

HW - Chapter 4 - Cost of Capital - Q20

(a) Assuming no tax as per MM Approach.

Calculation of Value of Firms 'A Ltd.' and 'B Ltd' according to MM Hypothesis

Market Value of 'B Ltd' [Unlevered(u)]

Total Value of Unlevered Firm (V_u) = $[\text{Dividend} / k_e] = 18,00,000 / 0.18 = \text{Rs. } 1,00,00,000$

K_e of Unlevered Firm (given) = 0.18

K_o of Unlevered Firm (Same as above = k_e as there is no debt) = 0.18

Market Value of 'A Ltd' [Levered Firm (I)]

Total Value of Levered Firm (V_L) = Total Value of unlevered Firm (V_U) = Rs. 1,00,00,000

Computation of Equity Capitalization Rate and WACC

Particulars	A Ltd.	B Ltd.
A. EBIT	18,00,000	18,00,000
B. Less: Interest on Debt (I)	6,48,000	-
C. Dividend	11,52,000	18,00,000
D Overall Capitalization Rate (k_o)	0.18	0.18
E Total Value of Firm ($V = \text{EBIT} \div k_o$)	1,00,00,000	1,00,00,000
F Less: Market Value of Debt	54,00,000	-
G Market Value of Equity (P_0)	46,00,000	1,00,00,000
H Equity Capitalization Rate [$k_e = \text{Dividend} \div P_0$]	0.2504	0.18
I $K_o = \text{EBIT} \div V$	0.18	0.18

(b) Assuming 40% taxes as per MM Approach

Market Value of 'B Ltd' [Unlevered(u)]

Total Value of unlevered Firm (V_u) = $[\text{EBIT}(1 - t) / k_e] = 18,00,000 (1 - 0.40) / 0.18 = \text{Rs. } 60,00,000$

$K_e = K_o = 0.18$

Market Value of 'A Ltd' [Levered Firm (I)]

Total Value of Levered Firm (V_L) = $V_u + (\text{Debt} \times \text{Tax})$

= Rs. 60,00,000 + (54,00,000 × 0.4) = Rs. 81,60,000

Computation of K_e & WACC of A Ltd

Particulars	A Ltd. (Rs.)
EBIT	18,00,000
Less: Interest on Debt (I)	6,48,000
Earnings Before Tax (EBT)	11,52,000
Less: Tax @ 40%	4,60,800
Dividend	6,91,200
Total Value of Firm (V) as calculated above	81,60,000
Less: Market Value of Debt	54,00,000
Market Value of Equity (P_0)	27,60,000
$K_e = \text{Dividend} / P_0$	25.04
$\text{WACC} = \text{EBIT} (1 - T) / V$	13.23