

DIVIDEND CAPITALISATION METHOD CONTINUED.....

When dividend is not increased at a uniform rate in each year : When dividend is not increased at a uniform rate in each, at first, the rate of increase in dividend is to be determined with the help of the following formula and thereafter the cost of equity share capital is to be determined by the property No. 2.

$$D_n = D_1 (1 + g)^{n-1}$$

where, —

D_n = *nth year's dividend ;*
 D_1 = *1st year's dividend ;*
 g = *growth rate of dividend ;*
 n = *No. of years.*

Handwritten formula: $D_n = D_1 (1+g)^{n-1}$

- | | | | | | | |
|--|--|--|-------|-------|-------|-------|
| | | | 11.75 | 12.75 | 13.50 | 14.50 |
|--|--|--|-------|-------|-------|-------|
- b) The shares of David Ltd. are selling at ₹ 50 per share. The firm had paid Dividend @ ₹ 4 per share last year. The estimated growth of the company is approximately 5% per year.
- Determine the cost of Equity Capital of the company.
 - Determine the estimated market price of the Equity Share if the anticipated growth rate of the company raise to 8%.
 - Determine the estimated market price of the Equity Share if the anticipated growth rate of the company fall to 4%.
 - Determine the estimated market price of the Equity Share if the anticipated growth rate of the company raise to 15%. Are you satisfied with your calculations ?
- Additional text at the bottom:* ...at a rate of 6% per year. If the

Hence, required cost of Equity Capital is 13.40%.

- (b) Let D_1 = current year's Dividend per Share
 D_0 = last year's Dividend per Share
 g = growth rate of Dividend.

(i) We know that,—

$$D_1 = D_0(1 + g)^{1-0}$$

$$D_1 = 4(1 + 0.05)^{1-0} \quad [\because g = 5\% \text{ or, } 0.05]$$

$$\text{or, } D_1 = 4 \times 1.05 = 4.20$$

Now, if K_e be the cost of Equity Capital, then—

$$K_e = \frac{D}{P} + g$$

$$\text{or, } K_e = \frac{4.20}{50} + 0.05 \quad [\text{where, } D_1 = \text{current year's Dividend} = 4.20]$$

$$\text{or, } K_e = 0.084 + 0.05 = 0.134 \text{ or, } 13.40\%.$$

Hence required cost of Equity Capital is 13.40%.

$$(ii) \quad D_1 = D_0(1 + g)^{1-0}$$

$$D_1 = 4(1 + 0.08)^{1-0} \quad [\because g = 8\% \text{ or, } 0.08]$$

$$\text{or, } D_1 = 4 \times 1.08 = 4.32$$

Now, if K_e be the cost of Equity Capital, then—

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$$K_e = \frac{D}{P} + g$$

$$0.1340 = \frac{4.32}{P} + 0.08 \quad [\text{where } D_1 = \text{current year's Dividend} = 4.32]$$

$$\text{or, } \frac{4.32}{P} = 0.1340 - 0.08$$

$$\text{or, } P = \frac{4.32}{0.1340 - 0.08} = \frac{4.32}{0.054} = 80.$$

Hence, required market price of each share is ₹ 80.

$$(iii) \quad D_1 = D_0(1 + g)^{1-0}$$

$$D_1 = 4(1 + 0.04)^{1-0} \quad [\because g = 4\% \text{ or, } 0.04]$$

$$\text{or, } D_1 = 4 \times 1.04 = 4.16$$

Now, if K_e be the cost of Equity Capital, then—

$$K_e = \frac{D}{P} + g$$

$$0.1340 = \frac{4.16}{P} + 0.04 \quad [\text{where } D_1 = \text{Current year's Dividend} = 4.16]$$

$$\text{or, } \frac{4.16}{P} = 0.1340 - 0.04$$

$$\text{or, } P = \frac{4.16}{0.1340 - 0.04} = \frac{4.16}{0.094} = 44.26.$$

Hence, required market price of each share is ₹ 44.26.

$$(iv) \quad D_1 = D_0(1 + g)^{1-0}$$

$$\text{or, } D_1 = 4(1 + 0.15)^{1-0} \quad [\because g = 15\% \text{ or, } 0.15]$$

$$\text{or, } D_1 = 4 \times 1.15 = 4.60$$

Now, if K_e be the cost of Equity Capital, then—

$$K_e = \frac{D}{P} + g$$

$$\text{or, } 0.1340 = \frac{4.60}{P} + 0.15 \quad [\text{where, } D_1 = \text{current year's Dividend} = 4.60]$$

$$\text{or, } \frac{4.60}{P} = 0.1340 - 0.15$$

$$\text{or, } P = \frac{4.60}{0.1340 - 0.15} = \frac{4.60}{(-)0.016} = (-) 287.50.$$

Hence, required market price of each share is ₹ (-) 287.50.

The formula $K_e = \frac{D}{P} + g$ is established on the assumption $K_e > g$. Here $K_e (0.1340) < g (0.15)$. So the determined result is not acceptable.

Hence, required price of each share is ₹ 1.00.

2. Earning Price Ratio Method : The ratio of earning per share and the current market price of each share is called **Earning Price Ratio**. When all the requirements of a company is fulfilled by the equity share capital i.e., the company has no need of any debt capital, the cost of equity share capital is determined in this method. As there is no debt capital in the capital structure of the company, the earning per share will be derived by dividing net profit after tax by the number of equity share. Under this method, the cost of equity share capital is determined on the basis of earning per share. We can have two types of expectations regarding the earning per share. *Firstly*, it can be assumed that the earning per share will remain constant in future. *Secondly*, it can be assumed that the earning per share will increase in future. On the basis of these two expectations, how the cost of equity share capital is determined under the earning Price Ratio Method is discussed below :

- A. When it is expected that the earning per share will remain constant in future :** When it is expected that the earning per share will remain constant in future, —

$$K_e = \frac{E}{P} \text{ where, —}$$

K_e = cost of equity share capital.

Explanation of E :

- If this type of shares were not issued in the past, then E = Expected earning per share to the equity shareholders.
- If this type of shares were issued in the past, then E = Current year's earning per share.
- If the average earning per share for last few years is considered as the expected earning per share to the equity shareholders, then E = Average earning per share.

Explanation of P :

- If this type of shares were not issued in the past, then P = Net selling price of each share.
- If this type of shares were issued in the past, then P = Current market price of each share.
- If the average earning per share for last few years is considered as the expected earning per share to the equity shareholders, then P = Average market price of each share.

□ **Example 1 :** (a) A Ltd.; a newly formed company, issues 40,000 Equity Shares of ₹ 20 each at a premium of ₹ 2.50 per share. The company pays Under-writing Commission @ 4%. You are given the following further information :

Expected annual sales (80,000 units)	= ₹	15 per unit
Variable cost	= ₹	8 per unit
Fixed cost	= ₹	3,60,000
Tax rate		50%

You are required to calculate the cost of Equity Capital.

• Solution ⇒

(a) Computation of Expected EPS

Particulars	Amount (₹)
Expected annual sales (₹ 15 × 80,000)	12,00,000
Less : Variable cost (₹ 8 × 80,000)	6,40,000
Contribution	5,60,000
Less : Fixed cost	3,60,000
EBIT	2,00,000
Less : Tax @ 50%	1,00,000
Earnings to Equity shareholders (EAT)	1,00,000
No. of Equity Shares	40,000
Expected earning per Share (E) = ₹ $\left[\frac{1,00,000}{40,000} \right]$	2.50

Issue price of each share = ₹ (20 + 2.50) = ₹ 22.50.

$$\begin{aligned} \therefore \text{Net selling price of each share (P)} &= ₹ \{22.50 - (22.50 \times \frac{4}{100})\} \\ &= ₹ 22.50 - 0.90 \\ &= ₹ 21.60. \end{aligned}$$

Now, if K_e be the cost of Equity Capital, then—

$$\begin{aligned} K_e &= \frac{E}{P} \\ &= \frac{2.50}{21.60} = 0.1157 \text{ or, } 11.57\%. \end{aligned}$$

Hence, required cost of Equity Capital is 11.57%.

- B. When it is expected that the earning per share will rise in future : When it is expected that the earning per share will rise in future, the cost of equity share capital is determined with the help of the following formula :

$$K_e = \frac{E}{P} + g$$

where, —

E = Earning per share .

P = Net Selling price of each share, and

G = Growth rate of earning.

Students please pay attention and understand the following logically. If a company had issued some shares previously at face value say Rs 100 and gradually after being traded for a few years, say the prices have risen to Rs 250 (due to good performance of the company, positive expectations of the share holders etc), and during that time if the company needs some extra money and plans to issue fresh equity stocks, then

1. The face value of the equity share remains as its first issue
2. But if the company now issues the shares at the previous face value of Rs 100 which is much lesser than the current market price, the current investors, even who believe that the company has good prospects will sell off their existing shares (because they are higher prices) and opt for new shares (which are priced at 100). So the company will never ever make a new issue at a price lower than the current market price.
3. Even if it is not mentioned explicitly in the sum, you have to assume the same and make a note in the sum, and understand that the company will issue the shares at a premium and match at least the current market price.

□ Example 2 : X Co. Ltd. plans to issue 10,000 new Equity Shares of ₹ 10 each to raise additional Capital. The cost of flotation is expected to be 4%. Its current market price per share is ₹ 40. Assuming that the earning per share and growth rate in earnings would be ₹ 5.76 and 3% respectively. Find out the Cost of New Equity.

• Solution ⇒

Let K_e be the Cost of New Equity.

$$\therefore K_e = \frac{E}{P} + g$$

where, E = Earning per share = ₹ 5.76,
P = Net selling price of each share
= ₹ $\{40 - (40 \times \frac{4}{100})\}$ = ₹ (40 - 1.60)
= ₹ 38.40,

and g = growth rate of earning
= 3% = 0.03.

$$\therefore K_e = \frac{5.76}{38.40} + 0.03$$

or, $K_e = 0.15 + 0.03 = 0.18$ or, 18%.

Hence, required Cost of Equity is 18%.

Note: since the current market price is higher than the face value, we assume that the company must have made the issue at the current price. hence the current market price= issue price. Thereafter flotation cost has to be adjusted, because it is a fresh issue. Then we arrive at P