

THE INSTITUTE OF COST AND MANAGEMENT ACCOUNTANTS OF BANGLADESH
CMA JUNE, 2018 EXAMINATION
PROFESSIONAL LEVEL-IV
SUBJECT: 401. FINANCIAL MANAGEMENT

Model Solution

Solution to the question No.1(d)

$$WACC = [E/V \times r_e] + [D/V \times r_d (1-T_c)]$$

Where,

r_e = Cost of equity = 6%

r_d = Cost of debt = 5%

E = Market value of firm's equity = Tk.6,000,000

D = Market value of firm's debt = Tk.4,000,000

T_c = Corporate tax rate = 35%

V = E+D

$$\begin{aligned} WACC &= [(6,000,000/10,000,000) \times 0.06] + [(4,000,000/10,000,000) \times \{0.05 \times (1-0.35)\}] \\ &= [0.6 \times 0.06] + [0.4 \times 0.0325] \\ &= 0.036 + 0.013 \\ &= 0.049 \\ &= 4.9\% \end{aligned}$$

Solution to the question No.2(c)

Given t=2 years; $r_d=9\%$, $r_f=7\%$ and $S_0=80$

$$\begin{aligned} \text{c(i): } F_0 &= S_0 \cdot e^{(r_d-r_f)t} \\ &= 80 \times 2.7183^{(0.09-0.07) \times 2} \\ &= 80 \times 1.0408 \\ &= 83.26 \end{aligned}$$

c(ii): If $F_0=81.20$, it is not profitable to invest in the USA.

Borrow Tk.80x4,000= Tk.320,000 @ 9% local risk-free rate for 2 years

The investment would grow $4,000 \times e^{0.07 \times 2} = \text{USD}4,601$

Sell USD 4,601 at future rate 81.2

At maturity

Realize the invested amount USD 4,601 and convert it to Tk; $4,601 \times 81.2 = \text{Tk. } 373,601$

Repay the borrowed amount with interest: $320,000 \times e^{0.09 \times 2} = 383,110$

Loss = (Tk.373,601-383,110) =Tk 9,509

c (iii): If $F_0=77.5$ it is profitable to invest in Bangladesh

Borrow USD 4,000 @ 7% foreign rate for 2 years

Convert USD 4,000 to Taka @ 80 per USD = Tk.320,000

Invest Tk 320,000 @ 9% local rate for 2 years.

Contract to buy USD ($4,000 \times e^{0.07 \times 2}$) = USD4,601 in the future market @Tk. 77.50:
 $4,601 \times 77.50 = 356,578$
At maturity realize the invested amount Tk. $320,000 \times e^{0.09 \times 2} = 383,110$
Pay Tk 356,578 to buy necessary USD to repay the borrowings
Profit = $(383,110 - 356,578) = \text{Tk.} 26,532$

Solution to the question No. 4

i.	Sales (\$45,500,000 + \$500,000		\$45,500,000
	Fixed costs		12,900,000
	Variable costs (58% of sales)		26,390,000
	Operating income (EBIT)		6,210,000
	Interest		1,275,000
	Earnings before taxes (EBT)		4,935,000
	Taxes (34%)		1,677,900
	Earnings after taxes (EAT)		3,257,100
	Shares		2,000,000
	Earnings per share		\$1.63
ii.	Earnings per share, 2016	\$1.63	
	Earnings per share, 2015	1.56	
	Increase	\$.07	
	Increase	\$.07	= 4.5%
	Earnings per share, 2015	1.56	
iii.	Sales		\$45,500,000
	Fixed costs		12,900,000
	Variable costs (58% of sales)		26,390,000
	Operating income (EBIT)		6,210,000
	Interest*		2,400,000
	Earnings before taxes (EBT)		3,810,000
	Taxes (34%)		1,295,400
	Earnings after taxes (EAT)		2,514,600
	Shares**		1,375,000
	Earnings per share		\$1.83
	*Interest		
	Old debt 10.625% x \$12,000,000	= \$1,275,000	
	New debt 11.250% x \$10,000,000	= +1,125,000	
	Total interest	\$2,400,000	
	**Shares outstanding 2,000,000 – 625,000 = 1,375,000		
iv.	Earnings per share, 2016 (based on more debt)		\$1.83
	Earnings per share, 2015		1.56
			\$.27

$$\frac{\text{Increase}}{\text{Earnings per share, 2010}} = \frac{\$.27}{\$ 1.56} = 17.3\%$$

$$v \quad \text{DFL i} = \frac{\text{EBIT}}{\text{EBIT} - I} = \frac{\$6,210,000}{\$6,210,000 - \$1,275,000} =$$

$$= \frac{\$6,210,000}{\$4,935,000} = 1.26$$

$$\text{DFL iii} = \frac{\text{EBIT}}{\text{EBIT} - I} = \frac{\$6,210,000}{\$6,210,000 - \$2,400,000} =$$

$$= \frac{\$6,210,000}{\$3,810,000} = 1.63$$

$$vi \quad \text{DCL i} = \frac{S - \text{TVC}}{S - \text{TVC} - \text{FC} - I}$$

$$= \frac{\$45,500,000 - \$26,390,000}{\$45,500,000 - \$26,390,000 - \$12,900,000 - \$1,275,000}$$

$$= \frac{\$19,110,000}{\$4,935,000} = 3.87$$

$$\text{DCL iii} = \frac{S - \text{TVC}}{S - \text{TVC} - \text{FC} - I}$$

$$= \frac{\$45,500,000 - \$26,390,000}{\$45,500,000 - \$26,390,000 - \$12,900,000 - \$2,400,000}$$

$$= \frac{\$19,110,000}{\$3,810,000} = 5.02$$

vii From Figure 2:

$$\frac{\text{Totaldebt}}{\text{Totalassets}} = \frac{\$17,500,000}{\$40,500,000} = 43.2\%$$

After new debt issue:

$$\frac{\text{Totaldebt}}{\text{Totalassets}} = \frac{\$17,500,000 + \$10,000,000}{\$40,500,000} = \frac{\$27,500,000}{\$40,500,000} = 67.9\%$$

viii. There are two conflicting factors that could influence the stock price.

On the positive side, earnings per share would be twenty cents higher with more debt (\$1.83 versus \$1.63).

Based on a current price-earnings ratio of about 10 (the repurchase price for the shares is for \$16 (\$10,000,000 / 625,000) and EPS are currently \$1.56), the stock might go up by approximately \$2.00 as a result of a \$.20 increase in EPS.

Two dollars represents a healthy 12.5% increase from the current value of \$16 per share. However, the management must keep in mind that the debt ratio is increasing from 43.2% to 67.9%, which probably would have a negative effect on the price-earnings ratio.

The net effect of the increase in earnings per share versus the likely decrease in the price-earnings ratio can only be conjectured. Security analysts following Glen Mount Furniture Company seem to be highly sensitive to earnings per share performance, but there may be some question about whether the type of financial engineering used to increase the earnings per share will satisfy them. Of course, the firm can argue that the share repurchase is a strong sign of confidence by management in future company performances.

One clue to the eventual reaction of the market to the recapitalization might lie in the data on the debt ratios of other firms in the industry. If 67.9% is perceived to be on the high end, there might be little positive gain associated with the increase in earnings per share. However, if other companies are in this range and the firm is merely taking advantage of underutilized debt capacity, the market reaction might be positive.

Solution to the question No. 5

i.	Midpoint of Days Outstanding	Weights	Weighted Number of Days	
	5	.010	.050	
	15	.075	1.125	
	25	.200	5.000	
	35	.325	11.375	
	45	.215	9.675	
	55	<u>.175</u>	<u>9.625</u>	
		1.000	36.850	Average Collection Period

ii. 1/10, net 30 Policy

	10%	x	10	days	=	1	day	
	90%	x	30	days	=	27	days	
						28	days	Average Collection Period

2/10, net 30 Policy

	25%	x	10	days	=	2.5	days	
	75%	x	30	days	=	22.5	days	
						25.0	days	Average Collection Period

3/10, net 30 Policy

	60%	x	10	days	=	6	days	
	40%	x	30	days	=	12	days	
						18	days	Average Collection Period

iii. Accounts receivable = average collection period x average daily credit sales

	1/10, net 30 policy	28 days	x	\$54,274	=	\$1,519,672
	2/10, net 30 policy	25 days	x	\$54,274	=	\$1,356,850
	3/10, net 30 policy	18 days	x	\$54,274	=	\$976,932

It should be pointed out that if total credit sales billed remained the same under the three cash discount policies, average daily credit sales would go down due to the subtraction of the cash discount. However, for simplicity in the calculations, this point is not explicitly considered.

iv. Cost of cash discount: Total credit sales x percent using the discount x % discount.

Cash Discount	Total Credit Sales		Percent Using the Discount		Percent Discount	=	Cost of Cash Discount
1/10, net 30 policy	\$18,000,000	x	10%	x	1%	=	\$18,000
2/10, net 30 policy	\$18,000,000	x	25%	x	2%	=	\$90,000
3/10, net 30 policy	\$18,000,000	x	60%	x	3%	=	\$324,000

v. Old accounts receivable – new accounts receivable = freed up funds

	1/10, net 30 policy					Freed up funds
	\$2,000,000	–	\$1,519,672	=	\$480,328	
	2/10, net 30 policy					
	\$2,000,000	–	\$1,356,850	=	\$643,150	
	3/10, net 30 policy					
	\$2,000,000	–	\$976,932	=	\$1,023,068	

vi. The return is equal to the freed up funds times 18%

	1/10, net 30 policy	\$480,328	x	18%	=	\$86,459
	2/10, net 30 policy	\$643,150	x	18%	=	\$115,767
	3/10, net 30 policy	\$1,023,068	x	18%	=	\$184,152

vii. Returns on freed up funds – cost of cash discounts = profit or loss

	Return on Freed up Funds		Cost of Cash Discount	=	Profit (loss)
1/10, net 30 policy	\$86,459	–	\$18,000	=	\$68,459
2/10, net 30 policy	\$115,407	–	\$90,000	=	\$25,767
3/10, net 30 policy	\$184,152	–	\$324,000	=	(\$139,848)

The 1/10, net 30 policy provides the largest profit. The cost is too high for the 2% and 3% discounts relative to the return potential from freed up funds.

viii. Increased profitability of Alternative 2 (2/10, net 30) under the assumption of a \$1,000,000 increase in sales.

	Increased Sales	\$1,000,000
	Profit Margin	9%
	Profit	\$90,000
-	Cost of cash discount (2% x \$1,000,000)	-20,000
-	Lost profit on funds committed to accounts receivable (20% x \$27,750)	-5,550
	Profit on new sales	\$64,450
	Previously computed Profit from freed up funds (req. vii)	+25,767
	Total profit on Alternative 2 (2/10, net 30)	\$90,217

The total profit on Alternative 2 (2/10, net 30) of \$90,217 now exceeds the profit of Alternative 1 (1/10, net 30) of \$68,459 as computed in req. vii. The 2/10, net 30 policy should now be chosen.

=THE END=