

The Hastings Company has two divisions, A and B. There are no transactions between the two divisions. The company has no permanent or temporary timing differences for its tax bill. The balance sheet for Hastings on December 31, 1998 and December 31, 1997 had the following items:

Balance Sheet December 31	1,993	1,994
Current Assets (\$ million)	\$140	\$140
Long term Assets (\$ million)	\$330	\$330
Accounts payable (\$ million)	\$70	\$70
Other information		
Long term debt / stockholder's equity (on Dec 31 1993)		60.00%
Return on stockholder's equity		
1994 results / Dec 31 1993 balance		24.00%
Return on investment (company)		
1994 results / Dec 31 1993 balance		16.00%
Tax rate		40.00%
Division A share of invested capital		25.00%
Division A residual income (\$ million) with capital charge rate	12.00%	\$12.00

The only other balance sheet items on Dec 31 1993 were debt and stockholder's equity.

Questions

- 1 What is the invested capital (debt plus equity) in Hastings on December 31, 1993?
- 2 What is the stockholder's equity in Hastings on December 31, 1993?
- 3 What is the Net Income for Hastings in 1994?
- 4 What is the Earnings Before Taxes for Hastings in 1993?
- 5 What is the Earnings Before Interest and Taxes for Hastings in 1993?
Use the company ROI, company invested capital and net income to figure the Net Operating Profit after Taxes.
- 6 What is the interest expense for Hastings in 1994?
- 7 What is the interest rate for Hastings in 1994?
- 8 What is the earnings before interest and taxes (operating income) for each of the two divisions in 1994?
- 9 What is the EVA (Residual income with charge rate = WACC = 12 %) for each of the two divisions in 1994?
- 10 What is the return on investment for the two divisions in 1994?
- 11 What is the cost of equity for Hastings in 1994 ?
- 12 What is the residual income for the company in 1994? What is the residual income for equity in 1994?

Optional

- 13 What will happens to Hastings if it disposes of one division, maintaining the capital structure? Assume that That there are no growth prospects for Hastings.
[First compute the proceeds from the sale of each division. Assume no growth and that the market is efficient]

Hastings		Balance Sheet December 31, 1993	
Current Assets			140
Long term Assets			330
Total assets			470
Accounts payable			70
Debt	Q2	150	
Equity	Q2	250	
Invested capital	Q1		400
Liabilities plus owner's equity			470

Q 1 Total liabilities plus owner's equity - current liabilities equals Total assets
 Q 2 Apportion invested capital Debt = 0.600 ÷ 1.600 = 0.375

Hastings		Income statement 1994	
Earnings before interest and taxes			106.7
Interest expense	Q 6		6.7
Interest rate		4.44%	
Earnings before taxes	Q 4		100.0
Taxes			
Net income	Q 3		60.0

Q 3 Net income = Equity x ROE = 250 x 24.00% = 60
 Q 4 Earnings before taxes = Net income / (1 - tax rate) = 60 / 60.00% = 100.0
 Q 5 ROI = NOPAT ÷ Equity + Debt = 16.00% x 400.0 = 64.0
 NOPAT = EBIT x 0
 EBIT = NOPAT ÷ 0 = 64 ÷ 60.00% = 106.667
 Q 6 Interest expense = Earnings before interest and taxes - Earnings before taxes = 106.7 - 100.0 = 6.7
 Q 7 Interest rate = 7 ÷ 150 = 4.44%

Divisional data		A	B	Hastings
Invested capital	Q 8	100.0	300.0	400
Earnings before interest and taxes	Q 8	40.0	66.7	107
Taxes	40.00%		26.7	
Earnings before interest and taxes		24.0	40.0	
Imputed Interest	Q 8	12.0	36.0	
Residual income (EVA)		12.0	4.0	16
Return on investment		24.00%	13.33%	

Q 8 Division A share of invested capital x total = 25.00% x 400.0 = 100.0
 Imputed Interest A = 12.00% x 100.0 = 12.0
 Earnings before interest and taxes = Earnings before interest and taxes / (1 - tax rate)
 24 ÷ 60.00% = 40
 Q 9 Earnings before interest and taxes B = Earnings before interest and taxes Firm - Earnings before interest and taxes A
 = 106.7 - 40.0
 Imputed Interest B = 12.00% x 300.0 = 36

Q11

$$\begin{aligned}
 \text{WACC} &= 12.00\% \\
 &= \text{Debt/Invested Capital} \times (1 - \text{tax}) \times \text{Interest rate} \\
 &\quad + \text{Equity /Invested Capital} \times \text{Cost of equity} \\
 &= 0.375 \times 60.00\% \times 4.44\% + 0.625 \times 17.60\% < \text{Plug}
 \end{aligned}$$

Residual income (EVA) for equity = Net Income - Cost of equity x Equity

$$= 60.00 - 17.60\% \times 250 = 16.00$$

Q 12 First we have to compute the net income for each division.

	A	B	A	B	
Earnings before interest and taxes			40.00	66.67	
Allocated Debt	37.50	112.50			
Interest 4.44%			1.67	5.00	
Earnings before taxes			38.33	61.67	
Taxes 40.00%			15.33	24.67	
Net Income 60.00			23.00	37.00	60.00
Allocated equity			62.50	187.50	
Divisional return on equity			36.80%	19.73%	

	Company	Keep A	Keep B
Net income	60.00	23.00	37.00
After tax cost of equity	17.60%	17.60%	17.60%
Equity value	340.91	130.68	210.23
Sell other division; Realize the invested capital as cash inflow		300.00	100.00
Retire the debt assigned to division sold		112.50	37.50
Net cash (pay as dividends)		187.50	62.50
Equity value of the division kept		130.68	210.23
Final value		318.18	272.73
Missing: Present value of residual income [Residual income / equity cost]			
4.00 ÷ 17.60% =		22.73	
12.00 ÷ 17.60% =			68.18
Equity value		340.91	340.91