

CHAPTER 17

DIVIDEN THEORIES

Problem 1

EPS (Rs)	10
Internal rate, r	15%
Payout, p	40%
DPS (Rs): $10 \times 40\%$	4
Growth, $r(1 - p) = 15\% (1 - 0.4)$	9%
Required rate, k	10%
Share price:	
Walter's model: $\frac{DPS}{k} + \frac{r(EPS - DPS) / k}{k}$	130
Gordon's model: $\frac{DPS}{k - rb}$	400

Problem 2

Investment (Rs crore)	30		
No of shares (crore)	0.30		
Investment per share (Rs)	100		
Profitability rate, r	20%	15%	10%
Capitalisation rate, k	12.5%		
EPS (Rs)	20	15	10
Walter's model: $\frac{DPS}{k} + \frac{r(EPS - DPS) / k}{k}$			
	r > k	r > k	r < k
Optimum payout	0%	0%	100%
DPS (Rs)	0	0	10
Share price (Rs)	256	144	80

Problem 3

EPS (Rs)	10		
Capitalisation rate, k	10%		
Retention, b	40%		
Internal rate, r	15%	10%	5%
DPS (Rs): $EPS (1 - b) = 10 (1 - .4)$	6		
Growth, $g = rb$	6%	4%	2%
Share price:			
Walter's model (Rs)	120	100	80
Gordon's model (Rs)	150	100	75

Problem 4

No of shares (lakh)	50.0
Market price, P ₀ (Rs)	120.0
Total share value (Rs crore)	60.0
DPS (Rs)	10.0
Total dividend (Rs crore)	5.0
Capitalisation rate	10%
Profits (Rs crore)	9.0
New investment (Rs crore)	6.6
MM model:	
Market price, P ₁	
No dividends (Rs): P ₁ = P ₀ (1+k)	132
Dividends paid (Rs): P ₁ = P ₀ (1+k) - DPS	122
Funds needed (Rs crore): 6.6 - (9 - 5)	2.60
No of new shares: 2,60,00,000/122	213,115

Problem 5

Number of shares (crore)	0.10
New investment (Rs crore), I ₁	5
Profits (Rs crore), X ₁	1
Expected price, P ₁	120
Discount rate, k	10%
External funds (Rs crore): 5 crore - 1 crore	4
New shares (crore): 4 crore/120	0.033
Total shares (crore): [0.10 + 0.033]	0.1333
MM model:	
Current share price (Rs): P ₀ = $\frac{(n + m)P_1 - I_1 + X_1}{n(1 + k)}$	
	108.72
	$P_0 = \frac{(0.10 + 0.033)120 - 5 + 1}{0.1(1.10)}$

Problem 6

The current share price and growth rate are as follows:

$$P_0 = \frac{5}{0.15 - g} = \text{Rs } 125$$

$$g = \frac{18.75 - 5}{125} = 0.11$$

To compensate for the internal funds via retained earnings, the company will have to issue new shares. This will cause decline in the dividend growth rate by (retained earnings to current price) 5/125 = 4%. This implies that the current shareholders will be sacrificing 4% each year to receive higher dividends. Thus the current share price remains:

$$P_0 = \frac{10}{0.15 - (0.11 - 0.04)} = \text{Rs } 125$$

Ch. 17: Dividend Theories

Problem 7

Share capital (Rs crore)	12.50
Reserve (Rs crore)	7.50
Net worth, NW (Rs crore)	20.00
PAT (Rs crore)	1.85
Dividends (Rs crore)	1.50
P/E ratio	13.33
Number of shares (crore): $N = 12.50/10$	1.25
EPS (Rs): PAT/N	1.48
Current share price (Rs): $EPS \times P/E$ ratio	19.73
ROE: PAT/NW	9.25%
DPS (Rs): $1.50/1.25$	1.20
Retention: $(PAT - Div.)/PAT$	18.92%
Growth: $Retention \times ROE$	1.75%
Required rate: $DPS/P_0 + g$	7.83%
Share price: Walter's model	19.55
Share price 100% retention: Walter's model*	22.33

Under Walter's model, when internal return is more than the required rate ($r > k$), the share price will be maximum if 100% retention policy is followed.

Problem 8

Capital expenditure (Rs crore)	35
Project NPV (Rs crore)	25
Dividend (Rs crore)	20
Internal funds (Rs crore)	10
Current share price (Rs)	25
Number of shares (crore)	5
Current value of shares (Rs crore): 5×25	125
Value after capital expenditure (Rs crore): $125 + 25$	150
Share price without dividend payment: $150/5$	30
Share price with dividends paid (Rs): $(150 - 20)/5$	26
Funds needed if dividends paid (Rs crore): $[35 + 20 - 10]$	45
New shares (crore): $45/26$	1.73
Funds needed if dividends not paid (Rs crore): $[35 - 10]$	25
New shares (crore): $25/30$	0.83

Problem 9

Company X does not pay any dividend and its share price after a year is expected to be Rs 115. Thus its total before tax payoff is: $0 + 115 = \text{Rs } 115$. Since company Y is identical to company X, we expect that it will have the same total before tax payoff of Rs 115 of which Rs 10 will come from dividend. Thus Y's share price after a year is expected to be Rs 105. Since both company's have same risk, their after-tax return should be the same. Thus Y's current share should be such that its shareholders earn an after-tax return equal to X's shareholders.

	Co. X	Co. Y
Current share price: $P_0 = \text{After-tax payoff}/\text{After-tax return}$	100	96.96
Price expected after one year	115	105
Expected dividend after one year	0	10
Expected capital gain	15	5
Total before-tax payoff: $DPS_1 + P_0$	115	115
Before-tax return	15%	19%
Dividend income tax, T_i	35%	35%
Capital gain tax, T_c	0%	0%
After-tax payoff: $DPS_1(1-T_i) + (P_1-P_0)(1-T_c)$	115	111.5
After-tax return, r	15%	15%

Problem 10

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Problem 11

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CASE

Case 17.1: Great Eastern Shipping Company

The GESC chairman is arguing for a lower payout. The shipping industry to which GESC belongs has the following characteristics:

1. It's a capital intensive industry, requiring continuous infusion of capital.
2. Shipping is a high risk (revenues show wide fluctuations) but high return (average ROE is quite high) business.
3. Firms in shipping industry are, on an average, cash rich; therefore, they would like to have balanced capital structure.
4. Shipping firms are mostly owner managed, and they look for long-term profitability rather than short-term.

The chairman further argues that dividend payments will dilute the overall shareholders' wealth. One reason is the double taxation; first, the company pays tax on its profits and then, the shareholders pay tax on the profits distributed to them as dividend. (This argument is not valid now in India as shareholders are not required to pay any tax on dividend income.) Further, if a company that needs funds, distributes dividends, will have to raise capital by issuing, say, rights shares. This will involve floatation costs. The issue costs and double taxation could be avoided if earnings are retained in the business. Given high average ROE (about 30%) for GESC, a high retention ratio will result into higher growth (growth = ROE x retention ratio) in sales, profits, EPS and consequently in share price if the P/E is maintained at its current level. If the P/E ratio improves, share price will be still higher.

GESC will thus like to retain as much profit as possible, and will like to raise remaining funds by issuing rights shares since it will not result into any dilution of the shareholders wealth and ownership (provided all of them subscribe to the rights issue).

The dividend policy suggested by the GESC chairman can be justified for the following reasons: GESC is a highly profitable company. It has continuous need for funds to finance profitable investment opportunities. Its shareholders will be better off if a low payout ratio is followed because the higher growth and profitability will result into higher share price and consequently higher capital gains. Further, GESC's revenues and profits are volatile and therefore, it would not be able to continuously sustain a high dividend payout policy. Frequent adjustment in payout ratio (particularly the reductions) could create uncertainty in the minds of the shareholders with adverse effect on the share price.