

**Valuation: Final Exam**

Answer all questions and show necessary work. Please be brief. This is an open books, open notes exam.

1. You have been called upon to value Dollarama Stores, a publicly traded retail firm that generated \$ 80 million in after-tax operating income in the most recent year, on book capital invested of \$ 800 million, but is facing decline. The firm expects to maintain its current return on capital but anticipates after-tax operating income to drop by 15% next year, 10% in year 2 and 5% in year 3 before stabilizing and growing 3% a year in perpetuity after the third year. The cost of capital for the firm is expected to be 12% in year 1, 11% in year 2 and 10% thereafter (forever).

a. Estimate the free cash flow to the firm each year for the next 3 years. (2 points)

b. Estimate the value of the firm at the end of year 3. (2 points)

c. Assume that the firm has \$ 50 million in cash and owes \$ 100 million in debt. If there are 70 million shares outstanding, estimate the value of equity per share today. (2 points)

2. You have been asked to assess the value of equity of Listas Inc, a rapidly growing software firm. You have been supplied with the current levels and forecasted revenues and net income of the company for the next 3 years (all in millions):

	<i>Current</i>	<i>1</i>	<i>2</i>	<i>3</i>
Revenues	500	600	700	800
Net Income	50	72	98	128

You have run a regression of PE ratios against expected revenue growth and net margin across software firms in the market right now and arrived at the following:

$PE = 4.5 + 80 (\text{Annual (CAGR) Revenue growth in next 3 years}) + 40 (\text{Current Net Profit margin})$   $R^2=60\%$

(The regression uses decimals. Thus, the PE for a firm with CAGR revenue growth of 10% and net margin of 20% would be  $= 4.5 + 80 (.10) + 40 (.20) = 20.5$ )

a. Using this regression, estimate Listas current PE ratio. (2 points)

b. Now assume that you can buy the stock at the PE ratio that you estimated in the last part. If the regression that you have run will still hold at the end of year 3, what will the revenue growth need to be between years 4 and 6 to allow you to generate a return on your equity investment of 25% a year for the next 3 years? (The stock pays no dividends)  
(4 points)

3. You have been brought in as the CEO of Zintas Technology, a firm that has both hardware and software products. You have been provided with the following information on the two divisions (in \$ million):

	Hardware	Software
EBIT (1-t) in most recent year	50	50
Book value of capital	1000	400
Expected growth rate	3%	3%
Cost of capital	9%	10%

a. Estimate the status quo value of Zintas. ( 3 points)

b. While there is nothing you can do about the existing investments in the hardware business, you plan to stop reinvesting in new investments in the hardware business. What effect will this action have on your overall firm value? ( 2 points)

c. You are also considering doubling the reinvestment in the software business for the next 3 years, before reverting back to current levels. What effect will this have on the value of the firm? ( 2 points)

4. You have been asked to evaluate the value of synergy in a merger of equals and have been provided with the following information on the two firms:

	Flava	Inca
Market value of equity	800	800
Market value of debt	200	200
Cost of equity	9%	9%
After-tax cost of debt	4%	4%
Expected growth rate in perpetuity=	2%	2%
Return on capital	10%	10%

You can assume that both firms are fairly valued currently. The current riskfree rate is 4%, the equity risk premium is 5% and the marginal tax rate is 40%. You see two potential synergies:

- You believe that the combined firm will be able to generate a 12% return on capital on its new investments (but existing investments will continue to generate 10%), what value would you attach to this synergy. (You can assume that the current reinvestment rate will remain unchanged)
- You also feel that the firm will be more stable and be able to increase its debt ratio to 30%, without affecting its cost of debt.

Estimate the value of synergy in this merger,

( 6 points)



5. You are the sole owner of Zona Chemicals, a profitable Venezuelan chemical company and expect to generate \$ 15 million in after-tax operating income next year. You are in stable growth and anticipate a growth rate of 3% a year forever and to maintain a return on capital of 15%. Based upon your operating risk assessment, you have estimated a cost of capital of 11%.

a. Estimate the value of the firm, based upon your inputs. ( 2 points)

b. Now assume that the Venezuelan government passes a law, giving it the right to buy any Venezuelan business for \$250 million (no matter what the value of the business) any time over the next 5 years. If the standard deviation in firm value of chemical companies is 30%, how would this law affect the value you attach to your business? (The five year riskfree rate is 4% and your firm pays no dividends). (3 points)

c. Using the output from your option pricing model, estimate the risk-neutral probability that your firm will be nationalized sometime in the next 5 years. (1 point)