

Session 13: Post class test solutions

1. **False.** If the macro environment changes (interest rates, equity risk premiums, exchange rates), the intrinsic value can change a lot.

2. **2000**

Retention Ratio = 20%

Return on equity = $150/1000 = 15\%$

Expected growth rate = 3%

Cost of equity = $4\% + 5\% = 9\%$

Value of index = $150 (.8)/(.09 - .03) = 2000$

(Since it is next year's earnings, you don't need a $(1+g)$).

3. 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

4. **b. 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 = $247.67/2097 = 11.81\%$

5.

	1	2	3	4	5
FCFF	-\$100.00	-\$50.00	\$100.00	\$250.00	\$1,000.00
Cost of capital	12.00%	11.50%	11.00%	10.50%	10.00%
Cumulated cost of capital	1.12	1.2488	1.386168	1.5317156	1.68488720
PV	-\$89.29	-\$40.04	\$72.14	\$163.22	\$593.51
Value today	\$699.54				

Cumulated cost of capital in year 2 = $(1.12) (1.115) = 1.2488$