Session 13: Post Class tests

1. Delray Stores is a retail company that is facing a shrinking market. The firm generated $ 50 million in after-tax operating income in the most recent year, but expects to shut down 10% of its stores, each year for the next 5 years. Which of the following would you most expect to see in the next 5 years?
    a. Increasing operating income each year and after-tax cash flows < operating income
    b. Increasing operating income each year and after-tax cash flows > operating income
    c. Decreasing operating income each year and after-tax cash flows < operating income
    d. Decreasing operating income each year and after-tax cash flows > operating income
2. Sigma Casino is a publicly traded firm that is burdened with too much debt and is in significant financial trouble. It has 10-year zero coupon bonds that are trading at 50% of face value and a DCF valuation of the firm as a going concern has generated a value of $6/share for the equity. If the risk free rate is 3% and you expect the equity to be worth nothing if the company folds, what would you be willing to pay per share for Sigma Casino?
    a. Nothing
    b. $1.97
    c. $3.00
    d. $4.03
    e. $6.00
3. Investments that are less liquid are usually valued lower than otherwise similar liquid investments. Which of the following is a way of incorporating the effect of illiquidity on value.
    a. Use a lower discount rate for the illiquid asset and reduce the DCF value by an illiquidity discount
    b. Use a higher discount rate for the illiquid asset and reduce the DCF value by an illiquidity discount
    c. Use the same discount rate for the illiquid asset (as you would for a liquid asset) and reduce the DCF value by an illiquidity discount.
    d. Use a lower discount rate for the illiquid asset and don't adjust the DCF value.
    e. Use a higher discount rate for the illiquid asset and don't adjust the DCF value.
4. You have just completed a discounted cash flow valuation of Rallye Inc. a publicly traded company, and have estimated a value of $500 million for the equity in the company. The company has 100 million shares trading at $5 a share, and 25 million employee options with an exercise price of $5/share. Estimate the value of equity per share using
    a. The fully diluted share approach
    b. The treasury stock approach
    Explain the difference.

5. Now, assume that you decide to value the employee options in Rallye Inc., using an option-pricing model and arrive at a value of $1.00 for each option. What is the value of equity per share, if you decide to use the "option value" approach?
    a. $5/share
    b. $4.75/share
    c. $3.80/share
    d. $4.20/share
    e. None of the above
6. Assume that Zisco Inc., a technology company, has 200 million shares outstanding, trading at $8/share. The company also has 10 million options outstanding, with an exercise price of $4/share and an option value of $7.5/option. What is the total market value of equity in Zisco?
    a. $1.525 billion
    b. $1.56 billion
    c. $1.6 billion
    d. $1.64 billion
    e. $1.675 billion

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1. **d. Decreasing operating income each year and after-tax cash flows > operating income.** The company will have a negative reinvestment rate and since these are moneymaking stores (though the ROC is terrible), the operating income will decline. However, the store closings will generate cash flows, thus resulting in cash flows > after-tax operating income.
2. **d. $4.03.** First, back out the probability of default from the zero coupon bond and the risk free rate:
    - Value of bond = $500 = $1000 (1- Probability of default)/ 1.03^{10}
    - Probability of default = 32.80%

    Since the equity will be worth nothing if the company defaults,
    - Value per share = $6 (.6720) + $0 (.328) = $4.03
3. The fully diluted approach adjusts just the number of shares and does not count the exercise proceeds, and thus will undervalue equity. The treasury stock approach counts the exercise proceeds, but ignores the time value of the option. It will therefore over value equity.
    - Fully diluted value/share = 500/ (100+25) = $4/share
    - Treasury stock approach = (500+25*$5)/ (100+25) = $5/share
4. **Either (c) or (e)**. You can either use a higher discount rate for the illiquid asset (which will lower value) or discount the DCF value that you get with the same discount rate as a liquid asset. You cannot do both.
5. **b. $4.75.** To compute the value per share, you first net out the option value of the employee options from the DCF value of equity, and then divide by the actual number of shares outstanding.
    - Value per share = (500 – 25*$1)/ 100 = $4.75/share
6. **e. $1.675 billion**. In this case, we are starting with the market value of the traded shares (rather than the DCF value of all equity). Consequently, if there are options outstanding, they will depress the stock price. To get to the total value of equity, you should add the option value of outstanding options.
    - Value of equity = (200*$8) + (10*7.50) = $1,675 million