

**Name:**

**Fin 350**

**Quiz 5**

1. EndofQuart Co. currently has a debt-to-equity ratio of 1/3. If its cost of equity is 25% and its cost of debt is 10%, what is its WACC if there are no taxes.[3]

$$D/E = 1/3 \text{ so } D=1/4 \text{ and } E=3/4$$

$$10\% /4 + 25\% \cdot 3/4 = 21.25\%$$

2. Repeat question 1 assuming a corporate tax rate of 34%. [3]

$$10\% (1-.34) /4 + 25\% \cdot 3/4 = 20.4\%$$

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3. EndofQuart is thinking about undertaking a one time expansion. The expansion will cost \$4 million and will result in a 20% increase in profits (earnings before interest and taxes). Current profits are \$5 mil/year and, without the expansion, are expected to stay at that level forever. Using all the information provided on this quiz, calculate whether the investment should be taken on in a world with no taxes and a world with a corporate tax rate of 34%. Justify why you used the numbers that you do. [4]

Without Taxes:

Use your answer to 1 as the discount rate, since this is a pro-rata increase, so the risk of the increase is the same as the overall risk of the firm.

$$NPV = (1/.2125) - 4 = 0.706 \text{ mil}$$

Take it!

With Taxes:

Use your answer to 2 as the discount rate, since this is a pro-rata increase, so the risk of the increase is the same as the overall risk of the firm.

Note that the after tax cash flow is:

$$5 \cdot 0.75 (1 - .34) + 5 \cdot 0.25 = 3.725 \text{ mil}$$

Using this cash flow:

$$NPV = (3.725 \cdot 0.2 / .204) - 4 = -0.348$$

Do NOT take it!