

A. Using Walter's Model

Illustration 11.

Calculation of optimum dividend policy and market price of share when $r > K_e$ and when $r < K_e$.
A company has 1,00,000 equity shares of ₹ 10 each. The company expects its earnings at ₹ 7,50,000 and cost of capital at 10% for the next financial year. Using the Walter's model what dividend policy would you recommend when the rate of return on investment of the company is estimated at 8% and 12% respectively? What will be the price of equity share if your recommendations are accepted?
[Almost similar to C.U. B.Com.(H), 2016]

Solution :

Situation 1 :

When cost of capital (K_e) = 10% or 0.10 and the rate of return on investment (r) = 8% or 0.08.

Under this situation $r < K_e$, i.e., the company is a declining company.

So, as per the Walter's model of dividend policy, the dividend pay-out ratio should be 100%. If the recommendation is accepted, the market price per equity share (P) will be

$$P = \frac{D + \frac{r}{K_e}(E - D)}{K_e}$$

where, $r = 0.08$, $K_e = 0.10$,

$$E = \text{Earnings per share} = \frac{\text{Total Earnings}}{\text{Number of Shares}}$$

$$= \frac{₹7,50,000}{1,00,000}$$

$$= ₹7.50$$

and $D = \text{Dividend per share} = ₹7.50$ (as D/P ratio is 100%)

Now, putting the values, we get,

$$P = \frac{₹7.50 + \frac{0.08}{0.10}(₹7.50 - ₹7.50)}{0.10}$$
$$= ₹75$$

Situation 2 :

When $K_e = 0.10$ and $r = 12\%$ or 0.12 .

Under this situation $r > K_e$, i.e., the company is a growth firm.

Hence, as per the model, it can be recommended that the dividend pay-out ratio should be zero. On the basis of this D/P ratio, the market price of equity share (P) will be

$$P = \frac{D + \frac{r}{K_e}(E - D)}{K_e}$$

where,

$$D = \text{zero}$$

$$r = 0.12$$

$$K_e = 0.10 \text{ and}$$

$$E = ₹ 7.50$$

Now, putting the values, we get,

$$\therefore P = \frac{0 + \frac{0.12}{0.10}(\text{₹ } 7.50 - 0)}{0.10} = ₹ 90$$

Illustration 12.

Calculation of optimum pay-out ratio when $r > K_e$.

Hindustan Organic Limited has an investment of ₹ 3,00,000 divided into 3,000 equity shares. If the profitability rate of the firm is 20% and the capitalisation rate is 12.5%, calculate optimum pay-out ratio of the firm using Walter's Model.

Solution :

Here, profitability rate of the firm (r) = 20% or 0.20

and capitalisation rate (K_e) = 12.5% or 0.125

Since, $r > K_e$ (growth firm), the company's optimum dividend pay-out ratio should be zero.

Under this situation, the market price of a share,

$$P = \frac{D + \frac{r}{K_e}(E - D)}{K_e}$$

where, $D = \text{Dividend per share} = \text{zero}$

$$r = 0.20$$

$$K_e = 0.125$$

and $E = \text{Earnings per share,}$

$$= \frac{\text{Total earnings}}{\text{Number of shares}} = \frac{20\% \text{ of } ₹ 3,00,000}{3,000} = ₹ 20$$

Now, putting the values, we get,

$$\therefore P = \frac{0 + \frac{0.20}{0.125}(\text{₹ } 20 - 0)}{0.125} = ₹ 256$$

Illustration 13.

Optimum dividend policy when price-earning ratio is given.

From the following information state whether the firm's dividend policy as per Walter's Model is optimum :

Earnings of the firm	:	₹ 1,00,000
Dividend Paid	:	₹ 75,000
Number of Shares	:	50,000
Per share value	:	₹ 10
Price earning ratio	:	8

Solution :

Here, dividend pay-out ratio (D/P Ratio)

$$\begin{aligned} &= \frac{\text{Dividend Paid}}{\text{Earnings of the firm}} \times 100 \\ &= \frac{₹ 75,000}{₹ 1,00,000} \times 100 \\ &= 75\% = 0.75 \end{aligned}$$

Rate of return on investment (r)

$$\begin{aligned} &= \frac{\text{Total return or earnings}}{\text{Total Investment}} \\ &= \frac{₹ 1,00,000}{50,000 \times ₹ 10} \\ &= 0.20 \end{aligned}$$

$$\text{and capitalisation rate } (K_e) = \frac{1}{\text{Price-earning ratio}}$$

$$= \frac{1}{8}$$

$$= 0.125$$

Since $r(0.20) > K_e(0.125)$, then as per Walter's model, the optimum dividend pay-out ratio should be zero. It implies that, no dividend should be paid out, the entire earnings should be retained to maximise the value of shares.

Illustration 14.

Calculation of Price per share under different dividend pay-out ratios.

The following data are available for P.P. Ltd. —

Earnings Per Share	₹ 3.00
Internal Rate of Return	15%
Cost of Capital	12%

If Walter's valuation formula holds, what will be the price per share when the dividend pay-out ratio is 50%, 75% and 100% ?

[C.U. M.Com., 1997]

Solution :

Here, Earnings per share, $E = ₹ 3.00$,
 Internal rate of return, $r = 15\%$ or 0.15 and
 Cost of capital, $K_e = 12\%$ or 0.12 .
 Now, the price per share (P) according to the Walter's valuation formula,

$$P = \frac{D + \frac{r}{K_e}(E - D)}{K_e}$$

where, $D =$ Dividend per share

Calculation of Price per share

Situation 1	Situation 2	Situation 3
D/P Ratio = 50% (Dividend per share = 50% of ₹ 3.00 = ₹ 1.50)	D/P Ratio = 75% (Dividend per share = 75% of ₹ 3 = ₹ 2.25)	D/P Ratio = 100% (Dividend per share = 100% of ₹ 3 = ₹ 3.00)
$P = \frac{₹ 1.50 + \frac{0.15}{0.12}(₹ 3.00 - ₹ 1.50)}{0.12}$	$P = \frac{₹ 2.25 + \frac{0.15}{0.12}(₹ 3.00 - ₹ 2.25)}{0.12}$	$P = \frac{₹ 3.00 + \frac{0.15}{0.12}(₹ 3.00 - ₹ 3.00)}{0.12}$
= ₹ 28.13	= ₹ 26.56	= ₹ 25.00

Illustration 15.

The earnings per share of XYZ Ltd. is ₹ 10 and the rate of capitalisation applicable is 12%. The company has before it an option of adopting (i) 50%, and (ii) 100% dividend pay-out ratio. Calculate the market price of the share as per Walter's model if it can earn a return of (a) 20%, and (b) 12% on its retained earnings. [C.U. M.Com., 2008]

Solution :

Market price of a share, P as per Walter's model is given by,

$$P = \frac{D + \frac{r}{K_e}(E - D)}{K_e}$$

- where, $D =$ Dividend per share.
- $r =$ Rate of return on investment.
- $K_e =$ Applicable capitalisation rate.
- $E =$ Earnings per share.

Option (i) : When dividend pay-out ratio is 50% i.e., $D = 50\%$ of ₹ 10 = ₹ 5

Situation (a)	Situation (b)
When $r = 20\%$ or 0.20	When $r = 12\%$ or 0.12
$P = \frac{₹ 5 + \frac{0.20}{0.12}(₹ 10 - ₹ 5)}{0.12} = ₹ 111.11$	$P = \frac{₹ 5 + \frac{0.12}{0.12}(₹ 10 - ₹ 5)}{0.12} = ₹ 83.33$

Option (ii) : When dividend pay-out ratio is 100% i.e., $D = 100\%$ of ₹ 10 = ₹ 10

Situation (a)	Situation (b)
When $r = 20\%$ or 0.20	When $r = 12\%$ or 0.12
$P = \frac{₹10 + \frac{0.20}{0.12} (₹10 - ₹10)}{0.12} = ₹ 83.33$	$P = \frac{₹10 + \frac{0.12}{0.12} (₹10 - ₹10)}{0.12} = ₹ 83.33$

Illustration 16.

Optimum dividend policy at given price-earning ratio.

(a) From the following information supplied to you, ascertain whether the firm's dividend pay-out ratio is optimal, according to Walter. The firm was started a year before, with equity capital of ₹ 20 lakh.

Earnings of the firm	₹ 2,00,000
Dividend Paid	₹ 1,50,000
Price-earning ratio	12.5
Number of shares outstanding	20,000 of ₹ 100 each.

The firm is expected to maintain its current rate of earnings on investment.

- (b) What should be the price-earnings ratio at which dividend pay-out ratio will have no effect on the value of the share ?
- (c) Will your decision change if the P/E ratio is 8 instead of 12.5 ?

Solution :

(a) Here, Earning per share, $E = \frac{\text{Total earnings}}{\text{Number of shares}} = \frac{₹2,00,000}{20,000} = ₹ 10$

Dividend per share, $D = \frac{\text{Dividend paid}}{\text{Number of shares}} = \frac{₹1,50,000}{20,000} = ₹ 7.5$

and, $D/P \text{ Ratio} = \frac{D}{E} \times 100$
 $= \frac{₹1,50,000}{₹2,00,000} \times 100 = 75\% = 0.75$

Rate of earnings on investments, $r = \frac{E_e}{\text{Total Investments}}$
 $= \frac{₹2,00,000}{₹20,000 \times 100}$
 $= 0.10$

and Capitalisation rate, $K_e = \frac{1}{\text{Price-earning ratio (P/E ratio)}}$
 $= \frac{1}{12.5} = 0.08$

Under this situation, the market price of a share (P) is,

$$P = \frac{D + \frac{r}{K_e}(E - D)}{K_e} = \frac{\text{₹}7.50 + \frac{0.10}{0.08}(\text{₹}10 - \text{₹}7.50)}{0.08}$$
$$= \text{₹}132.81$$

This is not the optimum market price of the share.

As, $r (0.10) > K_e (0.08)$, the optimum dividend pay-out ratio should be zero (i.e., $D = 0$)

Under that situation, putting the values in the Walter's Model, we get,

$$P = \frac{0 + \frac{0.10}{0.08}(\text{₹}10 - 0)}{0.08}$$
$$= \text{₹}156.25$$

which is the optimum market price of the share.

(b) The dividend pay-out ratio will have no effect on the value of the share, when,
 $r = K_e = 0.10$

Under this situation, price-earning ratio (P/E ratio)

$$= \frac{1}{K_e} = \frac{1}{0.10} = 10$$

(c) When P/E ratio = 8,

$$K_e = \frac{1}{\text{P/E ratio}} = \frac{1}{8} = 0.125$$

whereas, $r = 0.10$

$\therefore r < K_e$ under this situation.

Hence, the company should distribute its entire earnings as dividend to the shareholders, i.e., D/P ratio should be 100%.