Session 19: Post Class tests

1. Simac Inc. is a publicly traded company and its current cost of capital is 9%. You have computed the optimal debt ratio for the firm to be 40% and the cost of capital at the optimal is 8%. If the firm is mature (with expected free cash flows growing 2% a year in perpetuity), how much will Simac’s firm value increase by, on a percentage basis, if it moves to its optimal?
   a. 11.1%
   b. 12.5%
   c. 16.67%
   d. 25%
   e. None of the above

2. Assume that Lyric Inc., a publicly traded company, has 10 million shares, trading at $20/share and that it has $50 million in debt. You believe that the value of Lyric will increase by 10% if it borrows $50 million and buys back stock. Assuming investors are rational, what would you expect to pay, per share, on the stock buyback?
   a. $20/share
   b. $21.875/share
   c. $22.50/share
   d. $23.33/share
   e. $25/share
   f. None of the above

3. In the last example, assume that you plan to buy the shares back at $25/share. If you do so, what would you expect the remaining shares in the company to trade at, after the buy back?
   a. $20/share
   b. $21.88/share
   c. $22.50/share
   d. $23.33/share
   e. $25/share
   f. None of the above

4. One way companies protect themselves from borrowing too much is to put a constrain the bond rating, i.e., not allow the debt ratio to increase so much that the rating (synthetic or estimated) drops below the rating constraint. For a non-financial service company, that rating constraint is often investment grade (BBB). Which of the following reasons explains this rating constraint?
   a. Your access to capital is more limited if you are not investment grade.
   b. Your cost of debt can rise significantly once you drop below investment grade.
   c. If your rating drops below investment grade, your customers may hold back on buying your product or service.
   d. If your rating drops below investment grade, suppliers may be less willing to extend credit (and will demand cash instead)
   e. All of the above.
5. Cain & Abel Inc. is in the hotel and entertainment businesses and has an actual debt ratio of 10%. You have computed an optimal debt ratio of 40% for the firm, based on its existing operating income, risk and assets. The company is planning to make investments with the excess debt capacity rather than recapitalize itself (by buying back stock). Under which of the following scenarios would your optimal debt ratio remain unchanged?
   a. An acquisition of a company in a different business.
   b. An expansion of the hotel business
   c. An expansion of the entertainment business
   d. Expansion of both the hotel and entertainment businesses, in line with their existing weights in the business
   e. None of the above
   f. Any of the above
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1. **c. 16.67%**. To show this, assume that the firm is expected to have $1 in cash flow next year.
   - Value at current cost of capital = \( \frac{1}{0.09 - 0.02} = 14.29 \)
   - Value at optimal = \( \frac{1}{0.08 - 0.02} = 16.67 \)
   - \% change in value = \( \frac{16.67}{14.29} - 1 = 16.67\% \)

2. **c. $22.50/share**. If investors are rational, the increase in firm value has to be spread equally among those who sell their shares back and those who do not.
   - Increase in value/share = \( \frac{25}{10} = $2.50 \)
   - New stock price = $22.50
   - Here is a way to confirm that you are right:
     - Number of shares outstanding after buyback = \( 10 - \frac{50}{22.5} = 7.778 \) million
     - Value of firm after buyback = $275
     - Value of debt after buyback = $100
     - Value of equity after buyback = $175
   - Value per share of remaining shares = \( \frac{175}{7.778} = $22.50 \)

3. **b. $21.88**. Here is the simplest way to show this:
   - Number of shares outstanding after buyback = \( 10 - \frac{50}{25} = 8 \) million
   - Value of firm after buyback = $275
   - Value of debt after buyback = $100
   - Value of equity after buyback = $175
   - Value per share of remaining shares = \( \frac{175}{8} = $21.875 \)

4. **e. All of the above**. While the costs can vary across companies, dropping below investment grade can make your indirect bankruptcy costs increase significantly.

5. **Expansion of both the hotel and entertainment businesses, in line with their existing weights in the business**. The optimal debt ratio is based on the existing operating income, risk and assets. Only with a proportional expansion is there a chance that all three of these will stay stable.