

Session 10: Post Class tests

1. Classify the following actions into value changing and value neutral actions. If value changing, specify whether it will increase or decrease the intrinsic value of equity in a business.
 - a. A stock dividend
 - b. Impairment of goodwill from a past acquisition (not tax deductible)
 - c. A non-cash restructuring charge (not tax deductible)
 - d. Impairment of goodwill from a past acquisition (a portion is tax deductible)
 - e. A non-cash restructuring charge (tax deductible)
 - f. A corporate name change with no change in business focus
 - g. A corporate name change with a change in business focus

2. Claremont Inc. is a company that has two divisions, both of which are in stable growth (growing 2% a year) and have a cost of capital of 10%. You have been provided with the following information on the divisions (in millions):

| | Expected After-tax Operating Income next year | Invested Capital |
|-----------|---|------------------|
| Food | \$150 | \$1,000 |
| Chemicals | \$50 | \$1,000 |

Assume that if you continue to run the chemical business, your return on capital will stay at existing levels and that you can divest the business for \$ 800 million. What effect will the divestiture have on company value?

- a. Decrease value by \$200 million
 - b. No change in value
 - c. Increase value by \$175 million
 - d. Increase value by \$300 million
 - e. Increase value by \$ 425 million
3. Charisma Software is a technology company is expected to report after-tax operating income of \$ 1 billion next year, earned on an invested capital base of \$10 billion. The company is expected to grow 1% a year in perpetuity and has a cost of capital of 9%. The firm wants to double its growth rate in perpetuity, while maintaining its current return on capital. How much will the value of its operating assets change in dollar terms?
 - a. Decrease value
 - b. No change
 - c. \$178.57 million
 - d. \$1607.14 million
 - e. \$1785.71 million
 - f. None of the above

How would your answer change if the invested capital base were \$ 11 billion? How about if it were \$12 billion?

4. Caribou Enterprises is an all-equity funded company with a cost of equity of 9%; the risk free rate is 3% and the equity risk premium is 6%. The company is

considering borrowing money at 5% (pre-tax) and pushing its debt to capital ratio to 20%. If the marginal tax rate is 40%, what will the new cost of capital be at 20%?

- a. 7.80%
- b. 8.20%
- c. 8.52%
- d. 8.92%
- e. 9.00%

Session 10: Post class test solutions

1.
 - a. A stock dividend: Value neutral, no cash flow change
 - b. Impairment of goodwill from a past acquisition (not tax deductible): Value neutral, no effect on cash flows, past mistake (sunk cost)
 - c. A non-cash restructuring charge (which is not tax deductible): Value neutral, no effect on cash flows, past mistake (sunk cost)
 - d. Impairment of goodwill from a past acquisition (a portion is tax deductible): Value increasing, Tax savings lead to higher cash flows
 - e. A non-cash restructuring charge (which is tax deductible): Value increasing, Tax savings lead to higher cash flows.
 - f. A corporate name change with no change in business focus: Value neutral
 - g. A corporate name change with change in business focus: Value changing, increase or decrease depends upon returns in new business
2. **e. Increase value by \$425 million.** To estimate the value of the chemicals division as a continuing entity, first compute the return on capital:
Return on capital = $50/1000 = 5\%$
Reinvestment rate for a growth rate of 2% = $2\%/5\% = 40\%$
Value of chemical business = $50 (1-.4)/(.10-.02) = \$375$ million
Divestiture proceeds = \$800 million
Value effect = $800 - 375 = +425$ million
3. **c. \$178.57 million.** First, value the firm with an expected growth rate of 1%.
Return on capital = $1000/10000 = 10\%$
Reinvestment rate = $g/ROC = 1\%/10\% = 10\%$
Value = $1000 (1-.10)/(.09-.01) = \$11,250$ million
With a 2% growth rate
Reinvestment rate = $g/ROC = 2\%/10\% = 20\%$
Value = $1000 (1-.20)/(.09-.02) = \$11,428.57$
Change in value = $\$11,428.57 - \$11,250 = \$178.57$
Bonus: If the invested capital were \$11 billion, the return on capital would become 9.1%, barely higher than the cost of capital. The change in firm value will become much smaller (\$18 million). If the invested capital were \$12 billion, the return on capital < cost of capital and increasing growth will lower value.
4. **c. 8.52%.** First, compute the unlevered beta using the current cost of equity.
Unlevered beta = $(9\% - 3\%) / 6\% = 1.00$
D/E ratio at a 20% debt to capital ratio = $20/80 = 25\%$
Levered beta = $1.00 (1 + (1-.4)(.25)) = 1.15$
Cost of equity = $3\% + 1.15 (6\%) = 9.90\%$
Cost of capital = $9.9\% (.8) + 5\% (1-.4) (.2) = 8.52\%$