

**CMA JANUARY 2022 EXAMINATION
ADVANCED LEVEL I
EF343. CORPORATE FINANCIAL STRATEGY & FINANCIAL MARKET**

Solution of the Question No. 2

(a)

Major Decisions:

- Capital budgeting
- Capital structure
- Working capital management

Capital budgeting

- What is the optimal firm size?
- What specific assets should be acquired?
- What assets (if any) should be reduced or eliminated?

Capital structure

- What is the best type of financing?
- What is the best financing mix?
- How will the funds be physically acquired?

Working capital management

- How do we manage existing assets *efficiently*?
- Greater emphasis on current asset management than fixed asset management
- How much cash and inventory should be kept on hand?
- Should credit terms be extended? If so, what are the conditions?
- How is short-term financing acquired?

(b)

i.

EBIT	Taka	4,000,000
Interest (Taka 10,000,000 = 0.12)		1,200,000
Earnings before taxes (EBT)		2,800,000
Taxes (35%)		980,000
Net income		1,820,000

Shares bought and retired:

$$\text{Change of N} = \text{change of Debt}/P_0 = \text{Taka } 8,000,000 / \text{Taka } 27.47 = 291,227$$

New outstanding shares:

$$N_1 = N_0 - \text{change of N} = 600,000 - 291,227 = 308,773$$

New EPS:

$$\text{EPS} = \text{Taka } 1,820,000 / 308,773 = \text{Taka } 5.89$$

New price per share:

$$P_0 = \text{Taka } 5.89 / 0.17 = \text{Taka } 34.65 \text{ versus Taka } 27.47$$

Therefore, GM should change its capital structure.

Workings:

(W- 1)

EBIT	Taka	4,000,000
Interest (Taka 2,000,000 * 0.10)		200,000
Earnings before taxes (EBT)		3,800,000
Taxes (35%)		1,330,000
Net income		2,470,000

$$\text{EPS} = \text{Taka } 2,470,000 / 600,000 = \text{Taka } 4.12$$

$$P_0 = \text{Taka } 4.12 / 0.15 = \text{Taka } 27.47$$

((W- 2)

Equity = 600,000 =Taka 10 =Taka 6,000,000

Debt =Taka 2,000,000

Total capital =Taka 8,000,000

$$\begin{aligned} \text{WACC} &= w_d r_d (1 - T) + w_c r_s \\ &= (2/8)(10\%)(1 - 0.35) + (6/8)(15\%) \\ &= 1.63\% + 11.25\% \\ &= 12.88\% \end{aligned}$$

ii.

In this case, the company's net income would be higher by $(0.12 - 0.10)(\text{Taka } 2,000,000)(1 - 0.35)$
=Taka 26,000 because its interest charges would be lower.

The new price would be

$$P_0 = ((\text{Taka } 1,820,000 + \text{Taka } 26,000) / 308,773) / 0.17 = \text{Taka } 35.17$$

In the first case, in which debt had to be refunded, the bondholders were compensated for the increased risk of the higher debt position. In the second case, the old bondholders were not compensated; their 10 percent coupon perpetual bonds would now be worth

$$\text{Taka } 100 / 0.12 = \text{Taka } 833.33$$

Or Taka 1,666,667 in total, down from the old Taka 2 million, or a loss of Taka 333,333. The stockholders would have a gain of

$$(\text{Taka } 35.17 - \text{Taka } 34.65)(308,773) = \text{Taka } 160,562$$

This gain would, of course, be at the expense of the old bondholders. (There is no reason to think that bondholders' losses would exactly offset stockholders' gains.)

c.

i. Cost of retained earnings

$$r_r = \frac{\$1.26(1 + 0.06)}{\$40.00} + 0.06 = \frac{\$1.34}{\$40.00} = 3.35\% + 6\% = 9.35\%$$

ii. Cost of new common stock

$$r_s = \frac{\$1.26(1 + 0.06)}{\$40.00 - \$7.00} + 0.06 = \frac{\$1.34}{\$33.00} = 4.06\% + 6\% = 10.06\%$$

iii. Cost of preferred stock

$$r_p = \frac{\$2.00}{\$25.00 - \$3.00} = \frac{\$2.00}{\$22.00} = 9.09\%$$

$$\text{iv. } r_d = \frac{\$100 + \frac{\$1,000 - \$1,175}{5}}{\frac{\$1,175 + \$1,000}{2}} = \frac{\$65.00}{\$1,087.50} = 5.98\%$$

$$r_f = 5.98\% \times (1 - 0.40) = 3.59\%$$

v. WACC = (0.40)(3.59%) + (0.10)(9.09%) + (0.50)(9.35%)

$$\text{WACC} = 1.436 + 0.909 + 4.675$$

$$\text{WACC} = 7.02\%$$

Solution of the Question No. 3**(c)**

The beta for a particular risk factor in a portfolio is the weighted average of the betas of the assets. This is true whether the betas are from a single factor model or a multi-factor model. So the betas of the portfolio are:

$$\beta_1 = .20(1.55) + .20(.81) + .60(.73) = 0.91$$

$$\beta_2 = .20(.80) + .20(1.25) + .60(-.14) = 0.33$$

$$\beta_3 = .20(.05) + .20(-.20) + .60(1.24) = 0.71$$

So, the expression for the return of the portfolio is:

$$R_i = .032 + 0.91F_1 + 0.33F_2 - 0.71F_3$$

The return of the portfolio is:

$$R_i = .032 + 0.91(.061) + 0.33(.053) - 0.71(.057) = .0641 \text{ or } 6.41\%$$

(d)

(i) The expected return on a portfolio $E(R_p) = (.121 + .05)/2 = .0855$ or 8.55%

(ii) Let X be the weight of stock. So,

$$\beta_p = 0.5 = X(1.13) + (1-X)(0)$$

Solving the equation, we get $X = .4425$ (weight of stock)

And, the weight of the risk-free asset is $(1 - .4425) = .5575$

(iii) Let X be the weight of stock. So,

$$E(R_p) = .10 = .121X + .05(1-X)$$

Solving the equation, we get $X = .7042$ (weight of stock)

So, the β of the portfolio will be:

$$\beta_p = .7042(1.13) + (1 - .7042)(0) = 0.796$$

(iv) Let X be the weight of stock. So,

$$\beta_p = 2.26 = X(1.13) + (1-X)(0)$$

Solving the equation, we get $X = 2$ (weight of stock)

And, the weight of the risk-free asset is $(1 - 2) = -1$

This portfolio is invested 200% in the stock and -100% in the risk-free asset. This represents borrowing at the risk-free rate to buy more of the stocks.

Solution of the Question No. 4**(c)**

i. Stock transaction:

$$\$70/\text{share} - \$62/\text{share} = \$8/\text{share profit}$$

$$\$8/\text{share} \times 100 \text{ shares} = \$800$$

ii. Option transaction:

$$(\$70/\text{share} \times 100 \text{ shares}) = \$7,000$$

$$- (\$60/\text{share} \times 100 \text{ shares}) = -6,000$$

$$\underline{- \$600 \text{ cost of option}} = \underline{-600}$$

$$\text{Profit} = \$400$$

iii. $\$600 \div 100 \text{ shares} = \$6/\text{share}$

The stock price must rise to \$66/share to break even.

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- iv. If Carol actually purchases the stock, she will need to invest \$6,200 (\$62/share x 100 shares) and can potentially lose this full amount. In comparison to the option purchase, Carol only risks the purchase price of the option, \$600. If the price of the stock falls below \$56/share, the option purchase is favored. (Below \$56/share, the loss in stock value of \$600 [(\$62 - \$56) x 100 shares], would exceed the cost of the option.) Due to less risk exposure with the option purchase, the profitability is correspondingly lower. It would take a stock price decline to \$0 for a 100% loss on the stock, but a stock price decline only to the striking price for a 100% loss on the call option.

Solution of the Question No. 5

(i) Potential problems in merging the management structures and how to minimize them

Potential problems that could be raised include the following:

- The importance of retaining the current management team. This is key to the success of the merger and plans to develop the business of Z;
- Different locations (opposing ends of the country);
- Spare capacity in the office building in the north of the country, but the management team of Z may well not be willing to move out of the capital. On the other hand, moving the management of Q down to the capital would result in an expensive empty office block in the north that may stand empty and, cost aside, there may not be a suitable office building to house the combined entity in or near to the capital city.

Possible solutions:

- Offer the current management team an attractive salary package;
- Obtain guarantees backed by financial incentives for management to stay with the business;
- Determine which key employees and managers are willing to relocate and which operations need to be centralized and then identifies the lowest cost solution.

Potential problems in merging the systems and how to minimize them

Potential problems include:

- Completely different type of systems at present: PC network for Z and bespoke system for Q. It is unlikely that Q could operate on a network of PCs and the transition would, in any case, be very problematic. On the other hand, it is unlikely that the different nature of the business of Z would fit well into the bespoke system that Q operates.

Possible solution:

- The management may need to agree to run the systems independently and build an effective interface.

(ii) Under MM, capital structure is irrelevant if you ignore taxes. However, if tax is included, debt becomes cheaper because of the tax shield and the value of the entity therefore increases as the proportion of debt increases. After a certain point, the entity reaches its debt capacity. That is, the level of debt at which there is a high risk of financial distress and both lenders and shareholders demand increased returns to compensate for the higher levels of risk.

From the information provided in the question, it would appear that Q is currently borrowing at levels well below its debt capacity and would therefore increase the value of the entity by taking on a higher proportion of debt. Similarly, Z could well be borrowing in excess of its debt capacity and so its value would be enhanced by reducing the proportion of debt on its balance sheet. It is therefore highly likely that *both* entities would benefit from the improved capital structure that would result from a merger or takeover if Q were to fund the takeover of Z using debt or were to acquire Z together with its high levels of debt.

END OF QUESTION
