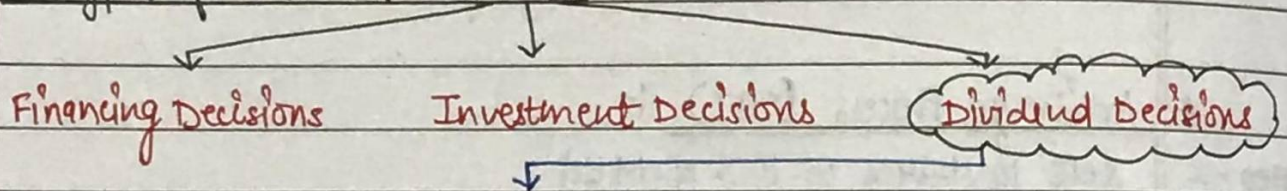


# Financial Management

## Chapter : Dividend Decisions

\* 3 Types of Financial Decisions -



\* Dividend is that part of profit which is distributed to shareholders (Equity).

\* Purpose of this chapter - ?

To find out best payout ratio to maximize the value of firm.

Eg:- PAT / EAESH = 1,00,000 / 1,00,000 shares = ₹10 per share

↳ 2 options

Distributed to equity shareholders

Retained for future (Retained Earnings)

₹70,000 (₹7 per share)

₹30,000 (₹3 per share)

**Dividend Payout Ratio** =  $\frac{\text{Dividend}}{\text{Total earnings}}$

$$= \frac{70,000}{1,00,000}$$

$$= 70\%$$

**Retention Ratio** =  $\frac{\text{Retained}}{\text{Total earnings}}$

$$= \frac{30,000}{1,00,000}$$

$$= 30\%$$

Complementary to each other.

i.e. Dividend payout ratio + Retention ratio = 100%

## Dividend Decision Theories

### Relevance Theories

Change in Dividend Payout Ratio leads to change in value of the firm.

- Walter's Model
- Gordon's Model
- Graham & Dodd Model

### Irrelevance Theories

change in Dividend Payout Ratio does not leads to change in value of the firm.

- Modigliani & Miller Model

### 1. Walter's Model :- (Base of this Model is Earning yield Approach)

#### \* Assumptions -

- Investments to be financed through "Retained Earnings" only.
- "r" & "ke" → constant.

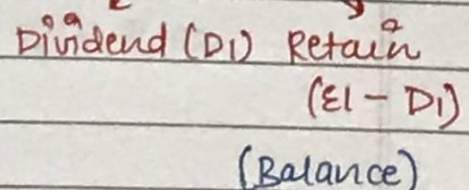
where,  $r$  = return on investment (ROI)

$k_e$  = cost of capital [Equity expectation or capitalisation Rate]

- Perfect Capital Markets → Rational investors.
- No taxes and no tax discrimination.
- No Floatation cost.
- Firm has a perpetual life (going concern)

Formula -  $k_e = \frac{E_1}{P_0} \Rightarrow P_0 = \frac{E_1}{k_e}$  → Earnings per share

Earnings yield approach



$$P_0 = D_1 + \frac{(E_1 - D_1) \times R}{k_e}$$

where,  $D_1$  = expected dividend at the end of year one.

$E_1$  = Earnings per share.

$E_1 - D_1$  = Retain

$k_e$  = cost of equity |  $k_c = k_e$

$R$  = IRR - Internal Rate of Return.

Vmp

Optimum Payout Ratio Table as per Walter's Model -

Cases	Optimum Payout Ratio
1 $R > k_e$ = Growth Firm	Retain = 100%, Payout = 0%
2 $R = k_e$ = Stable Firm	Any Payout Ratio is optimum
3 $R < k_e$ = Declining Firm	Retain = 0%, Payout = 100%

Eg 1: A Ltd. earns £6 per share having capitalisation rate @10% and has a return on investment at the rate of 20%. According to Walter's Model, what should be the price per share at 30% dividend payout ratio? Is this the optimum payout ratio?

As per Walter's Model  $\Rightarrow P_0 = D_1 + \frac{(E_1 - D_1) \times R}{k_e}$

$D_1$  = Dividend per share =  $0.3 \times \text{£}6 = \text{£}1.80$

$E_1$  = Earnings per share = £6

$R$  = Internal rate of return = 20%

$k_e$  = cost of capital = 10%

$P_0 = 1.80 + \frac{(6 - 1.80) \times \frac{20}{10}}{10\%} \Rightarrow P_0 = \text{£}102$

However, this is not the optimum payout as per Walter's Model, because for  $R > K_e$ , optimum payout should be zero. Therefore, substituting  $D_1 = 0$ , we get  $P_0 = ₹120$ .

2. Gordon's Model :- (Base of this Model is Dividend Yield + Growth Approach)

\* Assumptions -

- The firm is an all equity firm.
- No external financing.
- Constant return.
- Constant cost of capital.
- Perpetual earning.
- No taxes.
- Constant retention.
- Cost of capital greater than growth rate.

Formula -  $K_e = \frac{D_1}{P_0} + g \Rightarrow \frac{D_1}{P_0} = K_e - g$

Dividend yield + growth approach

$\Rightarrow P_0 = \frac{D_1}{K_e - g}$

$\rightarrow$  Earnings (E1) - Retention =  $D_1$   
 $K_e - g \rightarrow b \times r_e$   
 Retention  $\times$  ROE Ratio

$$P_0 = \frac{E_1(1-b)}{K_e - (b \times r_e)}$$

Where,  $E_1$  = Earnings per share.

$b$  = retention ratio (1 - payout ratio)

$K_e$  = Capitalisation Rate.

$r$  = IRR = Internal Rate of Return | Return on Equity.

Imp

Optimum Payout Ratio Table as per Gordon's Model -

Cases

Optimum Payout Ratio

- 1  $R > k_e$  = Growth Firm  $\rightarrow$  Retain = 100%, Payout = 0%
- 2  $R = k_e$  = Stable Firm  $\rightarrow$  Any payout ratio is optimum.
- 3  $R < k_e$  = Declining Firm  $\rightarrow$  Retain = 0%, Payout = 100%

Eg 1:-

From the following data of Z Ltd. calculate the value of an equity share of each of the following company according to the Gordon's Model when dividend payout ratio is (i) 25% and (ii) 100%.

Particulars	Z Ltd
Internal Rate of Return (r)	10%
Cost of Capital (k <sub>e</sub> )	10%
Earnings per share (E <sub>1</sub> )	£12

What conclusion do you draw?

As per Gordon's Model  $\Rightarrow P_0 = \frac{E_1(1-b)}{k_e - b \times r}$

(i) when dividend payout ratio is 25%.

$\therefore b = 75\%$  or  $0.75$   
 $b \times r = 0.75 \times 0.10 = 0.075$   
 $P_0 = \frac{12(1-0.75)}{0.10 - 0.075}$   
 $= \frac{12 \times 0.25}{0.025} = \text{£}120$

(ii) when dividend payout ratio is 100%.

$\therefore b = 0\%$   
 $b \times r = 0 \times 0.10 = 0$   
 $P_0 = \frac{12(1-0)}{0.10 - 0}$   
 $= \frac{12}{0.10}$   
 $= \text{£}120$

3. Graham And Dodd Model :-

$$P_0 = m \left[ \frac{D + A}{3} \right]$$

where,  $m$  = multiplier

$D$  = Dividend per share.

$A$  = Earnings per share (EPS)

4. MM Model :-

- As per MM model, value of the company depends solely on the earning power (EPS).
- share price is NOT influenced by the manner in which the earnings are distributed.

\* Assumptions -

- Perfect Capital Market.
- NO taxes.
- Fixed investment policy → New investment is only equity financed.
- NO flotation cost.
- Risk of uncertainty does not exist.

# Steps for solving MM Approach questions related to Dividend Decision

Calculate the following 3 things, in 2 cases :

Case 1 - Dividend is not paid.

Case 2 - Dividend is paid.

step 1:- calculation of Price at the end of year one ( $P_1$ ).

$$P_0 = \frac{D_1 + P_1}{1 + k_e}$$

Step 2: Calculation of fresh shares to be issued.

$$EAESH / PAT = xxx$$

$$\text{Dividend} = \underline{(xx)}$$

$$\text{Retained} = xxx$$

$$\text{Fresh investment} = \underline{(xx)}$$

$$\text{Amt raised through fresh issue} = \underline{xxx}$$

$$\text{Issued Price (PI)} = \underline{xx \text{ (step 1)}}$$

$$\text{no. of shares to be issued} = \underline{xxx \text{ shares}}$$

Step 3: Calculation of value of firm (VF).

$$VF = \frac{(\text{existing shares} + \text{Fresh issue}) \times P_1 + PAT - \text{Fresh investment}}{1 + k_e}$$

(step 2)      (step 1)

Eg 1: Anel Ltd. belongs to a risk-class for which the appropriate capitalisation rate is 10%. It currently has outstanding 2000 equity shares of £100 each. The firm is contemplating the declaration of dividend of £8 per share at the end of the current financial year. It expects to have net earnings of £20,000 and has a proposal for making new investment of £24,000. Show that under the Modigliani-Miller assumption, the payment of dividend does not affect the value of the firm.

Case 1: when dividend is paid -

\* Cal<sup>n</sup> of Price at the end of year 1 ( $P_1$ ).

$$P_0 = \frac{D_1 + P_1}{1 + k_e}$$

$$100 = \frac{8 + P_1}{1 + 0.10} \quad \therefore P_1 = \text{£}102$$

\* Cal<sup>n</sup> of Fresh shares to be issued.

$$\text{PAT} = 20,000$$

$$\ominus \text{ dividend} = \underline{(16,000)} \quad (2000 \text{ shares} \times \text{€}8)$$

$$\text{Retained} = \underline{4,000}$$

$$\text{Fresh Investment} = \underline{(24,000)}$$

$$\text{Amt Raised through fresh issue} = \underline{20,000}$$

$$\therefore \text{Issued Price } (P_1) = \text{€}102 \longrightarrow \text{step 1}$$

$$\text{no. of fresh shares to be issued} = \underline{196.078 \text{ shares}}$$

\* Cal<sup>n</sup> of value of firm (VF).

$$\text{VF} = \frac{(\text{Existing shares} + \text{Fresh shares}) \times P_1 + \text{PAT} - \text{Fresh investment}}{1 + k_e}$$

$$\text{VF} = \frac{\left[2000 + \frac{20,000}{102}\right] \times 102 + 20,000 - 24,000}{1 + 0.10} = \boxed{\text{€}2,00,000}$$

Case 2:- when dividend is not paid -

\* Cal<sup>n</sup> of Price at the end of year one (P<sub>1</sub>).

$$P_0 = \frac{D_1 + P_1}{1 + k_e}$$

$$100 = \frac{0 + P_1}{1 + 0.10} \quad \therefore P_1 = \text{€}110.$$

\* Cal<sup>n</sup> of Fresh shares to be issued.

$$\text{PAT} = 20,000$$

$$\ominus \text{ Dividend} = \underline{0}$$

$$\text{Retained} = \underline{20,000}$$

⊖ Fresh Investment = 24,000

Amt Raised through = 4,000

Fresh Issue

⊕ Issued Price (P<sub>1</sub>) = £110 → step 1

no. of shares to be issued = 36.36 shares

\* cal<sup>n</sup> of value of firm (VF).

VF =  $\frac{(\text{existing shares} + \text{Fresh shares}) \times P_1 + \text{PAT} - \text{Fresh Investment}}{1 + K_e}$

VF =  $\frac{[2000 + \frac{4000}{110}] \times 110 + 20,000 - 24,000}{1 + 0.10}$

VF = £2,00,000

5. Dividend Discount Model :-

No/zero Growth

constant Growth

Variable Growth

\* No/zero Growth =  $K_e = \frac{D_1}{P_0}$  (Dividend yield approach)

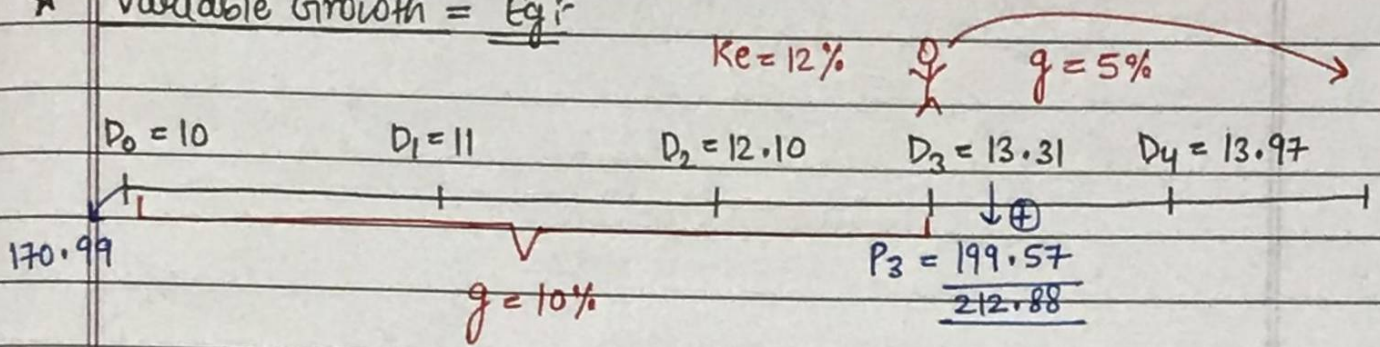
$P_0 = \frac{D_1}{K_e}$

\* Constant Growth =  $K_e = \frac{D_1}{P_0} + g$  (Dividend yield + growth approach)

$= K_e - g = \frac{D_1}{P_0}$

$P_0 = \frac{D_1}{K_e - g}$

★ Variable Growth = Eg 1



At  $D_3 \Rightarrow 13.31$

$$P_3 = \frac{D_4}{K_e - g} = \frac{13.97}{0.12 - 0.05} = \boxed{199.57}$$

Eg 1 - X Ltd has paid a dividend per share of £5. Capitalisation rate = 10%. Calculate  $P_0$  using Dividend Discount Model i-

- i) No Growth Firm.
- ii) constant growth @ 6%.

i) No Growth firm  $\Rightarrow P_0 = \frac{D_1}{K_e} \Rightarrow \frac{5}{10\%} \Rightarrow \text{£}50$

ii) constant growth @ 6%  $\Rightarrow P_0 = \frac{D_1}{K_e - g} \Rightarrow \frac{5.30}{10\% - 6\%} \Rightarrow 5.30 \Rightarrow \text{£}132.5$

5 + 6% = 5.30