Answer on Question #50988, Economics, Finance

Micro Spin offs Inc., issued 20-year debt a year ago at par value with a coupon rate of 9%, paid annually. Today, the debt is selling at $1050. If the firm's tax bracket is 35%, what is its after tax cost of debt?

1. Micro spinoffs also has preferred stock outstanding. The stock pays a dividend of $4 per share, and the stock sells for $40. What is the cost of preferred stock?

2. Suppose Micro Smirnoff's cost of equity is 12.5%. What is the WACC if equity is 50%, preferred stock is 20% and debt is 30% of total capital?

Solution:

The effective rate that a company pays on its current debt; it can be measured as either before-tax or after-tax returns; however, because interest expense is deductible, the after-tax cost is seen most often. This is one part of the company's capital structure, which also includes the cost of equity.

In our task we have the following given data. Time = 20 years, Coupon rate = 9%, Sales cost of debt = $1 050, Tax bracket = 35%, Dividend = $4, Stock price = $40, Cost of equity = 12.5%, Equity = 59%, Preferred stock = 20%, Debt = 30%.

Firstly we need to find the Interest rate on debt. We apply the calculation in Excel and obtained the value which is equal to 8.46%.

Now we need to determine the after tax cost of debt accordingly to the given condition of the task. We apply the following formula.

$$\text{After} - \text{tax cost of debt} = \mathrm{R_d}\ (1 - \mathrm{t_c})$$

$\mathrm{R_d}$ represents the cost to issue new debt, not the cost of the firm's existing debt.

$$\text{After} - \text{tax cost of debt} = 8.46\% \cdot\ (1 - 35\%) = 5.499\%$$

Now our task is to calculate the Cost of Preferred Stock. Cost of preferred stock ($\mathrm{R_{ps}}$) can be calculated as follows:

$$\mathrm{R_{ps}} = \frac{\mathrm{D_{ps}}}{\mathrm{P_{net}}}$$

Where: $\mathrm{D_{ps}}$ is preferred dividends, $\mathrm{P_{net}}$ is net issuing price. We can substitute the given data into the noted above formula.

$$\mathrm{R_{ps}} = \frac{\mathrm{D_{ps}}}{\mathrm{P_{net}}} = \frac{\$4}{\$40} = 0.1 \text{ or } 10\%$$

Then we have to calculate the weighted average cost of capital. In finance, the weighted average cost of capital, or WACC, is the rate that a company is expected to pay on average to all its security holders to finance its assets. The WACC is the minimum acceptable return that a company must earn on an existing asset base to satisfy its creditors, owners, and other providers of capital, or they will invest elsewhere.

A company has two primary sources of financing - debt and equity - and, in simple terms, WACC is the average cost of raising that money. WACC is calculated by multiplying the cost of each capital source (debt and equity) by its relevant weight, and then adding the products together to determine the WACC value:

The following is the WACC calculation formula:

$$\mathrm{WACC} = \frac{\mathrm{E}}{\mathrm{V}} \cdot \mathrm{R_e} + \frac{\mathrm{D}}{\mathrm{V}} \cdot \mathrm{R_d} \cdot (1 - \mathrm{T_c})$$

Where:

$\mathrm{R_e}$ = cost of equity

$\mathrm{R_d}$ = cost of debt

E = market value of the firm's equity

D = market value of the firm's debt

V = E + D = firm value

$\frac{\mathrm{E}}{\mathrm{V}}$ = percentage of financing that is equity

$\frac{\mathrm{D}}{\mathrm{V}}$ = percentage of financing that is debt

$\mathrm{T_c}$ = corporate tax rate

Now we can determine the WACC by applying the formula noted above.

$$\mathrm{WACC} = 0.30 \cdot 5.499\% + 0.20 \cdot 10\% + 0.5 \cdot 12.5\% = 9.8997\%$$