

Session 24: 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 = $9.9\% (.8) + 5\% (1-.4) (.2) = 8.52\%$
5. **b. \$11/share.** First, divide the status quo value by total # shares
Value per non-voting share = $10,000 / (600 + 400) = \$10$ /share
Expected value of control = $(12000 - 10000) * .2 = \$400$ million
Control Value per voting share = $400/400 = \$1$
Value per voting share = $\$10 + \$1 = \$11$ /share