effective rate of tax is 30%.

Required

Calculate the cost of debt.
The weighted average cost of capital

Calculating the Weighted Average Cost of Capital (WACC)

\[
WACC = \left[ \frac{V_e}{V_e + V_d} \right] k_e + \left[ \frac{V_d}{V_e + V_d} \right] k_d (1 - T)
\]

Where:
- \( k_e \) is the cost of equity
- \( V_e \) is the market value of equity
- \( k_d \) is the cost of debt
- \( V_d \) is the market value of debt

Assumptions for WACC
- Project small relative to company and has same business risk as company
- WACC reflects company’s long-term future capital structure and costs
- New investments financed by new funds
- Cost of capital reflects marginal cost

[Use market values rather than book values unless market values unavailable (unquoted company)]
Example:

1. An entity has the following information in its statement of financial position.

   Rs. '000

   Ordinary shares of Rs 50   25,000
   12% unsecured bonds      10,000

   The ordinary shares are currently quoted at Rs. 130 each and the bonds are trading at Rs. 72 per Rs. 100 nominal. The ordinary dividend of Rs.15 has just been paid with an expected growth rate of 10%. Corporation tax is currently 30%.

   Calculate the weighted average cost of capital for this entity.
### Capital Structure 7

#### Solution

<table>
<thead>
<tr>
<th>Rs. '000</th>
<th>No. of Shares/ Bonds</th>
<th>MV (Rs. '000)</th>
<th>W.Avg. % of Total</th>
<th>Cost</th>
<th>WACC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ordinary shares of Rs 50</td>
<td>25,000</td>
<td>500,000</td>
<td>65,000</td>
<td>90%</td>
<td>22.7% 20.4%</td>
</tr>
<tr>
<td>12% unsecured bonds</td>
<td>10,000</td>
<td>100,000</td>
<td>7,200</td>
<td>10%</td>
<td>11.7% 1.2%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>72,200</td>
<td></td>
</tr>
</tbody>
</table>
CHAPTER 9: CAPITAL STRUCTURE

Syllabus areas

- The capital structure decisions
- The effects of capital structure on ratios
- Theories of capital structure
- Project specific capital structure
Capital structure decisions

- What risk does the capital structure reflect of a company?
- What are the advantages and disadvantages of using debt as means of financing the capital structure?
The effects of capital structure on ratios

**Gearing**

- **Financial gearing** – reflects the financial risk based on the capital structure

\[
\frac{\text{Prior charge capital}}{\text{Equity capital (including reserves)}} \quad \text{and} \quad \frac{\text{Prior charge capital}}{\text{Total capital employed}}
\]

- **Operating gearing** – business risk

\[
\text{Operating gearing or leverage} = \frac{\text{Contribution}}{\text{Profit before interest and tax (PBIT)}}
\]

- **Interest cover** – measures the financial risk

\[
\text{Interest cover} = \frac{\text{Profit before interest and tax}}{\text{Interest payable}}
\]
Theories of capital structure

The traditional theory of WACC

Traditional theory
- There is an optimal capital mix at which the weighted average cost of capital is minimised
- Shareholders demand increased returns to compensate for greater risk as gearing rises
- However debt costs are lower leading to lower overall cost of capital
- At high gearing debt holders also require higher returns
- This leads to an increase in overall cost of capital
Theories of capital structure

Modigliani and Miller theory ignoring tax

- The weighted average cost of capital is not influenced by changes in capital structure
- The benefits of issuing debt are counterbalanced by the increased cost of equity
- This means that (without tax implications) the WACC remains constant at any level of gearing
Theories of capital structure

Modigliani and Miller theory with tax

- The weighted average cost of capital is not influenced by changes in capital structure
- The benefits of issuing debt are counter balanced by the increased cost of equity
- This means that (without tax implications) the WACC remains constant at any level of gearing
- With the tax benefit of debt however the WACC will fall as gearing levels increase
Impact of cost of capital on investments

- The lower a company’s WACC, the higher the NPV of its future cash flows and the higher its market value.
- Cost of capital can be calculated using WACC.
- Projects must be small relative to company.
- Same financial risk from existing capital structure.
- Project has same business risk as company.
- The marginal cost of capital can also be calculated using the CAPM.
- Project has a different business risk.
- Finance used to fund investment changes capital structure.
- Use geared betas.
This is the **asset beta formula** on the exam formula sheet.

where  
\[ \beta_a = \left[ \frac{V_e}{(V_e + V_d(1-T))} \right] \beta_e + \left[ \frac{V_d(1-T)}{(V_e + V_d(1-T))} \right] \beta_d \]

This is the formula for asset beta. 

\[ \beta_a = \beta_e \times \frac{V_e}{V_e + V_d(1-T)} \]

or, without tax, 
\[ \beta_a = \beta_e \times \frac{V_e}{V_e + V_d} \]

Debt is often assumed to be risk-free and its beta (\( \beta_d \)) is then taken as zero, in which case the formula above reduces to the following form.
Two companies are identical in every respect except for their capital structure. Their market values are in equilibrium, as follows.

<table>
<thead>
<tr>
<th></th>
<th>Geared</th>
<th>Ungeared</th>
</tr>
</thead>
<tbody>
<tr>
<td>$000</td>
<td>$000</td>
<td></td>
</tr>
<tr>
<td>Annual profit before interest and tax</td>
<td>1,000</td>
<td>1,000</td>
</tr>
<tr>
<td>Less interest (4,000 x 8%)</td>
<td>320</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>680</td>
<td>1,000</td>
</tr>
<tr>
<td>Less tax at 30%</td>
<td>204</td>
<td>300</td>
</tr>
<tr>
<td>Profit after tax = dividends</td>
<td>476</td>
<td>700</td>
</tr>
<tr>
<td>Market value of equity</td>
<td>3,900</td>
<td>6,600</td>
</tr>
<tr>
<td>Market value of debt</td>
<td>4,180</td>
<td>0</td>
</tr>
<tr>
<td>Total market value of company</td>
<td>8,080</td>
<td>6,600</td>
</tr>
</tbody>
</table>

The total value of Geared is higher than the total value of Ungeared, which is consistent with MM.

All profits after tax are paid out as dividends, and so there is no dividend growth. The beta value of Ungeared has been calculated as 1.0. The debt capital of Geared can be regarded as risk-free.

Calculate:

(a) The cost of equity in Geared
(b) The market return $R_m$

(c) The beta value of Geared

**Solution**

(a) Since its market value (MV) is in equilibrium, the cost of equity in Geared can be calculated as:

$$\frac{d}{MV} = \frac{476}{3,900} = 12.20\%$$

(b) The beta value of Ungeared is 1.0, which means that the expected returns from Ungeared are exactly the same as the market returns, and $R_m = 700/6,600 = 10.6\%$.

(c) $\beta_e = \beta_a \times \frac{V_e + V_d(1-T)}{V_e}$

$$= 1.0 \times \frac{3,900 + (4,180 \times 0.70)}{3,900} = 1.75$$

The beta of Geared, as we should expect, is higher than the beta of Ungeared.
1. A company has issued 10% convertible bonds which are due to be redeemed in four years at a 5% premium. They are currently quoted at $80 per $100 nominal. $100 nominal can be converted into 25 shares in four years.

The share price is currently $4.00 and is expected to grow at a rate of 4% pa. Assume a 30% rate of tax.

Calculate the cost of the convertible debt.

2. A company's shares are valued at $5.80. Dividends grow 5% pa. The current dividend of $0.45 is about to be paid.

What is the cost of equity?
A company has the following capital structure:

**Equity:** 2 million shares valued at $3.30 each. Current dividend of $0.06 about to be paid. Dividends for each of the last two years were $0.051 and $0.0415 (earliest)

**Debt:** 0.5 million 8% debentures valued at $112 per cent. Redeemable in four year's time at a premium of 20%. Corporation tax is 30%.

What is the WACC?
Rupab Co has in issue five million shares with a market value of $3.81 per share. The equity beta of the company is 1.2. The yield on short-term government debt is 4.5% per year and the equity risk premium is approximately 5% per year.

The debt finance of Rupab Co consists of bonds with a total book value of $2 million. These bonds pay annual interest before tax of 7%. The par value and market value of each bond is $100.

Rupab Co pays taxation one year in arrears at an annual rate of 25%.

**Required:** Calculate the after-tax weighted average cost of capital of Rupab Co. (6 marks)
Cost of equity = 4.5 + (1.2 × 5) = 10.5%
The bonds are trading at par so the before-tax cost of debt is the same as the interest rate on the bonds, 7%.
After-tax cost of debt = 7 × (1 – 0.25) = 5.25%

Market value of equity = 5m × 3.81 = $19.05 million
Market value of debt is equal to its par value of $2 million
Sum of market values of equity and debt = 19.05 + 2 = $21.05 million
WACC = (10.5% × 19.05/21.05) + (5.25% × 2/21.05) = 10.0%
Ex div MV ordinary shares = $4.70 per share; ordinary dividend of 36.3 cents per share has just been paid. Recent dividends (cents)

<table>
<thead>
<tr>
<th>Year</th>
<th>Dividend (cents)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>30.9</td>
</tr>
<tr>
<td>2009</td>
<td>32.2</td>
</tr>
<tr>
<td>2010</td>
<td>33.6</td>
</tr>
<tr>
<td>2011</td>
<td>35.0</td>
</tr>
</tbody>
</table>

Ex div MV preference shares (not redeemable) = 40 cents per share.

The bank loan rate = 4%

The 7% bonds premium have an ex interest market value of $104.50 per bond and are redeemable at a 5% premium. Tax = 30%. **Required:** calculate AMH Co's WACC
A company has the following capital structure:

1 million $1 ordinary shares, MV = $2/share.

0.75 million 8% debentures, MV = $80%.

Its current cost of equity = 20%. $\text{R}_f = 6\% \ R_m = 16\% \ T = 30\%$.

What would the company's cost of equity be if it were all equity financed?

Hint calculate the geared beta using CAPM and then calculate the un geared beta.

And then calculate the cost of equity using CAPM
A house-building company is financed in the ratio D:E 2:3. It has a cost of equity of 21%. It is considering expanding into office maintenance.

A listed company in office maintenance has a cost of equity of 15%. It is financed in the ratio D:E 1:1.

Required return = $R_f + \beta (R_m - R_f)$; $R_m = 16\%$; $R_f = 4\%$; $T = 30\%$

If the house-building company finances its expansion purely by equity, what return would be required?
CHAPTER 10: DIVIDEND POLICY

Syllabus areas

- Dividend policy – practical issues
- Dividend policy - theories
Dividend policy will depend upon many factors including:

- Sufficient funds available
- Law on distributable profits
- Loan agreements
- Funds for asset replacement
- Investors preference for either dividend / capital gains
- Preferred gearing level
- Other sources of finance
- Consistency
- Avoid large falls / rises
Theories of dividend policy

Residual theory

- If a company can identify projects with positive NPVs, it should invest in them. Dividends should be paid only if investment opportunities are exhausted.

Traditional view

- The price of a share depends on the mix of dividends, given shareholders’ required rate of return, growth.

Irrelevancy theory

- MM proposed that in a tax-free world, shareholders are indifferent between dividends and capital gains, and the value of a company is determined solely by the ‘earning power’ of its assets and investment.
Types of dividend

- **Scrip dividend** is a dividend payment in the form of new shares, not cash.
- **Scrip issue** is an issue of new shares to current shareholders by converting equity reserves.
- **Share repurchase** is a use for surplus cash, increases EPS and increases gearing.
- It may prevent a takeover or enable a quoted company to withdraw from the stock market.
CHAPTER 11: MARKET EFFICIENCY

Syllabus areas

- Share prices and investment returns
- The efficient market hypothesis
Share prices and investment returns

Theories of share price behaviour

- The fundamental analysis theory
- Technical analysis (chartist theory)
- Random walk theory

The fundamental analysis theory

- The value of a share is derived from a valuation of estimated future dividend (dividend valuation model)

- Fundamental analysis is the analysis of internal and external influences that directly affect the operations of a company with a view to assisting in investment decisions. Information include industry trends, competitor analysis, financial statements, fiscal policy, etc.
Technical analysis (chartist theory)

- Attempts to predict share price movements by assuming that past price patterns will be repeated

- **Technical analysis** is the analysis of past movements in the prices of financial instruments, currencies, commodities etc. with a view to, by applying analytical techniques, predicting future price movements

Random walk theory

- It is consistent with the traditional theory. However, the share price will be altered when new information becomes available.

- One of its underlying assumptions is that all relevant information about a company is available to all potential investors who will act on the information in a rational manner
The efficient market hypothesis is the theory that the stock market reacts immediately to all the information that is available.

The features of an efficient market are:
- Prices reflect all relevant information
- No individual dominates the market
- Transaction costs are insignificant

There are three forms of efficiency:
- **Weak-form** efficiency suggests prices reflect all relevant information about past price movements and their implications.
- **Semi strong-form** efficiency suggests prices are also influenced by publicly available knowledge.
- **Strong-form** efficiency suggests prices are also influenced by inside information.
The efficient market hypothesis

The implications of an efficient market are:

- The share price of a company is the best basis for a takeover bid
- A company should concentrate on maximising NPV of investments
- There is no point in attempting to mislead the market

Practical considerations

- Efficiency in a market relates to how quickly and accurately prices adjust to new information
- Liquidity is the ease of dealing in shares
- Large companies have better liquidity and greater marketability than small companies
- Irrationality often drives the stock market eg seasonal effects, short-run overreactions
Practical considerations

- Market capitalisation is the market value of a company’s shares multiplied by the number of issued shares
- The return from investing in smaller companies can be greater in the long run
- Behavioural finance attempts to explain the market implications of the psychological factors behind investor decisions
- Suggests that irrational investor behaviour may cause over-reactions in prices
[CHAPTER 12: INVESTMENT APPRAISAL TECHNIQUES]

Syllabus areas

- Investments and projects
- Capital investment appraisal
- Risk and uncertainty
- Investment performance and post-completion audit
Investment Cycle

- New Opportunities
- Environmental Review for Possible Investment
- Strategic Priorities
- Identify Investments
  - Key Criteria: Production, Labour, Sales, Economic Environment
- Financial Appraisal of Investment
- Authorisation of Investment
- Capital Budget
- Monitoring of Investment
- Review of Investment
Nature of projects

- They have a defined beginning and end
- They have resources allocated to them
- They are intended to be done only once
- There are clear goals/ objectives and a plan to achieve it
- They have cross functional teams to drive the project

Project success factors

- Clearly defined mission and goals
- Top management support
- Competent project manager and a project team
- Sufficient resources – finance, material, people, processes
- Excellent communication channels
Capital Investment Appraisal Techniques

Non-Discounted Cash flow Methods
- Payback Period
- Accounting (book) rate of return (AROR)

Discounted Cash flow Methods
- Net Present Value (NPV)
- Internal Rate of Return (IRR)/ MIRR
- Profitability Index (PI)
Accounting Rate of Return (AROR)

- Also known as Return on Capital Employed (ROCE) or Return on Investment (ROI)
- Can be used to rank projects taking place over a number of years (using average profits and investment)
- Can also rank mutually exclusive projects
- There are several ways of calculating the AROR/ ROCE/ ROI

\[
ARRO = \frac{\text{Estimated average annual profit, after depreciation, before interest and tax}}{\text{Average book value of capital employed}} \times 100\%
\]

- Criteria for acceptance
  - If AROR > Hurdle rate: Accept project
  - If AROR < Hurdle rate: Reject project
Accounting Rate of Return (AROR)

\[
\frac{\text{Estimated average profits}}{\text{Estimated average investment}} \times 100\%
\]

Where average investment = \[
\frac{\text{Initial outlay} + \text{scrap value}}{2}
\]

Profit is **after** depreciation but before interest and tax.
Example - Accounting Rate of Return (AROR)

A company has a target accounting rate of return of 20% (using the definition given above), and is now considering the following project.

<table>
<thead>
<tr>
<th>Capital cost of asset</th>
<th>Rs. 80m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated life</td>
<td>4 years</td>
</tr>
<tr>
<td>\textit{Estimated profit before depreciation}</td>
<td>Rs</td>
</tr>
<tr>
<td>Year 1</td>
<td>20 million</td>
</tr>
<tr>
<td>Year 2</td>
<td>25 million</td>
</tr>
<tr>
<td>Year 3</td>
<td>35 million</td>
</tr>
<tr>
<td>Year 4</td>
<td>25 million</td>
</tr>
</tbody>
</table>

The capital asset would be depreciated by 25% of its cost each year, and will have no residual value.

Required

**Assess** whether the project should be undertaken.
Example - Accounting Rate of Return (AROR)

- Total profit before depreciation over four years: Rs 105 million
- Total profit after depreciation over four years: Rs 25 million
- Average annual profit after depreciation: Rs 6.25 million
- Original cost of investment: Rs 80 million
- Average net book value over the four-year period: \( \frac{(80\text{ million} + 0)}{2} \) = Rs 40 million

The average ARR is 6.25 million ÷ 40 million = 15.625%.
**Payback Period**

**Payback** is the time taken for the cash inflows from a capital investment project to equal the cash outflows (When will the project’s cash flows allow us to break-even?)

- The concept behind the payback approach is to favour investments that return the invested capital as quickly as possible.
- Usually expressed in years
- It is used as a minimum target / first screening method

**Example**

<table>
<thead>
<tr>
<th>Rs. ’000</th>
<th>X</th>
<th>Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investment</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>Year 1 profits</td>
<td>20</td>
<td>50</td>
</tr>
<tr>
<td>Year 2 profits</td>
<td>30</td>
<td>20</td>
</tr>
<tr>
<td>Year 3 profits</td>
<td>50</td>
<td>5</td>
</tr>
</tbody>
</table>

Calculate the payback period.
Capital investments appraisal 7

Net Present Value (NPV)

The NPV is the total present value of expected cash flows minus the initial outlay. NPV measures the improvement/deterioration of a firm’s value as a result of undertaking a project in today’s rupees.

- It considers the profitability during the total life of the project and take into account the time value of money.

- Relevant cost are – cash based, opportunity cost, futuristic, incremental. Ignores sunk cost and centrally allocated costs (overheads)

- The decision rule:
  
  If NPV > 0  Accept project
  If NPV < 0  Reject project
Net Present Value (NPV)

Calculate the net present value of the following short-duration investment.

Cost (Rs. 2,000,000)

Revenues

2 months  Rs. 700,000
4 months  Rs. 300,000
6 months  Rs. 1,000,000
One year  Rs. 250,000

The company's annual cost of capital is 16%.
Net Present Value (NPV)

**Two months**
Interest rate \[= \sqrt{1+0.16} - 1 = 2.50\%\]
Discount factor \[= \frac{1}{1.025} = 0.976\]

**Four months**
Interest rate \[= \sqrt[3]{1+0.16} - 1 = 5.07\%\]
Discount factor \[= \frac{1}{1.0507} = 0.952\]

**Six months**
Interest rate \[= \sqrt[6]{1+0.16} - 1 = 7.70\%\]
Discount factor \[= \frac{1}{1.0770} = 0.928\]
You have recently commenced working for Burung Co and are reviewing a four-year project which the company is considering for investment. The project is in a business activity which is very different from Burung Co’s current line of business.

The following net present value estimate has been made for the project:

<table>
<thead>
<tr>
<th>Year</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales revenue</td>
<td>23-03</td>
<td>36-60</td>
<td>49-07</td>
<td>27-14</td>
<td></td>
</tr>
<tr>
<td>Direct project costs</td>
<td>(13-82)</td>
<td>(21-96)</td>
<td>(29-44)</td>
<td>(16-28)</td>
<td></td>
</tr>
<tr>
<td>Interest</td>
<td>(1-20)</td>
<td>(1-20)</td>
<td>(1-20)</td>
<td>(1-20)</td>
<td></td>
</tr>
<tr>
<td>Profit</td>
<td>8-01</td>
<td>13-44</td>
<td>18-43</td>
<td>9-66</td>
<td></td>
</tr>
<tr>
<td>Tax (20%)</td>
<td>(1-60)</td>
<td>(2-69)</td>
<td>(3-69)</td>
<td>(1-93)</td>
<td></td>
</tr>
<tr>
<td>Investment/sale</td>
<td>(38-00)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cash flows</td>
<td>(38-00)</td>
<td>6-41</td>
<td>10-75</td>
<td>14-74</td>
<td>11-73</td>
</tr>
<tr>
<td>Discount factors (7%)</td>
<td>1</td>
<td>0-935</td>
<td>0-873</td>
<td>0-816</td>
<td>0-763</td>
</tr>
<tr>
<td>Present values</td>
<td>(38-00)</td>
<td>5-99</td>
<td>9-38</td>
<td>12-03</td>
<td>8-95</td>
</tr>
</tbody>
</table>

Net present value is negative $1-65 million, and therefore the recommendation is that the project should not be accepted.

In calculating the net present value of the project, the following notes were made:

(i) Since the real cost of capital is used to discount cash flows, neither the sales revenue nor the direct project costs have been inflated. It is estimated that the inflation rate applicable to sales revenue is 8% per year and to the direct project costs is 4% per year.

(ii) The project will require an initial investment of $38 million. Of this, $16 million relates to plant and machinery, which is expected to be sold for $4 million when the project ceases, after taking any taxation and inflation impact into account.

(iii) Tax allowable depreciation is available on the plant and machinery at 50% in the first year, followed by 25% per year thereafter on a reducing balance basis. A balancing adjustment is available in the year the plant and machinery is sold. Burung Co pays 20% tax on its annual taxable profits. No tax allowable depreciation is available on the remaining investment assets and they will have a nil value at the end of the project.
(iv) Burung Co uses either a nominal cost of capital of 11% or a real cost of capital of 7% to discount all projects, given that the rate of inflation has been stable at 4% for a number of years.

(v) Interest is based on Burung Co’s normal borrowing rate of 150 basis points over the 10-year government yield rate.

(vi) At the beginning of each year, Burung Co will need to provide working capital of 20% of the anticipated sales revenue for the year. Any remaining working capital will be released at the end of the project.

(vii) Working capital and depreciation have not been taken into account in the net present value calculation above, since depreciation is not a cash flow and all the working capital is returned at the end of the project.

It is anticipated that the project will be financed entirely by debt, 60% of which will be obtained from a subsidised loan scheme run by the government, which lends money at a rate of 100 basis points below the 10-year government debt yield rate of 2.5%. Issue costs related to raising the finance are 2% of the gross finance required. The remaining 40% will be funded from Burung Co’s normal borrowing sources. It can be assumed that the debt capacity available to Burung Co is equal to the actual amount of debt finance raised for the project.

Burung Co has identified a company, Lintu Co, which operates in the same line of business as that of the project it is considering. Lintu Co is financed by 40 million shares trading at $3.20 each and $34 million debt trading at $94 per $100. Lintu Co’s equity beta is estimated at 1.5. The current yield on government treasury bills is 2% and it is estimated that the market risk premium is 8%. Lintu Co pays tax at an annual rate of 20%.
Both Burung Co and Lintu Co pay tax in the same year as when profits are earned.

Required:

(a) Calculate the adjusted present value (APV) for the project, correcting any errors made in the net present value estimate above, and conclude whether the project should be accepted or not. Show all relevant calculations.  

(b) Comment on the corrections made to the original net present value estimate and explain the APV approach taken in part (a), including any assumptions made.
Risk and uncertainty

Following are the methods to deal with risk and certainty

1. Sensitivity analysis
2. Certainty equivalents
3. Probability analysis
4. Simulation models
5. Discounted payback
6. Risk adjusted discounting factor
Risk and uncertainty

Following are the methods to deal with risk and certainty

1. **Sensitivity analysis**

   \[
   \text{Sensitivity} = \frac{\text{NPV}}{\text{Present value of project variable}} \times 100 \%
   \]

   NPV could depend on a number of uncertain variables such as selling price, sales volume, initial cost, operating cash flows, discounting factor and benefits

   KN Co is considering a project with the following cash flows.

<table>
<thead>
<tr>
<th>Year</th>
<th>Initial investment Rs Mn</th>
<th>Variable costs Rs Mn</th>
<th>Cash inflows Rs Mn</th>
<th>Net cash flows Rs Mn</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>(2)</td>
<td>6.5</td>
<td>4.5</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>(2)</td>
<td>6.5</td>
<td>4.5</td>
<td></td>
</tr>
</tbody>
</table>

   Cash flows arise from selling 650,000 units at Rs. 100 per unit. KN Co has a cost of capital of 8%.

   **Required**

   **Interpret** the sensitivity of the project to changes in variables.
Risk and uncertainty

Solution
The PVs of the cash flow are as follows.

<table>
<thead>
<tr>
<th>Year</th>
<th>Discount factor 8%</th>
<th>PV of initial investment Rs Mn</th>
<th>PV of variable costs Rs Mn</th>
<th>PV of cash inflows Rs Mn</th>
<th>PV of net cash flow Rs Mn</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1.000</td>
<td>(7.000)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>0.926</td>
<td>(1.852)</td>
<td>6.019</td>
<td>4.167</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>0.857</td>
<td>(1.714)</td>
<td>5.571</td>
<td>3.857</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(7.000)</td>
<td>(3.566)</td>
<td>11.590</td>
<td>1.024</td>
</tr>
</tbody>
</table>

The project has a positive NPV and would appear to be worthwhile. The sensitivity of each project variable is as follows.

(a) **Initial investment**

Sensitivity = \( \frac{1.024}{7.000} \times 100 = 14.6\% \)

(b) **Sales volume**

Sensitivity = \( \frac{1.024}{11.590 - 3.566} \times 100 = 12.8\% \)

(c) **Selling price**

Sensitivity = \( \frac{1.024}{11.590} \times 100 = 8.8\% \)

(d) **Variable costs**

Sensitivity = \( \frac{1.024}{3.566} \times 100 = 28.7\% \)
Risk and uncertainty

2. Certainty equivalents

Certainty equivalent method is an approach to dealing with risk in a capital budgeting context. It involves expressing risky future cash flows in terms of the certain cash flow which would be considered, by the decision maker, as their equivalent, i.e., the decision maker would be indifferent between the risky amount and the (lower) riskless amount considered to be its equivalent.

- By this method, the expected cash flows are converted to equivalent riskless amounts.
- The cash flows are discounted at the risk free rate.
- The disadvantage of this method is the subjectivity involved in adjusting the cash flows.
2. Certainty equivalents

DA Co, whose cost of capital is 10%, is considering a project with the following expected cash flows.

<table>
<thead>
<tr>
<th></th>
<th>Year 0</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash flow</td>
<td>(10,000)</td>
<td>7,000</td>
<td>5,000</td>
<td>5,000</td>
</tr>
<tr>
<td>Discount factor @ 10%</td>
<td>1.000</td>
<td>0.909</td>
<td>0.826</td>
<td>0.751</td>
</tr>
<tr>
<td>Present value</td>
<td>(10,000)</td>
<td>6,363</td>
<td>4,130</td>
<td>3,755</td>
</tr>
</tbody>
</table>

\[ \text{NPV} = \text{Rs. } 4,248 \]

The project would seem to be worthwhile. However, because of the uncertainty about the future cash flows, the management decides to reduce them to certainty equivalents by taking only 70%, 60% and 50% of the years 1, 2 and 3 cash flows respectively. The risk-free rate is 5%.
### Solution

The risk-adjusted NPV of the project would be as follows.

<table>
<thead>
<tr>
<th>Year</th>
<th>Cash flow</th>
<th>Certainty equivalent</th>
<th>Risk adjusted cash flow</th>
<th>Discount factor @ 5%</th>
<th>Present value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 0</td>
<td>10,000</td>
<td>1.00</td>
<td>10,000</td>
<td>1.00</td>
<td>10,000</td>
</tr>
<tr>
<td>Year 1</td>
<td>7,000</td>
<td>0.70</td>
<td>4,900</td>
<td>0.952</td>
<td>4,665</td>
</tr>
<tr>
<td>Year 2</td>
<td>5,000</td>
<td>0.60</td>
<td>3,000</td>
<td>0.907</td>
<td>2,721</td>
</tr>
<tr>
<td>Year 3</td>
<td>5,000</td>
<td>0.50</td>
<td>2,500</td>
<td>0.864</td>
<td>2,160</td>
</tr>
</tbody>
</table>

**NPV = (454,000)**

The project is too risky and should be rejected.
3. Probability analysis

A probability distribution of 'expected cash flows' can often be estimated, recognising there are several possible outcomes, not just one. This may be used to do the following.

Step 1  Calculate an expected value of the NPV.

Step 2  Measure risk, for example in the following ways.

(a) By calculating the worst possible outcome and its probability

(b) By calculating the probability that the project will fail to achieve a positive NPV
3. Probability analysis

A company is considering a project involving the outlay of Rs. 300,000 which it estimates will generate cash flows over its two-year life at the probabilities shown in the following table.

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Cash flow (Rs)</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>100,000</td>
<td>0.25</td>
</tr>
<tr>
<td></td>
<td>200,000</td>
<td>0.50</td>
</tr>
<tr>
<td></td>
<td>300,000</td>
<td>0.25</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>1.00</strong></td>
</tr>
</tbody>
</table>
Risk and uncertainty

3. Probability analysis

<table>
<thead>
<tr>
<th>Year 2</th>
<th>If cash flow in year 1 is: Rs</th>
<th>There is a probability of:</th>
<th>That the cash flow in year 2 will be: Rs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>100,000</td>
<td>0.25</td>
<td>Nil</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.50</td>
<td>100,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.25</td>
<td>200,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>200,000</td>
<td>0.25</td>
<td>100,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.50</td>
<td>200,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.25</td>
<td>300,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>300,000</td>
<td>0.25</td>
<td>200,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.50</td>
<td>300,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.25</td>
<td>350,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.00</td>
<td></td>
</tr>
</tbody>
</table>

The cost of capital is 10% for this type of project.

**Required**

*Calculate* the expected value (EV) of the project's NPV and the probability that the NPV will be negative.
Risk and uncertainty

3. **Probability analysis**

**Step 1** Calculate expected value of the NPV

First we need to draw up a probability distribution of the expected cash flows. We begin by calculating the present values of the cash flows.

<table>
<thead>
<tr>
<th>Year</th>
<th>Cash flow (Rs '000)</th>
<th>Discount factor 10%</th>
<th>Present value (Rs '000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100</td>
<td>0.909</td>
<td>90.9</td>
</tr>
<tr>
<td>1</td>
<td>200</td>
<td>0.909</td>
<td>181.8</td>
</tr>
<tr>
<td>1</td>
<td>300</td>
<td>0.909</td>
<td>272.7</td>
</tr>
<tr>
<td>2</td>
<td>100</td>
<td>0.826</td>
<td>82.6</td>
</tr>
<tr>
<td>2</td>
<td>200</td>
<td>0.826</td>
<td>165.2</td>
</tr>
<tr>
<td>2</td>
<td>300</td>
<td>0.826</td>
<td>247.8</td>
</tr>
<tr>
<td>2</td>
<td>350</td>
<td>0.826</td>
<td>289.1</td>
</tr>
</tbody>
</table>
3. **Probability analysis**

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Year 2</th>
<th>Joint Probability</th>
<th>Total PV of Cash Inflows</th>
<th>EV of PV of Cash Inflows</th>
</tr>
</thead>
<tbody>
<tr>
<td>PV of Cash flow Rs '000</td>
<td>(a)</td>
<td>(b)</td>
<td>(c)</td>
<td>(d)</td>
</tr>
<tr>
<td>90.9</td>
<td>0.25</td>
<td>0.0</td>
<td>0.25</td>
<td>0.0625</td>
</tr>
<tr>
<td>90.9</td>
<td>0.25</td>
<td>82.6</td>
<td>0.50</td>
<td>0.1250</td>
</tr>
<tr>
<td>90.9</td>
<td>0.25</td>
<td>165.2</td>
<td>0.25</td>
<td>0.0625</td>
</tr>
<tr>
<td>181.8</td>
<td>0.50</td>
<td>82.6</td>
<td>0.25</td>
<td>0.1250</td>
</tr>
<tr>
<td>181.8</td>
<td>0.50</td>
<td>165.2</td>
<td>0.50</td>
<td>0.2500</td>
</tr>
<tr>
<td>181.8</td>
<td>0.50</td>
<td>247.8</td>
<td>0.25</td>
<td>0.1250</td>
</tr>
<tr>
<td>272.7</td>
<td>0.25</td>
<td>165.2</td>
<td>0.25</td>
<td>0.0625</td>
</tr>
<tr>
<td>272.7</td>
<td>0.25</td>
<td>247.8</td>
<td>0.50</td>
<td>0.1250</td>
</tr>
<tr>
<td>272.7</td>
<td>0.25</td>
<td>289.1</td>
<td>0.25</td>
<td>0.0625</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>344,420</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

EV of PV of cash inflows: 344,420 Rs
Less project cost: 300,000 Rs
EV of NPV: 44,420 Rs
CHAPTER 13: INTERNATIONAL INVESTMENT APPRAISAL

Syllabus areas

- International Investments
- International Investment Appraisal
### 1.1 Why invest overseas?

We can summarise the reasons for overseas investment using 5 Cs:

<table>
<thead>
<tr>
<th>The 5 Cs</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company</td>
<td>An expansion strategy may create economies of scale as the company gets bigger.</td>
</tr>
<tr>
<td>Country</td>
<td>The company could locate near to high-quality local supplies or access cheaper labour and government grants.</td>
</tr>
<tr>
<td>Customer</td>
<td>The company could locate closer to its end customer to enable shorter lead times.</td>
</tr>
<tr>
<td>Competition</td>
<td>Overseas markets may have weaker competition.</td>
</tr>
<tr>
<td>Currency</td>
<td>International investments can create costs which can be matched against revenues from that country and help to manage exchange rate risk.</td>
</tr>
</tbody>
</table>
1.2 Forms of overseas operations

Different forms of expansion overseas are available to meet various strategic objectives.

(a) Firms may expand by means of new 'start-up' investments, for example the setting up of an overseas subsidiary to operate a manufacturing plant. This does allow flexibility, although it may be slow to achieve, expensive to maintain and slow to yield satisfactory results.

(b) A firm might take over or merge with established firms abroad. This provides a means of purchasing market information, market share and distribution channels. However, the better acquisitions will only be available at a premium.

(c) A joint venture with a local overseas partner might be entered into.
1.3 Joint ventures

Joint venture is a contractual arrangement whereby two or more parties undertake an economic activity which is subject to joint control.

The two distinct types of joint venture are industrial co-operation (contractual), and joint-equity. A contractual joint venture is for a fixed period, and the duties and responsibility of the parties are contractually defined. A joint-equity venture involves investment, is of no fixed duration and continually evolves. It may be the best route in countries where full foreign ownership is discouraged.
1.4 Foreign subsidiaries

The basic structure of many multinationals consists of a parent company (a holding company) with subsidiaries in several countries. The subsidiaries may be wholly owned or just partly owned, and some may be owned through other subsidiaries.

1.4.1 The purpose of setting up subsidiaries abroad

The following are some reasons why a parent company might want to set up subsidiary companies in other countries.

- The location of markets
- The need for a sales organisation
- The opportunity to produce goods more cheaply
- The need to avoid import controls
- The need to obtain access to raw materials
- The availability of grants and tax concessions
1.4.3 Obtaining cash returns from an overseas subsidiary

If a subsidiary earns a profit, but then retains and reinvests the profits, the parent company will not get any cash at all. Various ways of obtaining a cash return are as follows.

(a) The subsidiary could make a profit and pay a **dividend** out of profits.

(b) The parent company could sell goods or services to the subsidiary and obtain payment. The amount of this payment will depend on the volume of sales and also on the **transfer price** for the sales.

(c) A parent company which grants a subsidiary the right to make goods protected by patents can charge a **royalty** on any goods that the subsidiary sells. The size of any royalty can be adjusted to suit the wishes of the parent company’s management.

(d) If the parent company makes a **loan** to a subsidiary, it can set the interest rate high or low, thereby affecting the profits of both companies. A high rate of interest on a loan, for example, would improve the parent company’s profits to the detriment of the subsidiary’s profits.

(e) **Management charges** may be levied by the parent company for costs incurred in the management of international operations.
1.5 Alternatives to FDI

(a) **Exporting** may be direct selling by the firm's own export division into the overseas markets, or it may be indirect through agents, distributors, trading companies and various other such channels. Exporting may be unattractive because of tariffs, quotas or other import restrictions in overseas markets, and local production may be the only feasible option in the case of bulky products such as cement and flat glass.

(b) **Licensing** involves conferring rights to make use of the licensor company’s production process on producers located in the overseas market in return for royalty payments. Licensing can allow fairly rapid penetration of overseas markets and has the advantage that substantial financial resources will not be required. Many multinationals use a combination of various methods of servicing international markets, depending on the particular circumstances.
Financing overseas subsidiaries

Following are the ways in which we can finance overseas operations

1. Using free cash flows
2. Using parent company’s home currency
3. Using subsidiary’s home currency
4. Using other country’s capital markets

The risks of overseas investments

1. Foreign exchange risk
2. Political ad country risks
3. Geographical separation
4. Litigation risks
5. Risks of loss of goods in transit
Implications of foreign investment

Following are the implications of foreign investment

1. Cost of capital will be high since the risk is high than the domestic market
2. Translation risk due to the conversion of foreign currency into the local currency

Tax implications

- Profits of an overseas branch or agency
- Income from foreign securities
- Dividends from foreign subsidiary
- Gains made on disposal of foreign assets

Double taxation relief (DTR)

A double taxation agreement is an agreement between two countries intended to avoid the double taxation of income which would otherwise be subject to taxation in both countries.
Implications of foreign investment

Example of Double taxation relief (DTR)

Suppose the tax rate on profits in the Federal West Asian Republic is 20%, the Sri Lanka company tax is 30%, and there is a double taxation agreement between the two countries.

A subsidiary of a Sri Lankan firm operating in the Federal West Asian Republic earns the equivalent of Rs. 1 million in profit, and therefore pays Rs. 200,000 in tax on profits. When the profits are remitted to Sri Lanka, the Sri Lankan parent can claim a credit of Rs. 200,000 against the full Sri Lankan tax charge of Rs. 300,000, and hence will only pay Rs. 100,000.
International investment appraisal

Forecasting exchange rates

1. Purchasing power parity

\[
\text{Future spot rate } A$/B$ = \text{Spot rate } A$/B$ \times \frac{1 + \text{country A inflation rate}}{1 + \text{country B inflation rate}}
\]

2. Interest Rate Parity

\[
\text{Future spot rate } A$/B$ = \text{Spot rate } A$/B$ \times \frac{1 + \text{nominal country A interest rate}}{1 + \text{nominal country B interest rate}}
\]

The Rs/$ exchange rate in February 2014 was Rs. 132/$ (that is, $1 = Rs. 132). Inflation in the US was 2.6% and 3.4% in Sri Lanka.

Required

Calculate the forecast spot rate in each of the next three years for the Rs/$.
International investment appraisal

The €/Rs exchange rate in April 2010 was €1.138/Rs. (that is, Re. 1 = €1.138); inflation in Europe was 1.5% and 3.7% in Sri Lanka.

Required

Calculate the forecast spot rate in each of the next three years for the €/Rs.

Adjusting the cost of capital

Adjusted discount rate to use in international budgeting (international Fisher effect)

\[
\frac{1 + \text{annual discount rate } B$}{1 + \text{annual discount rate } A$} = \frac{\text{Future spot rate } A$ / B$ \text{ in 12 months' time}}{\text{Spot rate } A$ / B$}
\]

\[
= \frac{1 + \text{annual inflation rate } B$}{1 + \text{annual inflation rate } A$}
\]

\[
= \frac{1 + \text{annual inflation rate } B$}{1 + \text{annual inflation rate } A$}
\]
Syllabus areas

- Reasons for valuation and valuation issues
- Assets valuation bases
- Earnings valuation bases
- Dividend valuation bases
- Cash flow valuation bases
- Intangible assets and intellectual capital
Reasons for valuations

- A company going public
- Merging with another company
- Selling shares
- When pledging shares as collateral
- Tax purposes
- When a group of companies wants to sell its subsidiaries
- When companies are broken in liquidation
- When a stake of a company needs to be sold out (e.g., Yahoo vs Microsoft bid)
General factors affecting valuations

- The size of the shareholdings to be acquired
- The distribution of other shareholdings
- The rights related to the shares
- Any restrictions in transfer

Valuing listed companies – (S.P x No. of shares) Market capitalisation

Valuing unlisted companies

The techniques we are now going to cover produce a range of values which can be summarised as follows.

Maximum value: Value the cash flows or earnings under new ownership

Value the dividends under the existing management

Minimum value: Value the assets
Valuation methods

- Assets based
- Earnings based
- Dividend based – dividend growth model
- Cash flow based
Valuation methods

- **Assets based**
  - net assets based on historical, replacement or NRV
- **Earnings based**
  - P/E Ratio
  - Earnings yield
  
  \[
  \text{Earnings yield (EY)} = \frac{\text{EPS}}{\text{Market price per share}} \times 100\%
  \]

  
  \[
  \text{Market value} = \frac{\text{Earnings}}{\text{EY}}
  \]

  - ARR

- **Dividend based – dividend growth model**
- **Cash flow based**
Valuation methods

**Free cash flows**

In the free flow cash flows model:

\[
\text{Operating free cash flow} = \text{Revenues} - \text{Operating costs} + \text{Depreciation} - \text{Debt repayments and lease obligations} - \text{Working capital increases} - \text{Taxes} - \text{Replacement capital expenditure}
\]

**Shareholder Value Analysis**

*Shareholder value* is the total return to shareholders in terms of both dividends and share price growth, calculated as the present value of future free cash flows of the entity discounted at the weighted average cost of capital of the entity less the market value of debt.
Valuation methods

Shareholder Value Analysis

Corporate objectives

Shareholder value

Cash flow from operations

Cost of capital

Value drivers

Sales growth
Margin
Value growth duration period

Capital investment
Working capital
Acquisition

Credit rating
Tax rate
Capital structure
Dividend policy

Strategic focus

Business strategy

Investment strategy

Financing strategy
Shareholder Value Drivers

(a) Key decisions with implications for cash flow and risk are specified. These may be strategic, operational, related to investment or financial.

(b) Value drivers are identified as the factors having the greatest impact on shareholder value, and management attention is focused on the decisions which influence the value drivers.

Value drivers are identified as being fundamental to the determination of value:

(i) Sales growth rate
(ii) Operating profit margin
(iii) Tax rate
(iv) Fixed capital investment
(v) Working capital investment
(vi) The planning horizon
(vii) The required rate of return
Valuation issues

- Impact of market efficiency
  - Availability of information
  - Mergers and takeovers
- Share valuation and change in market structure
  - Traditional approach – firm’s value is maximised by reducing the cost of capital
  - Net operating income approach – the value of a geared company will always be greater than its ungeared counterpart

\[ V_g = V_u + TB_c \]

- Valuation prior to flotation

Refer examples in p. 467 to 472 for illustration
Share valuation and change in capital structure

- Impact of market efficiency
  - Availability of information
  - Mergers and takeovers

- Share valuation and change in market structure
  - Traditional approach – firm’s value is maximised by reducing the cost of capital
  - Net operating income approach – the value of a geared company will always be greater than its ungeared counterpart

\[ V_g = V_u + TBC \]

- Valuation prior to flotation

Refer examples in p. 467 to 472 for illustration
Valuation of prior floatation

Step 1
Find the equity beta of a similar listed company and strip out the effect of gearing to create an ungeared beta.

\[ \beta_u = \beta_g \frac{V_F}{V_E + V_D(1 - t)} \]

Step 2
Regear the beta using the company's gearing using the formula:

\[ \beta_g = \beta_u + (\beta_u - \beta_d) \frac{V_D(1 - t)}{V_E} \]
and calculate the \( k_e \) geared.

Step 3
Use this \( k_e \) geared to calculate the value of the company using the formula:

\[ P_0 = \frac{d_0(1 + g)}{k_e - g} \]
GH Co is going to obtain a stock market listing, and a valuation therefore needs to be calculated for the company.

GH Co's debt:equity ratio is 2:5, its annual earnings this year were Rs. 600 million and it regularly pays 50% of earnings as dividends, with 5% growth expected each year.

A listed company in the same industry as GH Co has a debt:equity ratio of 1:2 and a beta of 1.62.

The risk-free return is 4%, the market return is 9% and tax is at 30%.

Required

Calculate a value of GH Co prior to floatation.
Valuation of prior floatation

Step 1

\[
\beta_u = 1.62 \left[ \frac{2}{2 + 1 \times (1 - 0.3)} \right] = 1.2
\]

Step 2

\[
\beta_g = 1.2 + 1.2 \left[ \frac{(2 \times (1 - 0.3))}{5} \right] = 1.54
\]

\[
k_e = 4\% + (9\% - 4\%) \times 1.54 = 11.7\%
\]

Step 3

\[
d_0 = 50\% \times 600m = 300m
\]

\[
g = 5\%
\]

\[
P_0 = \frac{300m(1+0.05)}{0.117-0.05} = \text{Rs. 4,701.493 million}
\]
Valuation of intangible assets

- Patents, trademarks and copyrights
- Franchises and licensing agreements
- Research and development
- Brands
- Technology, management and consulting processes
- Know-how, education and vocational qualification
- Customer loyalty
- Distribution channels
- Management philosophy
A step-by-step approach would be as follows.

**Step 1** Calculate average pre-tax earnings and average year-end tangible asset values over a time period.

**Step 2** Divide earnings by average assets to get the return on assets.

**Step 3** Multiply the industry average return on assets percentage by the entity's average tangible asset values. Subtract this from the entity's pre-tax earnings to calculate the excess return.

**Step 4** Subtract tax from the excess return to give the after-tax premium attributable to intangible assets.

**Step 5** Calculate the NPV of the premium by dividing it by the entity's cost of capital.

Read p. 475 - 477
EVA and MVA

Market value added (MVA) approach

Shows how much management has added to the value of capital contributed by the capital providers

\[
\text{MVA} = \text{Market Value of Debt} + \text{Market Value of Equity} - \text{Book Value of Equity}
\]

MVA related to EVA: MVA is simply PV of future EVAs of the company

If market value and book value of debt are the same, MVA is the difference between market value of common stock and equity capital of the firm

Economic Value Added (EVA™)

\[
\text{EVA}^{TM} = \text{NOPAT} - (\text{cost of capital} \times \text{capital employed})
\]

Adjustments to NOPAT

Add:

- Interest on debt
- Goodwill written off
- Accounting depreciation
- Increases in provisions
- Net capitalised intangibles
Advantages of Economic Value Added (EVA™)

(a) The economic value added approach focuses on long-term net present value.

(b) By including a financing element, it brings home to managers the costs of capital used, emphasising the importance of careful investment and control of working capital.

Disadvantages of Economic Value Added (EVA™)

(a) EVA® may cause managers to avoid projects with poor initial returns or large initial expenditure (for example, on research and development) if they are primarily being judged on short-term performance.

(b) The economic value added approach also suffers from the usual problems of being based on historical accounting figures that can be distorted.

(c) There may be other value drivers that are important, such as non-capitalised goodwill.
CHAPTER 16: AMALGAMATIONS AND RESTRUCTURING

Syllabus areas

- Mergers and acquisitions
- The conduct of a takeover
- Payment methods
- Valuation of mergers and acquisitions
- Regulation of takeovers and Post-acquisition integration
- Impact of mergers and takeovers on stakeholders
- Exit strategies
Merger. A business combination that results in the creation of a new reporting entity formed from the combining parties, in which the shareholders of the combining entities come together in a partnership for the mutual sharing of the risks and benefits of the combined entity, and in which no party to the combination in substance obtains control over any other, or is otherwise seen to be dominant, whether by virtue of the proportion of its shareholders’ rights in the combined entity, the influence of its directors or otherwise.

Takeover. The acquisition by a company of a controlling interest in the voting share capital of another company, usually achieved by the purchase of a majority of the voting shares.

Reverse takeover. When a smaller company takes over a larger one, so that a predator company has to increase its equity by over 100% to complete the takeover.
Definitions

Horizontal integration is characterised by a firm adding new products to its existing market, or new markets to its existing products.

Vertical integration, or vertical diversification, occurs when a company becomes either its own supplier of raw materials or components (ie backward vertical integration) or its own distributor or sales agent (ie forward vertical integration).

Concentric diversification occurs when a company seeks to add new products that have technological and/or marketing synergies with the existing product line. These products will normally appeal to new classes of customer.

Conglomerate diversification consists of making entirely new products for new classes of customers. These new products have no relationship to the company’s current technology, products or markets.
Reasons for mergers and takeovers

**Synergy** is where the present value of the combined enterprise is greater than the sum of the net present value of the individual firms.

<table>
<thead>
<tr>
<th>Operating economies</th>
<th>Elimination of duplicate facilities and many other ways</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management acquisition</td>
<td>Acquisition of competent and go-ahead team to compensate for lack of internal management abilities</td>
</tr>
<tr>
<td>Diversification</td>
<td>Securing long-term future by spreading risk through diversification</td>
</tr>
<tr>
<td>Asset backing</td>
<td>Company with high earnings: assets ratios reducing risk through acquiring company with substantial assets</td>
</tr>
<tr>
<td>Quality of earnings</td>
<td>Reducing risk by acquiring company with less risky earnings</td>
</tr>
<tr>
<td>Finance and liquidity</td>
<td>Improve liquidity/ability to raise finance through acquisition of a more stable company</td>
</tr>
<tr>
<td>Reasons for mergers and takeovers</td>
<td></td>
</tr>
<tr>
<td>----------------------------------</td>
<td></td>
</tr>
<tr>
<td><strong>Growth</strong></td>
<td>Cheaper way of growing than internal expansion</td>
</tr>
<tr>
<td><strong>Tax factors</strong></td>
<td>Tax-efficient way of transferring cash out of corporate sector. In some jurisdictions, means of utilising tax losses by setting them against profits of acquired companies</td>
</tr>
<tr>
<td><strong>Defensive merger</strong></td>
<td>Stop competitors obtaining advantage</td>
</tr>
<tr>
<td><strong>Strategic opportunities</strong></td>
<td>Acquiring a company that provides a strategic fit (see below)</td>
</tr>
<tr>
<td><strong>Asset stripping</strong></td>
<td>Acquiring an undervalued company in order to sell off the assets to make a profit</td>
</tr>
</tbody>
</table>
Synergies

The following types of synergy may arise:

- **Operating** – for example economies of scale and eliminating inefficiency
- **Financial** – for example reduced risk through diversification, perhaps giving a lower cost of capital
- **Other effects** – for example management talent or increased market power

The types of synergy that arise through a particular merger or takeover will depend on the specific scenario. It is important to bear in mind that **projected** synergies may not be realised in practice.
Factors in takeovers

**Price factors**

(a) What would the **cost** of acquisition be?

(b) Would the acquisition be **worth** the price?

(c) Alternatively, factors (a) and (b) above could be expressed in terms of:

   What is the **highest price** that it would be worth paying to acquire the business?

   The value of a business could be assessed in terms of:

   (i) Its earnings

   (ii) Its assets

   (iii) Its prospects for sales and earnings growth

   (iv) How it would contribute to the strategy of the 'predator' company

The valuation of companies was covered in the previous chapter of this Study Text.
Factors in takeovers

Other factors

(d) Would the takeover be regarded as desirable by the predator company’s shareholders and (in the case of quoted companies) the stock market in general?

(e) Are the owners of the target company amenable to a takeover bid? Or would they be likely to adopt defensive tactics to resist a bid?

(f) What form would the purchase consideration take? An acquisition is accomplished by buying the shares of a target company. The purchase consideration might be cash, but the purchasing company might issue new shares (or loan stock) and exchange them for shares in the company taken over. If purchase is by means of a share exchange, the former shareholders in the company taken over will acquire an interest in the new, enlarged company.

(g) How would the takeover be reflected in the published accounts of the predator company?

(h) Would there be any other potential problems arising from the proposed takeover, such as future dividend policy and service contracts for key personnel?

Note. In the exam you may be asked to value a company and then discuss the strategic implications of the proposed acquisition.
Contesting an offer

The directors of a target company must **act in the interests of their shareholders, employees and creditors**. They may decide to contest an offer on several grounds.

(a) **The offer may be unacceptable** because the **terms are poor**. Rejection of the offer may lead to an improved bid.

(b) **The merger or takeover may have no obvious advantage.**

(c) **Employees** may be **strongly opposed** to the bid.

(d) **The founder members of the business** may oppose the bid, and appeal to the loyalty of other shareholders.

When a company receives a takeover bid which the board of directors considers unwelcome, the directors must act quickly to fight off the bid.
Defective tactics

The steps that might be taken to thwart a bid or make it seem less attractive include:

(a) **Revaluing assets** or **issuing a forecast of attractive future profits and dividends** to persuade shareholders that to sell their shares would be unwise, that the offer price is too low, and that it would be better for them to retain their shares

(b) **Lobbying** to have the offer referred to the competition authorities

(c) Launching an **advertising campaign** against the takeover bid (one technique is to attack the accounts of the predator company)

(d) Finding a *white knight*, a company which will make a welcome takeover bid (see below)
Defective tactics

(e) Making a **counter-bid** for the predator company (this can only be done if the companies are of a reasonably similar size)

(f) Arranging a **management buyout**

(g) Introducing a '**poison-pill**' anti-takeover device (see below)

(h) Introducing a '**shark repellent**' – changing the company's constitution to require a large majority to approve the takeover

**CASE STUDY**

The Swiss pharmaceutical company Roche launched a hostile takeover bid for US diagnostics company Illumina in early 2012. Illumina adopted defensive tactics and announced that it would adopt a 'poison pill' to protect its shareholders. This means that Illumina shareholders can buy new shares if any bidder acquires 15 per cent of the company's shares. This move protects the company by making Illumina more expensive to acquire. As a result of defensive tactics, Roche let its offer expire in April 2012.
Costs of contested takeover bids

Takeover bids, when contested, can be very expensive, involving:

- Costs of professional services, eg merchant bank and public relations agency
- Advertising costs
- Underwriting costs
- Interest costs
- Possible capital loss on buying/selling the target company’s shares
Methods of payment

- Cash
- Share exchange
- Bonds
- Earn out arrangements

Refer detailed explanation and example on p. 494 to 501
Macleanstein Inc is considering making a bid for 100% of Thomasina Inc’s equity capital. Thomasina has a P/E ratio of 14 and earnings of $500m.

It is expected that $150m in synergy savings will be made as a result of the takeover and the P/E ratio of the combined company is estimated to be 16.

Macleanstein currently has a P/E ratio of 17 and earnings of $750m.

Required

(a) What is the maximum amount that Macleanstein should pay for Thomasina?

(b) What is the minimum bid that Thomasina’s shareholders should be prepared to accept?
(a) **Maximum amount to be paid**

Macleanstein must consider the synergies to be made from the combination when determining the maximum amount to pay.

Value of Thomasina to Macleanstein = value of combined company – current value of Macleanstein

Value of combined company = new P/E ratio x combined earnings

= 16 x (500m + 750m + 150m) = $22,400m

Current value of Macleanstein = 17 x $750m = $12,750m

Value of Thomasina to Macleanstein = $22,400 - $12,750m = $9,650m

Therefore the maximum amount that Macleanstein should pay for Thomasina is $9,650m.

(b) **Minimum amount that Thomasina’s shareholders should accept**

= current value of Thomasina’s equity

= 14 x $500m = $7,000m

The final amount paid will probably fall between these two extremes.
EVA and MVA

Market value added (MVA) approach

Shows how much management has added to the value of capital contributed by the capital providers

$$\text{MVA} = \text{Market Value of Debt} + \text{Market Value of Equity} - \text{Book Value of Equity}$$

MVA related to EVA: MVA is simply PV of future EVAs of the company

If market value and book value of debt are the same, MVA is the difference between market value of common stock and equity capital of the firm

Economic Value Added (EVA™)

$$\text{EVA}^\text{TM} = \text{NOPAT} - (\text{cost of capital} \times \text{capital employed})$$

Adjustments to NOPAT

Add:

- Interest on debt
- Goodwill written off
- Accounting depreciation
- Increases in provisions
- Net capitalised intangibles
CHAPTER 17: CORPORATE FAILURE AND RECONSTRUCTION

Mohamed Intikab Bin Ali

Syllabus areas

- Predicting business failure
- Assessment of corporate failure prediction models
- Performance improvement strategies and corporate failure
- Organisational survival and life cycle issues
- Implementing performance improvement strategies
- Implementing performance improvement strategies
- Reconstruction schemes
- Financial reconstructions
- Leverage buyouts (LBO)
- Market response to financial reconstruction
Declining industries

- **Technological advances** leading to the growth of substitute products, often of lower cost and higher quality
- **Rising costs of inputs** of complementary products
- **Regulatory changes** or changes in legislation
- Shrinking **customer groups** (caused, for example, by demographic changes)
- **Changes** in lifestyle, buyers’ needs, tastes or trends
- Customers are in **financial difficulty** (for example, due to economic hardship in a recession)

Declining companies
Declining companies

(a) Decrease in the company's profitability
(b) Decreasing sales volume (ie sales revenue adjusted for inflation)
(c) An increase in gearing (debt as a proportion of equity)
(d) A decrease in liquidity, as measured by accounting ratios
(e) Restrictions on the dividend policy
(f) Financial engineering (eg changes in accounting policies and periods)
(g) 'Top management fear'
(h) Frequent changes in senior executives
(i) Falling market share
(j) Evidence of a lack of planning
Strategic failure
CHAPTER 19: MANAGING FOREIGN EXCHANGE RISK

Syllabus areas

- Translation, transaction and economic risk
- Exchange rates
- Internal hedging techniques
- Forward contracts
- Money market hedging
- Choosing a hedging method
- Currency futures, options and swaps
- Devising a foreign currency hedging strategy
Transaction, translation and economic risks

Translation: differences arise when consolidating foreign subsidiaries and branches.

- No cash flow effect
- Value of foreign operations rise and fall as exchange rates alter
- The effect can be reduced by using loans in the foreign currency to part-finance the subsidiary, because the foreign currency assets and liabilities will partially cancel
Transaction, translation and economic risks

Transaction: imports and exports where payments and receipts depend on exchange rates.

The most important source of currency risk in the exam

Many techniques to reduce the risk:
- Invoicing in domestic currency
- Leading and lagging
- Matching assets and liabilities
- Forward contracts
- Interest rate hedging
- Futures
- Options
Economic risk: long term exchange rate fluctuations affect the competitiveness of exports and imports.

- If a currency gets stronger (ie more expensive) its products will become more expensive in export markets.

- If a currency gets stronger imports become cheaper when translated from the foreign currency. (This can affect the competitiveness of home businesses which neither import nor export.)

- The only defence is to diversify the customer and supplier base and hope that not all currencies move in the same direction.
An exchange rate is the rate at which a currency can be traded in exchange for another currency.

The spot exchange rate is the rate at which currencies can be bought or sold for immediate delivery.

The forward rate is an exchange rate set for currencies to be exchanged at a future date.

A direct quote is the amount of domestic currency which is equal to one foreign currency unit.

An indirect quote is the amount of foreign currency which is equal to one domestic currency unit.
An exchange rate could be quoted either way in your exam, ie $1:Rs. 130 or Re. 1:$0.00769.

To convert $1,000 to rupees using the direct quote (Rs. 130:$1): $1,000 \times 130 = Rs. 130,000.

To convert $1,000 to rupees using an indirect quote ($0.00769:Re. 1): $1,000/0.00769 = Rs. 130,000 (corrected for rounding).

To convert Rs. 130,000 to dollars using the direct quote (Rs. 130:$1): 130,000/130 = $1,000.

To convert Rs. 130,000 to dollars using the indirect quote ($0.00769:Re. 1): 130,000 \times 0.00769 = $1,000 (corrected for rounding).

Logically, a direct quote for a Sri Lankan rupee will be an indirect quote for the USD and vice versa.

If a currency is quoted at Re 1:$0.00769, the $ is the counter currency (the reference or term currency), the Rs is the base currency.
The bid price is the rate at which the bank is willing to buy the currency. The offer (or ask) price is the rate at which the bank is willing to sell the currency. The difference between the bid price and the offer price is known as the spread.

You are a US importer and have to pay an Indian supplier Rupees 500,000. Exchange rate quoted is:

\[
\text{INR/US$} = 60.1853 - 60.2354
\]

How much will you pay in US$?

You are an Australian exporter and need to change €30,000 from an overseas sale into Australian $ (AUD). The exchange rates quoted by your bank is:

\[
\text{€/AUD} \quad 0.6833 - 0.6843
\]

How much will you receive AU$?
Hedging techniques

- Invoicing in domestic currency
- Leading (accelerating) and lagging (delaying) payments to avoid potential additional costs due to currency rate movements
- Matching receipts and payments
- Netting – credit balances are netted off against debit balances
- Forward contract - sets in advance the rate at which a specified quantity of currency will be bought and sold at a specified date in the future.
  A forward contract is binding: the agreed amount of currency must be delivered or paid for.
- Money market hedging
Hedging techniques examples

Forward contract

A UK company has made a sale to a US customer for $5 million. Payment will be received in three months.

The company will protect itself against exchange rate risk by taking out a forward contract to deliver $5 million in three months.

Three month forward rate = 1.5299 ± 0.0006.

What is the £ receipt from the transaction?
Money market hedging
The result is very similar to forward contracts, but the process is quite complex.

Risk is eliminated by changing the currency now rather than when it is received or paid.

We need to look at two cases: receiving a foreign currency amount and paying a foreign currency amount.
Money market hedging

The result is very similar to forward contracts, but the process is quite complex.

Risk is eliminated by changing the currency now rather than when it is received or paid.

We need to look at two cases: receiving a foreign currency amount and paying a foreign currency amount.
A German manufacturer will receive US $5m in three months.

1. Borrow enough US$ now to become $5m in three months after interest charged

2. Convert the US$ amount borrowed at the spot €/$ rate: the German company now has a definite, risk free amount of €

The loan grows to $5m in three months

3. Use the $5 million received in three months to pay back the loan

4. Use the $5 million received in three months to pay back the loan.
Money market Hedging techniques

A German manufacturer will receive US $5m in three months.

Spot rate for €/US$ = 0.7524
US 3 month interest rates = 2.5% – 3.2% pa
€ 3 month interest rates = 0.2% – 0.8% pa

Show how exchange rate risk can be managed using money market hedging.
A German manufacturer will receive US $5m in three months. Spot rate for €/US$ = 0.7524; US 3 month rates = 2.5% – 3.2% pa € 3 month rates = 0.2% – 0.8% pa

1. Borrow enough $ now to become $5m in three months

   The bank will charge 3.2% for borrowing (the higher US $ rate). This is always quoted for 12 months, but will apply for three month loans. Therefore borrow $X so that:

   \[ X \times \left(1 + \frac{0.032}{4}\right) = 5,000,000 \]

   \[ X = \frac{5,000,000}{1 + \left(\frac{0.032}{4}\right)} = 4,960,317 \]
A German manufacturer will receive US $5m in three months. Spot rate for €/US$ = 0.7524; US 3 month rates = 2.5% – 3.2% pa € 3 month rates = 0.2% – 0.8% pa

2. Convert $4,960,317 at the spot rate of 0.7524 €/$ to obtain $4,960,317 × 0.7524 = € 3,732,143 now [Note that this amount is received now so is certain.]

3. The loan of $4,960,317 will grow to $5m in three months and the $5m receipt from the US customer will pay this off precisely. Using a $ receipt to pay $ will not involve exchange risk.

The € 3,732,143 received now can be spent now.

Alternatively, it can be invested for three months (to match the time of the receipt) at the € rate to become: € 3,732,143 × (1 + (0.002/4)) = € 3,734,009
Money market Hedging techniques 7

A UK importer must pay US $10m in three months.

1. Deposit enough US$ now to become $10m in three months after interest earned.

2. Convert £ now to the required the US$ amount to be deposited. The UK company has paid a definite, risk free amount of £ for $.

3. The deposit grows to $10m in three months.

4. The $10 million is used to pay the supplier in three months.
A UK importer must pay US $10m in three months.

Spot rate for £/US$ = 1.5123

US 3 month interest rates = 2.5% – 3.2% pa

£ 3 month interest rates = 1.6% – 4.2% pa

Show how exchange rate risk can be managed using money market hedging
UK importer must pay US$10m in three mths. Spot rate £/US$ = 1.5123. US $ 3 mth interest rates = 2.5% – 3.2% pa. £ 3 mth interest rates = 1.6% – 4.2% pa

1. To have US$ 10 million in three months, the company has to deposit $X at 2.5% now (lower rate paid by bank) where:

\[ X (1 + (0.025/4)) = 10,000,000 \]

\[ X = 10,000,000 / (1 + (0.025/4)) = \$9,937,888 \]
UK importer must pay US$10m in three months. Spot rate £/US$ = 1.5123. US $ 3 mth interest rates = 2.5% – 3.2% pa. £ 3 mth interest rates = 1.6% – 4.2% pa

2. $9,937,888 can be obtained now at the spot rate of £/US$ 1.5123. So the current, certain £ cost is:

\[ \frac{9,937,888}{1.5123} = 6,571,373 \]

3. In three months the $ deposit will have grown to $10m and will be used to pay the supplier.

Of course, the company has had to find £6,571,373 now, three months earlier than the supplier needs to be paid.

The true cost of the transaction should take into account the cost of borrowing this amount for three months

\[ 6,571,373 \times (1 + (0.042/4)) = 6,640,372 \]
TGA Co, a US company, expects to receive €500,000 from export sales at the end of three months. A forward rate of €1.687 per $1 has been offered by the company's bank and the spot rate is €1.675 per $1. TGA Co can borrow short term in the euro at 9% per year and deposit in the US at 4% per year.

**Required:**
Calculate the dollar income from a forward market hedge and a money market hedge, and indicate which hedge would be financially preferred by TGA Co.
**Strategic risks** - is the potential volatility of profits caused by the nature and type of business strategies

**Operational/ process risks** - is the risk of loss from a failure of internal business and control processes

**Other types of risks** – market risk, liquidity risks, financing risks, cash flow risks, credit risks, political risk, fraud risks, etc.

**Assessing financial** risks through sensitivity analysis, expected values, certainty equivalent approach, simulation models, scenarios, etc.
Test your understanding. Can you answer the following?

- What are spot rates and forward rates?
- What is bid price and offer price?
- What is spread?
- What internal hedging techniques are available for an organisation in dealing with foreign exchange risk?
Internal hedging techniques

- Leading and lagging
- Invoicing in home currency
- Matching receipts and payments
- Multilateral netting

Other hedging techniques

- Forward contracts
- Money market hedging
Any Questions?
Wrap up

All the best!