THE INSTITUTE OF CHARTERED ACCOUNTANTS OF SRI LANKA

Corporate Finance and Risk Management
STRATEGIC LEVEL
Dec 2024

VALUATION of SHARES

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Reasons for valuations

When valuations are required

Given quoted share prices on the stock exchange, why devise techniques for estimating the value of a share? A share valuation will be necessary:

(a) For **quoted companies**, when there is a takeover bid and the offer price is an estimated 'fair value' in excess of the current market price of the shares.

A **takeover** is 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.

(b) For **unquoted companies**, when:

(i) The company wishes to 'go public' and must fix an issue price for its shares

(ii) There is a scheme of merger

(iii) Shares are sold

(iv) Shares need to be valued for the purposes of taxation

(v) Shares are pledged as collateral for a loan

(c) For **subsidiary companies**, when the group's holding company is negotiating the sale of the subsidiary to a management buyout team or to an external buyer.

(d) For **any company**, where a shareholder wishes to dispose of their holding. Some of the valuation methods we describe will be most appropriate if a large or controlling interest is being sold. However, even a small shareholding may be a significant disposal, if the purchasers can increase their holding to a controlling interest as a result of the acquisition.

(e) For **any company**, when the company is being broken up in a liquidation situation or the company needs to obtain additional finance, or re-finance current debt.

General factors affecting valuation

As well as the calculations, buyers and sellers will also take into account the **industry situation**, the **fixed and human assets** of the company, and a number of factors relating to **shareholdings**:

- The **size** of shareholding to be acquired
- The **distribution** of other shareholdings
- The **rights** related to the shares
- Any **restrictions** on transfers

Note. In an exam question as well as in practice, it is unlikely that one method would be used in isolation. Several valuations might be made, each using a different technique or different assumptions. The valuations could then be compared, and a final price reached as a compromise between the different values. Remember that some methods may be more appropriate for valuing a small parcel of shares, others for valuing a whole company.

Valuation of listed or unlisted companies?

Listed companies

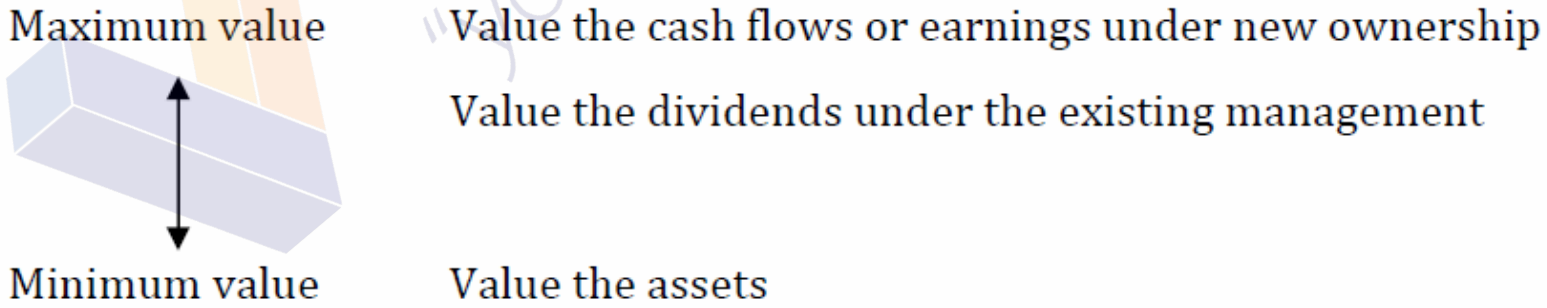
A listed company will have a current stock market value also known as its market capitalisation. Where small holdings of shares are being traded, this is the relevant price for the transaction.

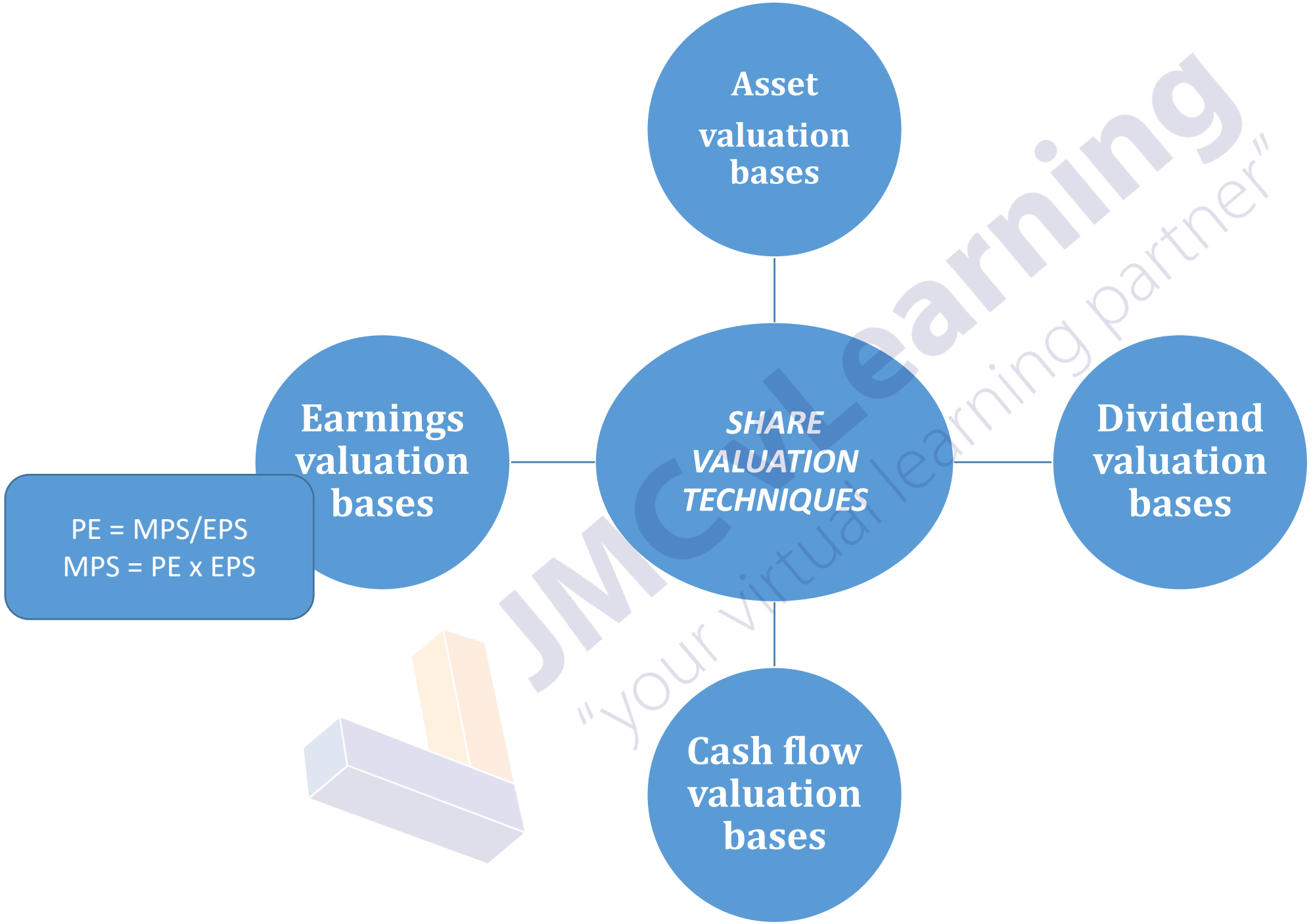
However, if one company is looking to purchase another by buying shares, this value will not give a suitable price because the current shareholders will not have any extra incentive to sell their holdings at the current market price. As a result, a premium to the existing market price is normally offered. Therefore, in an exam question, the current stock market price should be used as a base figure for calculations to give a suitable price.

Unlisted companies

Since an unlisted company has no stock market price, determining a valuation may be more difficult. There is likely to be **less available information** to help a potential purchaser assess the value of the company. Typically, this process will involve using a similar listed company (proxy company).

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




Asset valuation bases
Earnings valuation bases
PE = MPS/EPS
MPS = PE x EPS
SHARE VALUATION TECHNIQUES
Dividend valuation bases
Cash flow valuation bases

Asset valuation bases

The net assets method of share valuation

Using this method of valuation, the value of a share in a particular class is equal to the **net tangible assets**, divided by the **number of shares**. **Intangible assets** (including goodwill) should be **excluded**, unless they have a market value (for example, patents and copyrights, which could be sold). The valuation of intangible assets in general, and intellectual capital in particular, is discussed at the end of this chapter.

Choice of valuation bases

The difficulty in an asset valuation method is establishing the **asset values** to use.
Values ought to be realistic. The figure attached to an individual asset may vary considerably depending on whether it is valued on a **going concern** or a **breakup** basis.

Possibilities include:

- **Historic basis**. Unlikely to give a realistic value as it is dependent on the business's depreciation and amortisation policy.
- **Replacement basis**. If the assets are to be used on an ongoing basis.
- **Realisable basis**. If the assets are to be sold, or the business as a whole broken up. This will not be relevant if a minority shareholder is selling their stake, as the assets will continue in the business's use.

The following list should give you some idea of the factors that must be considered.

- Do the assets need **professional valuation**? If so, how much will this cost?
- Have the **liabilities** been accurately quantified, for example deferred taxation? Are there any contingent liabilities? Will any balancing tax charges arise on disposal?
- How have the **current assets** been valued? Are all receivables collectable? Is all inventory realisable? Can all the assets be physically located and brought into a saleable condition? This may be difficult in certain circumstances where the assets are situated abroad.
- Can any **hidden liabilities** be accurately assessed? Would there be redundancy payments and closure costs?
- Is there an **available market** in which the assets can be realised (on a breakup basis)? If so, do the balance sheet values truly reflect these break-up values?
- Are there any **prior charges** on the assets?
- Does the business have a regular **revaluation and replacement** policy? What are the bases of the valuation? As a broad rule, valuations will be more useful the better they estimate the **future cash flows** that are derived from the asset.
- Are there factors that might indicate that the **going concern valuation** of the business **as a whole** is **significantly higher** than the valuation of the individual assets?
- What shareholdings are being sold? If a minority interest is being disposed of, realisable value is of limited relevance as the assets will not be sold.

Use of net asset basis

The net assets basis of valuation might be used in the following circumstances.

(a) As a **'floor value'** for a business that is up for sale – shareholders will be reluctant to sell for less than the net asset value (NAV). However, if the sale is essential for cash flow purposes or to realign with corporate strategy, even the asset value may not be realised.

(b) **As a measure of the 'security' in a share value**. The **asset backing** for shares provides a measure of the **possible loss** if the company fails to make the expected earnings or dividend payments. Valuable tangible assets may be a good reason for acquiring a company, especially freehold property which might be expected to increase in value over time.

(c) **As a measure of comparison in a scheme of merger**
A **merger** is essentially a business combination of two or more companies, of which none obtains control over any other.
For example, if company A, which has a low asset backing, is planning a merger with company B, which has a high asset backing, the shareholders of company B might consider that their shares' value ought to reflect this. It might therefore be agreed that something should be added to the value of the company B shares to allow for this difference in asset backing.

######## For these reasons, it is always advisable to calculate the net assets per share. ############

The summary statement of financial position of CT Co is as follows.

	Rs. '000	Rs. '000	Rs. '000
Non-current assets			
Land and buildings		160,000	
Plant and machinery		80,000	
Motor vehicles		20,000	
			260,000
Goodwill			20,000
Current assets			
Inventory		80,000	
Receivables		60,000	
Short-term investments		15,000	
Cash		5,000	
		160,000	
Current liabilities			
Payables	60,000		
Taxation	20,000		
Proposed ordinary dividend	20,000		
		(100,000)	
			60,000
			340,000

12% bonds		(60,000)
Deferred taxation		(10,000)
Total net assets		270,000
Ordinary shares of Rs. 1	80,000	
Reserves	140,000	
		220,000
4.9% preference shares of Rs. 1		50,000
Total equity and reserves		270,000

Required

Calculate the value of an ordinary share using the net assets basis of valuation.

Solution

If the figures given for asset values are not questioned, the valuation would be as follows.

	Rs '000	Rs '000
Total value of assets less current liabilities	340,000	
Less intangible asset (goodwill)	(20,000)	
Total value of assets less current liabilities		320,000
Less: Preference shares	50,000	
Bonds	60,000	
Deferred taxation	10,000	
		120,000
Net asset value of equity		200,000
Number of ordinary shares		80,000
Value per share		Rs. 2.50

Earnings valuation bases

The highest business valuation is usually calculated by **valuing the earnings under new ownership**. This method uses the price-earnings ratio (P/E ratio) which shows the stock market's view of the growth prospects of a company.

The P/E ratio (earnings) method of valuation

This is a common method of valuing a **controlling interest** in a company, where the owner can decide on **dividend** and **retentions policy**. The P/E ratio relates earnings per share to a share's value.

FORMULA TO LEARN

Since P/E ratio = $\frac{\text{Market value}}{\text{EPS}}$, then market value per share = EPS × P/E ratio

Remember that earnings per share (EPS) = $\frac{\textit{Profit attributable to ordinary shareholders}}{\textit{Weighted average number of ordinary shares}}$

The P/E ratio produces an **earnings-based** valuation of shares by deciding a suitable P/E ratio and multiplying this by the EPS for the shares which are being valued.

Market valuation or capitalisation = P/E ratio × Earnings per share

The EPS could be a historical EPS or a prospective future EPS. For a given EPS figure, a higher P/E ratio will result in a higher price.

Significance of a high P/E ratio

A high P/E ratio may indicate:

(a) **Expectations that the EPS will grow rapidly**
A **high price is being paid for future profit prospects**. Many small but successful and fast-growing companies are valued on the stock market on a high P/E ratio. Some stocks (for example, Uber) have reached high valuations before making any profits at all, on the strength of expected future earnings.

(b) **Security of earnings**
A well-established low-risk company would be valued on a higher P/E ratio than a similar company whose earnings are subject to greater uncertainty.

(c) **Status**
If a quoted company (the predator) made a share-for-share takeover bid for an unquoted company (the target), it would normally expect its own shares to be valued on a **higher P/E ratio** than the target company's shares. This is because a quoted company ought to be a **lower-risk** company; but in addition, there is an advantage in having shares which are quoted on a stock market: the shares can be **readily sold**. The P/E ratio of an unquoted company's shares might be around 50% to 60% of the P/E ratio of a similar public company with a full stock exchange listing.

Problems with using P/E ratios

However, using the price-earnings ratios of quoted companies to value unquoted companies may be problematic.

- Finding a quoted company with a **similar range of activities** may be difficult. Quoted companies are often **diversified**.
- A **single year's P/E ratio** may not be a good basis, if earnings are volatile, or the quoted company's share price is at an abnormal level, due for example to the expectation of a takeover bid.
- If a P/E ratio trend is used, then **historical data** will be used to value how the unquoted company will do in the future.
- The quoted company may have a **different capital structure** to the unquoted company.

Example: Earnings method of valuation

SD Co is considering the takeover of an unquoted company, FL Co. SD Co's shares are quoted on the stock exchange at a price of Rs. 3.20, and since the most recent published earnings per share (EPS) of the company is 20 cents, the company's P/E ratio is 16. FL Co is a company with 100,000 shares and current earnings of Rs. 50,000, 50 cents per share.

Required
Analyse how SD Co might decide on an offer price.

Solution

The decision about the offer price is likely to be preceded by the estimation of a 'reasonable' P/E ratio in the light of the particular circumstances.

(a) If FL Co is in the **same industry** as SD Co, its P/E ratio ought to be lower, because of its lower status as an unquoted company.

(b) If FL Co is in a **different industry**, a suitable P/E ratio might be based on the P/E ratio that is typical for quoted companies in that industry.

(c) If FL Co is thought to be **growing fast**, so that its EPS will rise rapidly in the years to come, the P/E ratio that should be used for the share valuation will be higher than if only small EPS growth is expected.

(d) If the acquisition of FL Co would **contribute substantially to SD Co's own profitability and growth**, or to any other strategic objective that SD Co has, then SD Co should be willing to offer a higher P/E ratio valuation, in order to secure acceptance of the offer by FL Co's shareholders.

Of course, the P/E ratio on which SD Co bases its offer will probably be lower than the P/E ratio that FL Co's shareholders think their shares ought to be valued on. Some haggling over the price might be necessary.

SD Co might decide that FL Co's shares ought to be valued on a P/E ratio of 60% × 16 = 9.6; that is, at 9.6 × 50c = Rs. 4.80 each.

FL Co's shareholders might reject this offer, and suggest a valuation based on a P/E ratio of, say, 12.5; that is, 12.5 × 50c = Rs. 6.25.

SD Co's management might then come back with a revised offer, say valuation on a P/E ratio of 10.5; that is, 10.5 × 50c = Rs. 5.25.

The haggling will go on until the negotiations either break down or succeed in arriving at an agreed price.

QUESTION — Earnings valuation

AB Co wishes to make a takeover bid for the shares of an unquoted company, YZ Co. The earnings of YZ Co over the past five years have been as follows (Rs. million).

20X0	Rs. 50	20X3	Rs. 71
20X1	Rs. 72	20X4	Rs. 75
20X2	Rs. 68		

The average P/E ratio of quoted companies in the industry in which YZ Co operates is 10. Quoted companies which are similar in many respects to YZ Co are:

(a) Bumblebee, which has a P/E ratio of 15, but is a company with very good growth prospects.

(b) Wasp, which has had a poor profit record for several years, and has a P/E ratio of 7.

Required

Calculate a suitable range of valuations for the shares of YZ Co.

ANSWER

(a) **Earnings**. Average earnings over the last five years have been Rs. 67.2m, [(50 + 72 + 68 + 71 + 75)/5]and over the last four years, Rs. 71.5m [(72 + 68 + 71 + 75)/4]. There might appear to be some growth prospects, but estimates of future earnings are uncertain.

A low estimate of earnings in 20X5 would be, perhaps, Rs. 71.5m.

A high estimate of earnings might be Rs. 75m or more. This solution will use the most recent earnings figure of Rs. 75m as the high estimate.

(b) **P/E ratio**. A P/E ratio of 15 (Bumblebee's) would be much too high for YZ Co, because the growth of YZ Co's earnings is not as certain, and YZ Co is an unquoted company.

On the other hand, YZ Co's expectations of earnings are probably better than those of Wasp. A suitable P/E ratio might be based on the industry's average, 10; but since YZ Co is an unquoted company and therefore more risky, a lower P/E ratio might be more appropriate: perhaps 60% to 70% of 10 = 6 or 7, or conceivably even as low as 50% of 10 = 5.

The valuation of YZ Co's shares might therefore range between:

High P/E ratio and high earnings: 7 × Rs. 75m = Rs. 525m, and

Low P/E ratio and low earnings: 5 × Rs. 71.500 = Rs. 357.5m.

The earnings yield valuation method

FORMULA TO LEARN

$$\text{Earnings yield (EY)} = \frac{\text{EPS}}{\text{Market price per share}} \times 100\%$$

This method is effectively a variation on the P/E method (the EY being the reciprocal of the P/E ratio), using an appropriate earnings yield effectively as a discount rate to value the earnings:

FORMULA TO LEARN

$$\text{Market value} = \frac{\text{Earnings}}{\text{EY}}$$

Price to book value

FORMULA TO LEARN

$$\text{Price to book value (P/BV)} = \frac{\text{Market price per share}}{\text{Book value per share}} \times 100\%$$

If the P/BV is greater than 1, this clearly means that the market price of the company is higher than the book value of the assets. This would suggest that the company is achieving a return on its assets that is higher than shareholders require so the share price has increased.

Another explanation of a Price to book ratio is that the difference between the market value of a company and the book value relates to intangible assets such as internally generated goodwill, which are not shown in the statement of financial position of the company. This is discussed further in Section 6 below.

Dividend Yield

FORMULA TO LEARN

$$\text{Dividend yield} = \frac{\text{Dividend per share}}{\text{Share price}} \times 100\%$$

The dividend yield shows the return that investors gain from holding dividends in the company. It can be a useful measure for investors who invest for income (e.g. pension funds who need income from their investments to pay out pensions to their members). However, it is an incomplete measure of the return in holding a share, as it does not include the return from capital growth.

The dividend yield is influenced by the following factors:

- he profits that the company makes
- he company's dividend policy
- he % of profits that the company wishes to retain for future investments.

Many companies do not pay any dividends, as they retain all their profits for investing. A good example is Alphabet Inc, the holding company of Google, which retains all its profits to invest in research.

Dividend valuation bases

Using the dividend valuation model

The dividend valuation model is based on the theory that an equilibrium price for any share (or bond) on a stock market is:

- The **future expected stream of income** from the security
- **Discounted** at a suitable **cost of capital**

Equilibrium market price is thus a **present value** of a **future expected income stream**. The annual income stream for a share is the expected dividend every year in perpetuity.
Using the **dividend growth model** we have:

FORMULA TO LEARN

$$P_0 = \frac{d_0(1+g)}{(k_e - g)} \text{ or } P_0 = \frac{d_1}{(k_e - g)}$$

Where: d_0 = Current year's dividend

g = Growth rate in earnings and dividends

k_e = Shareholders' required rate of return

$d_0(1+g)$ = Expected dividend in one year's time (d_1)

P_0 = Market value excluding any dividend currently payable

QUESTION — Dividend valuation model (DVM)

Target paid a dividend of Rs. 250,000 this year. The current return to shareholders of quoted companies in the same industry as Target is 12%, although it is expected that an additional risk premium of 2% will be applicable to Target, being a smaller and unquoted company.

Required

Compute the expected valuation of Target, if:

(a) The current level of dividend is expected to continue into the foreseeable future.

(b) The dividend is expected to grow at a rate of 4% pa into the foreseeable future.

(c) The dividend is expected to grow at a 3% rate for three years, and 2% afterwards.

ANSWER

k_e = 12% + 2% = 14% (0.14) d_0 = Rs. 250,000 g (in (b)) = 4% or 0.04

(a) $P_0 = \frac{d_0}{k_e} = \frac{\text{Rs. } 250{,}000}{0.14} = \text{Rs. } 1{,}785{,}714$

(b) $P_0 = \frac{d_0(1+g)}{k_e - g} = \frac{\text{Rs. } 250{,}000(1.04)}{0.14 - 0.04} = \text{Rs. } 2{,}600{,}000$

(c)

		Time 1	*Time 2*	*Time 4*	*Time 4 onwards*
Dividend (Rs. '000)		258	266	274	279
Annuity to infinity $(1/k_e - g)$)					8.333
279 x 1/(.14 - .02)					
Present value at year 3					2,325
Discount factor @ 14%		0.877	0.769	0.675	0.675
Present value		226	205	185	1,569
Total	**Rs. 2,185,000**				

Assumptions of dividend models

The dividend models are underpinned by a number of assumptions that you should bear in mind.

(a) Investors act **rationally** and **homogenously**, and have **perfect information** available.

(a) The d_0 figure used does **not vary significantly** from the **trend or risk of dividends**.

(c) The **estimates** of future dividends and prices used, and also the cost of capital are **reasonable**

(d) Investors' attitudes to receiving different cash flows at different times can be modelled using **discounted cash flow arithmetic**.
(e) Directors use dividends to **signal** the strength of the company's position (however, companies that pay zero dividends do not have zero share values).

(f) Dividends either show **no growth** or **constant growth**. If the growth rate is calculated using g = bR, then the model assumes that b and R are constant.

(g) **Other influences** on share prices are **ignored**.
(h) The company's **earnings** will **increase** sufficiently to maintain dividend growth levels.

(i) The **discount rate** used exceeds the **dividend growth rate**.

(j) **Tax and issue expenses** are ignored.

Cash flow valuation bases

Example: Discounted future cash flow method of share valuation

Diversification wishes to make a bid for TP Co. TP Co makes after-tax profits of Rs. 40 million a year. Diversification believes that if further money is spent on additional investments, the after-tax cash flows (ignoring the purchase consideration) could be as follows.

Year	*Cash flow (net of tax)* Rs '000
0	(100,000)
1	(80,000)
2	60,000
3	100,000
4	150,000
5	150,000

The after-tax cost of capital of Diversification is 15%, and the company expects all its investments to pay back, in discounted terms, within five years.

Required

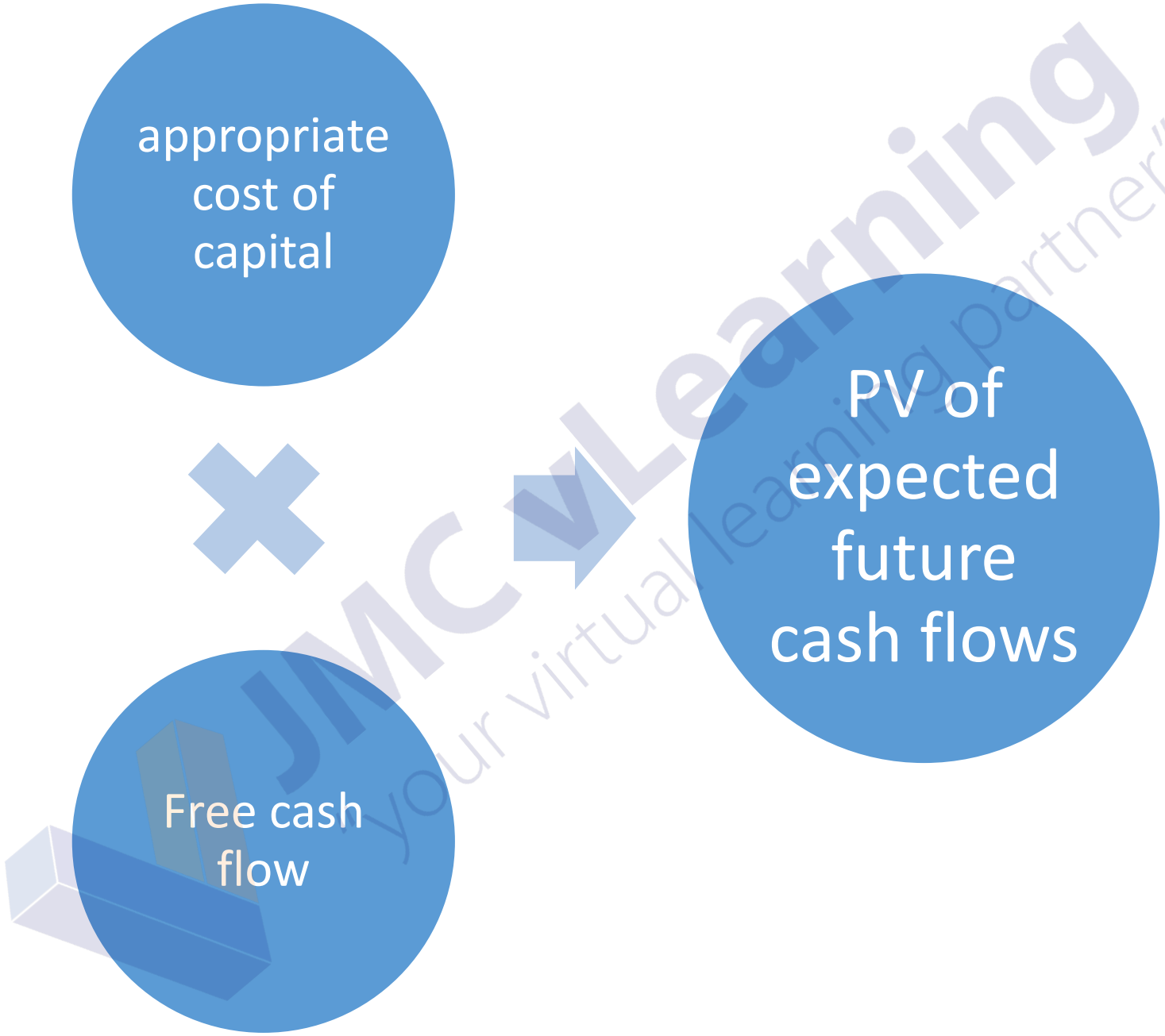
Calculate the maximum price that the company should be willing to pay for the shares of TP Co.

Solution

The maximum price is one which would make the return from the total investment exactly 15% over five years, so that the net present value (NPV) at 15% would be 0.

Year	*Cash flows ignoring purchase consideration*	*Discount factor (from tables) @ 15%*	*Present value*
	Rs '000		Rs '000
0	(100,000)	1.000	(100,000)
1	(80,000)	0.870	(69,600)
2	60,000	0.756	45,360
3	100,000	0.658	65,800
4	150,000	0.572	85,800
5	150,000	0.497	74,550
Maximum purchase price			101,910

Note. You may also need to calculate the value of cash flows in perpetuity using the formula given to you in the exam.


appropriate cost of capital
PV of expected future cash flows
Free cash flow

❑ Selection of an appropriate cost of capital

In the above example, Diversification used its own cost of capital to discount the cash flows of TP Co. There are a number of reasons why this may not be appropriate.

(a) The **business risk** of the new investment may not match that of the investing company. If TP Co is in a completely different line of business from Diversification, its cash flows are likely to be subject to differing degrees of risk, and this should be taken into account when valuing them.

(b) The **method of finance** of the new investment may not match the current debt/equity mix of the investing company, which may have an effect on the cost of capital to be used.

❑ Free cash flow

Under NPV, valuation of a new company = cash subscribed/paid for investment + NPV of proposed activities.

The **present value** of future **free cash flows model** (also known as the **surplus project cash flow model**) focuses on the strategic need of companies to reinvest in new plant to maintain or increase current operating cash flows. This investment expenditure does not generally equal the depreciation charge in the accounts. Free cash flow takes into account this difference.

In the free flow cash flows model:

Operating free cash flow
= Revenues
– Operating costs
+ Depreciation (as not a cash flow)
– Debt repayments and lease obligations
– Working capital increases
– Taxes
– Replacement capital expenditure

PBIT

Using this model, the value of a company is the **sum** of **future discounted free cash flows**.

Drawbacks of cash flow methods

Cash flow methods of valuation can be used to place a **maximum value** on an entity and incorporate the **time value of** money.

However, whichever method is used, cash flow methods suffer from the following general drawbacks.

- As we have seen above, selection of an **appropriate cost of capital** may prove difficult.
- **Estimating future cash flows**, particularly of companies that are being acquired, may be **very difficult**.
- Cash flows are most appropriate for valuing **controlling interests**, which might have a significant influence on whether expected cash flows are attained.

Summary of valuation techniques

MAXIMUM VALUE (under new management)

- PV of future cash flows
  - Includes expected synergies
  - Discount free cash flows at target's WACC
- P/E method
  - Adjust P/E
  - P/E × EPS

FAIR VALUE (under existing method)

- Dividend valuation – use target's growth rate, most suitable for valuing a minority holding

MINIMUM VALUE

- Assets basis – most appropriate for a capital intensive business

Intangible assets and intellectual capital

- Market-to-book values
- Tobin's 'q'
- Calculated intangible value

- 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