

Proposition II (world with taxes)

MM adjusted the equation for calculating the cost of levered equity for the interest tax shield. Some of the increase in equity risk and return is offset by the interest tax shield.

$$r_s = r_0 + (B/S_L) * (1-T_c) * (r_0 - r_B)$$

r_B is the interest rate (cost of debt)

r_s is the return on equity (cost of equity)

r_0 is the return on unlevered equity

B is the value of debt

S_L is the value of levered equity

The cost of levered equity for our example firm is calculated below.

$$r_s = .10 + 1 * (1-.35) * (.10-.06) = .1260$$

The WACC equation is also adjusted for the interest tax shield and is shown below:

$$WACC = (B/V_L) * (1 - T_c) * r_B + (S_L/V_L) * r_s$$

where

$$V_L = B + S_L$$

The WACC for the levered firm in our example is calculated below:

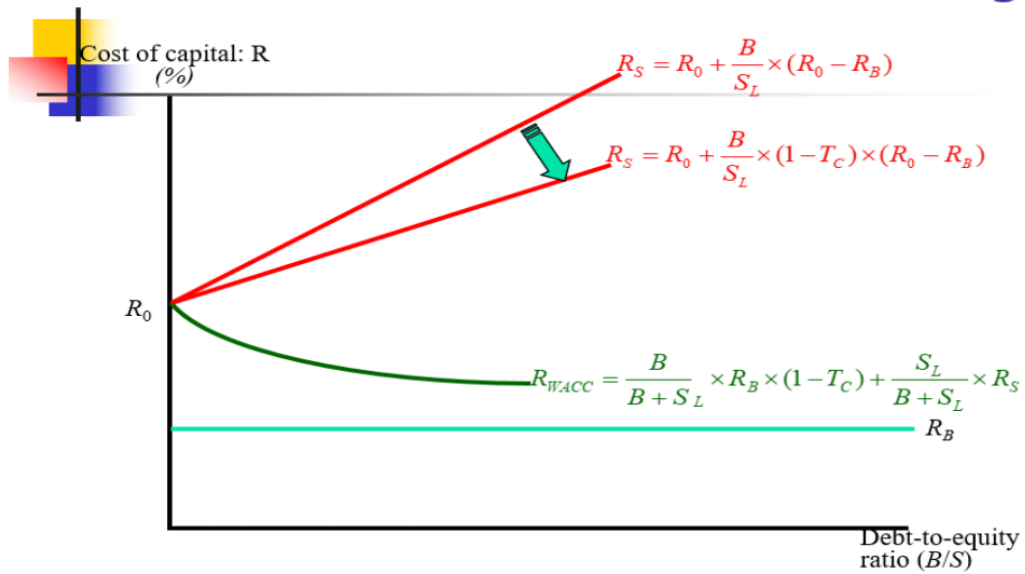
$$.5 * (.06) * (1-.35) + .5 * (.1260) = .0825$$

This is below the 10% WACC for the unlevered firm.

Reference Lecture Slides 54 and 55 for numerical illustration!

The diagram below shows that WACC decreases as debt is added to the capital structure in a world with taxes. This diagram also shows that the cost of equity increases, as leverage is increased. Debt shifts risk to the stockholders of the firm.

The Effect of Financial Leverage



Note: The WACC of the U.S. firm facing corporate tax no longer equals the unlevered cost of capital (r_0).

Reference Lecture Slides 56 and 57 for chapter summary highlights.