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Financial Management

Chapter : Dividend Decisions

* 3 Types of Financial Decisions –

Financing Decisions | Investment Decisions | Dividend 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 | 10000 shares = ₹10 per share

2 options

Distributed to Equity shareholders → ₹70,000 (₹7 per share)

Retained for future (Retained Earnings) → ₹30,000 (₹3 per share)

Dividend Payout Ratio = $\frac{\text{Dividend}}{\text{Total earnings}}$ = $\frac{70,000}{1,00,000}$ = 70%

Retaintion Ratio = $\frac{\text{Retained}}{\text{Total earnings}}$ = $\frac{30,000}{1,00,000}$ = 30%

Complementary to each other.
i.e Dividend payout ratio + Retaintion ratio = 100%

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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 doesnot 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)

ke = 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 - $Ke = \frac{E_1}{P_0}$ ⇒ $P_0 = \frac{E_1}{Ke}$

Earnings yield approach

E_1 → Earnings per share → Dividend (D_1), Retain ($E_1 - D_1$) (Balance)

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$$P_0 = \frac{D1 + \left[(E1 - D1) \times \frac{R}{Ke}\right]}{Ke}$$

where, $D1$ = Expected dividend at the end of year one.
$E1$ = Earnings per share.
$E1 - D1$ = Retain
Ke = cost of Equity | $Kc = Ke$
R = IRR - Internal Rate of Return.

Vimp.

Optimum Payout Ratio Table as per Walter's Model -

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

Eg1:- 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 ⇒ $P_0 = \frac{D1 + \left[(E1 - D1) \times \frac{R}{Ke}\right]}{Ke}$

$D1$ = Dividend per share = $0.3 \times$ ₹6 = ₹1.80
$E1$ = Earnings per share = ₹6
R = Internal rate of return = 20%
Ke = cost of capital = 10%

$$P_0 = \frac{1.80 + \left[(6 - 1.80) \times \frac{20}{10}\right]}{10\%} \Rightarrow P_0 = ₹102$$

However, this is not the optimum payout as per Walter's Model, because for $R > Ke$, optimum payout should be zero. Therefore, substituting $D1 = 0$, 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 – $Ke = \frac{D1}{P_0} + g$ ⇒ $\frac{D1}{P_0} = Ke - g$

Dividend yield + growth approach

$\Rightarrow P_0 = \frac{D1}{Ke - g}$

$D1$ → Earnings ($E1$) – Retention = $D1$

g → $b \times r$ → Retention Ratio × ROE

$$P_0 = \frac{E_1 (1-b)}{Ke - (b \times r)}$$

where, $E1$ = Earnings per share.
b = retention ratio (1 – payout ratio)
Ke = Capitalisation Rate.
r = IRR = Internal Rate of Return | Return on Equity.

V.Imp. Optimum Payout Ratio Table as per Gordon's Model –

Cases | Optimum Payout Ratio

1 $R > Ke$ = Growth Firm $\longrightarrow$ Retain = 100%, Payout = 0%
2 $R = Ke$ = Stable Firm $\longrightarrow$ Any payout ratio is optimum.
3 $R < Ke$ = Declining Firm $\longrightarrow$ 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 (ke)	10%
Earnings per share (E_1)	₹12

What conclusion do you draw?

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

(i) When dividend payout ratio is 25%.

$\therefore b = 75\%$ or 0.75

$br = 0.75 \times 0.10 = 0.075$

$P_0 = \dfrac{12(1-0.75)}{0.10 - 0.075}$

$= \dfrac{12 \times 0.25}{0.025} = ₹120$

(ii) When dividend payout ratio is 100%.

$\therefore b = 0\%$

$br = 0 \times 0.10 = 0$

$P_0 = \dfrac{12(1-0)}{0.10 - 0}$

$= \dfrac{12}{0.10}$

$= ₹120$

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3. Graham And Dodd Model :-

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

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 floatation 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.

Step1:- Calculation of Price at the end of year one (P_1).

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

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step 2:- Calculation of fresh shares to be issued.

EAESH | PAT	=	xxx
(-) Dividend	=	(xx)
Retained	=	xxx
(-) Fresh Investment	=	(xx)
Amt raised through fresh issue	=	xxx
(÷) Issued Price (P_1)	=	xx (step 1)
no. of shares to be issued	=	xxx shares

step 3:- Calculation of value of firm (VF).

$$V_F = \frac{(\text{Existing shares} + \underset{(\text{step } 2)}{\text{Fresh issue}}) \times \underset{(\text{step}1)}{P_1} + PAT - \text{Fresh Investment}}{1 + Ke}$$

Eg 1:- Anil 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^n of Price at the end of year 1 (P_1).

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

$$100 = \frac{8 + P_1}{1 + 0.10} \qquad \therefore P_1 = ₹102$$

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* Calⁿ of Fresh shares to be issued.

PAT = 20,000
(−) dividend = (16,000) (2000 shares × ₹8)
Retained = 4,000
(−) Fresh Investment = (24,000)
Amt Raised through fresh issue = 20,000
(÷) Issued Price (P_1) = ₹102 ⟶ step 1
no. of fresh shares to be issued = 196.078 shares

* Calⁿ of value of firm (VF).

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

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

Case 2 :- when dividend is not paid –

* Calⁿ of Price at the end of year one (P_1).

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

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

* Calⁿ of Fresh shares to be issued.

PAT = 20,000
(−) Dividend = 0
Retained = 20,000

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(-) Fresh investment = (24,000)
Amt Raised through Fresh issue = 4,000

(÷) issued price (P_i) = ₹110 → step 1
no. of shares to be issued = 36.36 shares

* cal^n of value of firm (VF).

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

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

$$VF = \boxed{₹2,00,000}$$

5. Dividend Discount Model :-

No/Zero Growth — Constant Growth — Variable Growth

* No/zero Growth = $Ke = \frac{D1}{P_0}$ ~~(Dividend yield approach)~~

$$P_0 = \frac{D1}{Ke}$$

* Constant Growth = $Ke = \frac{D1}{P_0} + g$ (Dividend yield + growth approach)

$$= Ke - g = \frac{D1}{P_0}$$

$$P_0 = \frac{D1}{Ke - g}$$

★ **Variable Growth = Eg :-**

$Ke = 12\%$ $\quad g = 5\%$

$D_0 = 10$ $\quad D_1 = 11$ $\quad D_2 = 12.10$ $\quad D_3 = 13.31$ $\quad D_4 = 13.97$

170.99

$g = 10\%$

$P_3 = 199.57$

$\underline{212.88}$

At $D_3 \Rightarrow 13.31$

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

Eg 1 :- X Ltd has paid a dividend per share of ₹5. capitalisation rate = 10%. Calculate Po using Dividend Discount Model :-

i) No Growth Firm.

ii) constant growth @ 6%.

i) No Growth firm $\Rightarrow P_0 = \frac{D_1}{Ke} \Rightarrow \frac{5}{10\%} \Rightarrow$ ₹50

$5 + 6\% = 5.30$

ii) constant growth @ 6% $\Rightarrow P_0 = \frac{D_1}{Ke - g} \Rightarrow \frac{5.30}{10\% - 6\%} \Rightarrow \frac{5.30}{4\%}$

$\Rightarrow$ ₹132.5