

Session 13: Post class test solutions

- To compute the taxes, you have to keep track of the NOL each year and use it to offset taxes in the first few years that you make money:

| | 1 | 2 | 3 | 4 | 5 |
|----------------------------|----------|----------|----------|---------|----------|
| Pre-tax Operating Income | -\$50.00 | -\$25.00 | \$30.00 | \$60.00 | \$100.00 |
| Taxes | \$0.00 | \$0.00 | \$0.00 | \$0.00 | \$26.00 |
| After-tax Operating Income | -\$50.00 | -\$25.00 | \$30.00 | \$60.00 | \$74.00 |
| Tax rate | 0.00% | 0.00% | 0.00% | 0.00% | 26.00% |
| NOL at start of year | \$50.00 | \$100.00 | \$125.00 | \$95.00 | \$35.00 |

- 11.81%**. To compute the return on invested capital in year 10, you first need to compute the revenues and after-tax operating income in year 10:

| | Now | In year 10 |
|----------------------------|-----------|------------|
| Revenues | \$500.00 | \$3,095.87 |
| After-tax Operating Income | -\$100.00 | \$247.67 |

The next step is to compute the reinvestment you will have over the next 10 years, by dividing the change in revenues by the sales to capital ratio, and adding this cumulated reinvestment to the current invested capital:

Reinvestment over next 10 years = $(3095.87 - 500) / 2 = \$1297.93$ million

Invested capital in year 10 = $\$800 \text{ m} + \$1297.93 \text{ m} = \$2,097$ million

Return on capital in year 10 = $247.67 / 2097 = 11.81\%$

- \$23.98**. To get the expected value per share, you have to value the company twice using the stable growth equation: $ATOI (1 - g / ROC) / (\text{Cost of capital} - g)$
 - Status Quo = $120 (1 - .02 / .08) / (.10 - .02) = \1125 million; $\$22.50$ /share
 - Activist = $120 (1 - .02 / .10) / (.09 - .02) = \1371.43 million; $\$27.43$ /share
 - Value per share = $0.7 (\$22.50) + 0.3 (\$27.43) = \$23.98$
- 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.
- \$4.03**. First, back out the probability of default from the zero coupon bond and the risk free rate:
 - Value of bond = $\$500 = \$1000 (1 - \text{Probability of default}) / 1.03^{10}$
 - Probability of default = 32.80%
 Since the equity will be worth nothing if the company defaults,
 - Value per share = $\$6 (.6720) + \$0 (.328) = \$4.03$