Cost of capital

1. Ayenew Company's financing plans for next year include the sale of long-term bonds with a 10% coupon. The company believes it can sell the bonds at a price that will provide a yield to maturity of 12% to investors. If its marginal tax rate is 35%, what is Ayenew's after-tax cost of debt?

2. Sattelite Share Company plans to sale preferred stock with par value of Br. 50 per share. The issue is expected to pay quarterly dividends of Br. 1.25 per share and to have flotation costs of 6% of the par value. The preferred stock sells at 95% of its par.
   Required: Calculate the cost of preferred stock to Satellite Share Company.

3. Repentance Corporation's share of common stock is currently selling at Br. 75. The firm's projected dividend per share during the next year is Br. 3.38 and the expected dividend growth rate is 8%. Because of competitive nature of the market a Br. 3 per share under pricing is necessary. In addition, the sale of new common stock involves underwriting fee of Br. 0.60 per share and other flotation costs of Br. 0.90 per share.
   Required: Calculate the cost of common stock for Repentance Corporation.

4. Zequala Textiles Share Company wishes to measure its cost of retained earnings. The firm's stock is currently selling for Br. 57.50. The firm expects to pay Br. 3.40 dividend at the end of the year. The expected dividend growth rate is 8%.
   Required: Determine th cost of retained earnings.

5. On January 1, 2002, the total assets of Zway share company were Br. 54 million. There was no short-term debt. The firm's optimal capital structure is given below.

Long-term debt	Br. 27,000,000
Common equity	27,000,000
Total liabilities and equity	Br. 54,000,000

   New bonds will have a 10% coupon rate and will be sold at Par. Common stock currently has a market price of Br. 60 and can be sold with a flotation cost of Br. 6 per share. Dividend yield is estimated to be 4% and the expected dividend growth rate is 8%
   Required: Calculate:
   1) the cost of debt assuming s 40% marginal corporate tax rate
   2) the cost of common equity (50% common stock and 50% retained earnings)
   3) the weighted average cost of capital

ANSWERS

1. Given: yield to maturity (YTM) = 12%; t = 35%; Kdt = ?

Since no flotation cost is indicated here, the YTM of 12% to investors represents the effective before –tax cost of debt for Ayenew company, i.e. Kd = 12%,

Therefore, Kdt = 12% (1 – 35%) = 7.80%

2. Given: Pps = Br. 50 x 95% = Br. 47.50; Dps = Br. 5 (4 x Br. 1.25); f = Br. 3 (Br. 50 x 6%); Kps

Kps = ?

Then, apply the two steps:

- NPps = Br. 47.50 – Br. 3 = Br. 44.50
- Kps = $\frac{\text{Br. 5}}{\text{Br. 44.50}}$ = 11.24%

3. Given: Po = Br. 75; D1 = Br. 3.38; g = 8%; f = Br. 4.50 (Br. 3 + Br. 0.60 + Br. 0.90); Ks = ?

Then, apply the two steps:

- Npo = Br. 75 – Br. 4.50 = Br. 70.50
- Ks = $\frac{D^1}{Npo}$ + G = $\frac{\text{Br. 3.38}}{\text{Br. 70.50}}$ + 8% = 13%

4. Given: Po = Br. 57.50; D_1 = Br. 3.40; g = 8%; Kr = ?

Then, apply the formula:

Kr = $\frac{D^1}{Po}$ + g = $\frac{\text{Br. 3.40}}{\text{Br. 57.50}}$ + 8% = 14%

5. 1. Since no flotation cost is involved here and the bonds are sold at par value, the effective before tax cost of debt (Kd) = coupon rate = 10%.

Kdt = 10% (1 – 40%) = 6%

2. Given: Po = Br. 60; f = Br. 6; dividend yield (D_1/po) = 4%; g = 8%

Cost of retained earnings (Kr) = $\frac{D_1}{Po}$ + g = 4% + 8% = 12%

Cost of common stock (Ks) = $\frac{D_1}{Npo}$ + g = $\frac{\text{Br. 2.40*}}{\text{Br. 60 – Br. 6}}$ + 8% = 12.44%

* $\frac{D_1}{Po}$ = 4% ⇒ $\frac{D_1}{\text{Br. 60}}$ = 4% ⇒ D_1 = Br. 2.40

Exercises

1. Zegha Technologies Company's common stock currently sells for Br. 46 per share. The company's most recent dividends were Br. 4, and it expects a dividend of Br. 4.28 to be paid at the end of the current year. The firm also expects to incur a flotation cost of Br. 5 to sell each share of common stock issue.

   Required: calculate the cost of new common stock issue and retained earnings.

2. Sidco Merchandising Company's stock is currently selling for Br. 300 a share. The firm is expected to earn Br. 27 per share this year and to pay a year-end dividend of Br. 18. The firm's investors require a 9% return on their common stock investment.

   Required: What rate of growth must be expected for sidman?

3. Nile Share Company has a debt ratio of 40% and a dividend payout ratio of 50%. The firm expects net income of Br. 5 million next year. Nile can borrow Br. 6 million at an interest rate of 11%, another Br. 6 million at a rate of 12%, and any additional debt at a rate of 13%. The firm's marginal tax rate is 35%.

Required: Determine

1) The breaking point associated with the exhausting of retained earnings.
2) The points where the cost of debt will increase.

Valuation

1. Amha Corporation issued a new series of bonds on January 1, 1985. The bonds were sold at their par of Br. 1,000, have 12% coupon, and mature in 20 years. Coupon payments are made quarterly. What was the price of the bond on December 31, 1989, assuming that the level of interest rate had fallen to 8%?

2. The Salem Company bond currently sells for Br. 955, has a 12% coupon interest rate and Br. 1,000 par value, pays interest annually, and has 15 years to maturity. Calculate the yield to maturity on this bond.

3. Allied Company has just issued 10,000 bonds of Br. 1,000 par value each. The bonds have original maturity of 50 years and an annual coupon rate of 15%. There is a 10 year call provision on the bonds. 3 years after the bonds had been issued, they were selling at Br. 1,300 each. The call price for each bond is 109 ¾. Calculate the yield to call on Allied bonds.

4. You are considering the purchase of Zemen company common stock that paid dividend of Br. 2 yesterday. You expect the dividend to grow at the rate of 5% per year for the next 3 years, and, if you buy the stock, you plan to hold it for 3 years and then sell it. Calculate the value of the common stock if your required rate of return is 15%.

5. Melat computers Incorporated is experiencing a period of rapid growth. Earnings and dividends are expected to grow at 15% rate during the next 2 years, at 13% in the third year, and at a constant rate of 6% thereafter. Melat's last dividend was Br. 1.15, and the required rate of return on the stock is 12%. Calculate the value of the stock today.

ANSWERS

1. Given: M = Br. 1,000; kd = 2% (8% ÷ 4); I = Br. 30 (Br. 1,000 x 12%/4); n = 60 (15 x 4) five years have passed (Jan. 1, 1985 to Dec. 31, 1989) since the bond was issued B_0 = ?

B_0 = Br. 30 (PVIFA 2%, 60) + Br. 1,000 (PVFI2%, 60)

= Br. 30 (34.7609) + Br. 1,000 (0.3048)

= Br. 1,347.63

2. Given M = Br. 1,000; I = Br. 120 (Br. 1,000 x 12%); n = 15; B_0 = Br. 955; YTM = ?

Approximate YTM = $$\frac{Br.120+\frac{Br.1,000-Br.955}{15}}{\frac{Br.1,000+Br.955}{2}} = 12.58\%$$

3. Given: I = Br. 150 (Br. 1,000 x 15%); B_0 = Br. 1,300; call price = Br. 1,097.50 (Br. 1,000 x 109 ¾%) ^{n} = 7 (10 – 3); YTC = ?

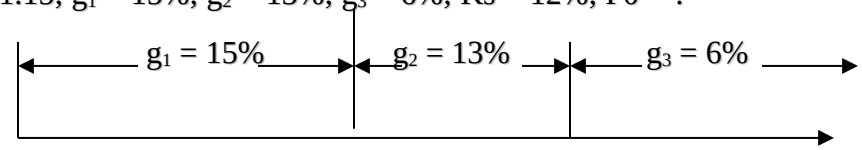
Approximate YTC = $$\frac{Br.150+\frac{Br.1,097.50-Br.1,300}{7}}{\frac{Br.1,097.50+Br.1,300}{2}} = 10.10\%$$

4. Value of common stock = PV of D_1 + PV of D_2 + PV of D_3 + PV of P_3. But P3 i.e. the selling price at the end of 3 years = the PV at the end of year 3 of D_4, D5, ----, D∞. Therefore, the value of common stock = PV of D_1 + PV of D_2 + ---- + PV of D∞. Whether you hold the common stock for 3 years of for indefinite, the value of common stock is the same.

Given: D_0 = Br. 2; g = 5%, ks = 15%; P_0 = ?

P_0 = $$\frac{D_1}{K_s-g} = \frac{D_0(1+g)}{K_s-g} = \frac{Br.2(1.05)}{15\%-5\%} = Br.21$$

5. Given: D_0 = Br. 1.15; g_1 = 15%; g_2 = 13%; g_3 = 6%; Ks = 12%; P0 = ?



Year 0 1 2 3 ∞

D_0 = Br. 1.15 D_1 = Br. 1.32 | D_2 = Br. 1.52 D_3 = Br. 1.72

PV of D_1 = Br. 1.18 PVIF12%, 1

PV of D_2 = Br. 1.21 PVIF12%, 2

PV of D_3 = 1.22 PVIF12%, 3

PV of P = 21.63 PVIF12%, 3 P_3 = $$\frac{D_4}{K_s-g} = Br.30.39$$

P_0 = Br. 25.24

D_1 = Br. 1.15 (1.15) = Br. 1.32; D_2 = Br. 1.32 (1.15) = Br. 1.52; D_3 = Br. 1.52(1.13) = Br. 1.72

P_3 = Br. 1.72 (1.06) = Br. 30.30
12% - 6%