Session 12: Post Class tests

1. Carpe Inc. is a publicly traded company that is considering merging with Diem Inc., another publicly traded company in the same business, motivated by the potential for cost savings from business overlap. The combination is expected to save $30 million in after-tax operating cash flows (increasing operating income) next year, with a growth rate of 2% a year in perpetuity. The following table lists the costs of equity and capital for the two companies and the merged entity:

	Carpe	Diem	Carpe Diem (combined)
Cost of equity	10.00%	12.00%	10.50%
Cost of capital	9.00%	10.80%	9.60%

   What is the value of the cost savings synergy in this merger?
   a. $300.00 million
   b. $340.91 million
   c. $352.94 million
   d. $375.00 million
   e. $394.74 million
   f. $428.57 million
2. Tinga Inc., a poorly run restaurant chain, is currently fairly valued, based on the expectation that it would generate $25 million in after-tax operating income next year, growing at 2% a year. The company has $500 million in invested capital and is expected to maintain its current return on investment capital; its cost of capital is 8%. You believe that you can run the firm better and double its after-tax operating income without adding any invested capital. Assuming that you can maintain your return on capital in perpetuity as well, how much of a control premium (in percentage terms, over and above current value) would you be willing to pay for Tinga?
   a. 20%
   b. 100%
   c. 167%
   d. 200%
   e. None of the above
3. If you are asked to value an acquisition, using relative valuation, which of the following will yield the best estimate of relative value?
   a. The median multiple for the peer group (companies in the same business)
   b. The multiple for the peer group, adjusted for differences on risk, growth & cash flows between the target company and the peer group.
   c. The median multiple for other companies that have been acquired in the recent past
   d. The multiple for other companies that have been acquired in the recent past, adjusted for differences on risk, growth & cash flows between the target company and this group.
4. Voltar Inc. is a company with 600 million non-voting shares and 400 million voting shares. You have valued the company, run by the existing management, at $ 10 billion but you believe that with new management, the company would

have a value of $12 billion. If the probability of management changing is 20%, what is the value of each voting share?

a. $10.00/share
b. $10.40/share
c. $11.00/share
d. $12.00/share
e. $14.00/share

5. If you invest in complex firms, you know far less than when you value in simple firms. However, as you get more diversified, the lack of knowledge will become less important because it will get averaged out in your portfolio.
    a. True
    b. False

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1. **f. $394.74 million**. It is the combined firm that gets these savings and since they are in operating income (not equity income), I would use the cost of capital of 9.6% for the combined firm:
   Value of synergy = 30/ (.096-.02) = $394.74 million
2. **c. 167%.** First, value the firm run by the existing management:
   After-tax operating income = 25 million, ROC = 5%, Reinvestment rate = 2%/5% = 40%
   Value = 25 (1-.4)/ (.08-.02) = $250 million
   Second, value the firm with you running it.
   After-tax operating income = 50 million, ROC = 10%, Reinvestment rate = 2%/10% = 20%
   Value = 25 (1-.2)/ (.08-.02) = $666.67 million
   Control premium = 666.67/250 -1 = 166.67%
3. **b. The multiple for the peer group, adjusted for differences on risk, growth & cash flows between the target company and the peer group.** The peer group is a less biased sample than the group of companies that have been acquired in transactions, since the latter will generally include acquirers who overpaid on acquisitions. It is always better to adjust multiples for differences in fundamentals than to use just the median value.
4. **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
5. **b. False.** While diversification will average out risk, it works only if the risk can cut both ways (be good news or bad news). With complex firms, it is more likely to be bad news.