1. You have been asked to review the valuation of Sprinbok Enterprises, a sporting goods firm. The analyst discounted expected cashflows to the firm to arrive at a value of $150 million for the firm. In making this estimate, though, the analyst used a 10% cost of capital, assumed that current after-tax operating income of $5 million a year would grow 15% a year for the next 5 years and then applied a multiple of 15 to the after-tax operating income in year 5 to arrive at the terminal value for the firm. While you agree with the analyst’s estimate of the cost of capital and his forecasts of earnings and cashflows for the next 5 years, you expect operating income to grow 3% a year and the firm to earn a return on capital equal to its cost of capital beyond year 5. Estimate the correct value for this firm today. (6 points)
2. You have been asked to assess how much the Mexican government will get in proceeds if it privatizes PEMEX, the government owned oil company. The company is expected to have operating income (before taxes) of 300 million next year on revenues of $6 billion. The corporate tax rate in Mexico is 30%. A regression of enterprise value to sales ratios across oil companies yields the following result:

\[ EV/Sales = 0.25 + 0.30 \text{ (After-tax operating margin)} - 0.5 \text{ (Emerging Market dummy)} \]

where the emerging market dummy is set to 1 for emerging market companies and Mexico is considered an emerging market. (The regression was run with absolute values for the margin; a 10% margin was entered as 10).

a. If PEMEX has $1500 million in debt outstanding and expects to have 100 million shares outstanding, estimate the value per share that PEMEX will receive if the Mexican government privatizes the company. (2 points)
b. Now assume that PEMEX privatizes and the market prices the shares at $45/share, based upon expected cost cutting and market efficiencies after the privatization. How much is the market expecting PEMEX to be able to cut its annual expenses next year, if the share price is right? (Use the regression to make the assessment). (3 points)
3. Phil Condit has just resigned as CEO of Boeing and you have been brought in as a replacement. You are considering several changes in the way the firm is run and are trying to assess the effects on firm value:
   
a. Boeing Capital, the financing arm of Boeing, expects to earn $40 million in net income next year, and expects this income to grow 3% a year in perpetuity. The cost of equity for financial service firms similar to Boeing Capital is 10% and Boeing has $500 million in book equity invested in Boeing Capital; the current return on equity will remain unchanged in perpetuity. You plan to divest Boeing Capital for $300 million. Estimate the effect of this divestiture on the value of Boeing. (3 points)
b. Boeing’s total after-tax operating income is $1 billion in the most recent year and is expected to grow 2% a year in perpetuity if Boeing maintains its existing return on capital and reinvestment rate. You believe that you can increase the reinvestment rate, which is currently 20%, to 40% in perpetuity without affecting the return on capital. Estimate the expected change in Boeing’s value as a result of this change. (The cost of capital for Boeing as a firm is 8% and you can assume that this part is independent of part a). (3 points)
4. You have been asked to evaluate how much SPD Inc., a large publicly traded corporation, should pay to acquire TGT Inc., a smaller retail firm. TGT Inc. reported $16 million in after-tax operating income in the most recent year and the book value of capital invested in the firm at the beginning of that year was $200 million. The cost of capital for SPD Inc in 12% and the cost of capital for TGT is 9%.
   
a. TGT expects its after-tax operating income to grow 2% a year in perpetuity. Estimate the value of control in TGT if SPD believes that it can increase the return on capital to 12% on future investments and that it can lower the TGT’s cost of capital to 8%, while keeping the growth rate at 2%. (3 points)
b. Now assume that the combined firm will have cost savings of $50 million growing 2% a year in perpetuity, starting in year 4, and that the cost of capital is 10% for the combined firm. Estimate the value of synergy from cost savings. (3 points)
5. A venture capitalist has asked you for some advice on a possible investment in a young private company. The company is expected to generate $5 million in after-tax operating income next year and is expected to grow 4% forever. The company is expected to earn a 20% return on capital in perpetuity and has a cost of capital of 14%.

a. If the venture capitalist was planning to provide $10 million in fresh capital to the firm, what percentage of the firm should she demand in return? (2 points)

b. Now assume that the venture capitalist have been given the option to buy an additional 25% of the firm for $12 million anytime over the next 5 years. If the standard deviation in firm value is 40% and the five-year riskless rate is 4%, estimate the value of this option. (1/2 point each for S & K and 1 point for option value)

S =

K =

Value of option:
c. Finally, assume that the owners of the private business offer the venture capitalist some protection if the investment does not work out well by allowing her to sell her initial stake back to them for half of her initial investment in the stake anytime over the next 5 years. How much is this protection worth? (3 points)

\[ S = \]

\[ K = \]

Value of option =