Session 8: Post Class tests

1. Telsome Publishing is a small, publicly traded firm and has reported the following earnings over the last five years:

Year	Earnings (in millions)
Current	$180.00
Year -1	$100.00
Year -2	$150.00
Year -3	$115.00
Year -4	$120.00
Year -5	$90.00

   What is the geometric average annual growth rate over the last five years?
    a. 20.00%
    b. 14.87%
    c. 21.25%
    d. 12.47%
    e. None of the above
2. DBK Bank paid out $ 80 million in dividends on net income of $100 million in the most recent year. The book value of equity for the firm is $800 million. Assuming that the bank maintains its current payout ratio and return on equity in perpetuity, what is the expected growth in earnings per share in perpetuity?
    a. 8%
    b. 2%
    c. 5%
    d. 2.5%
    e. None of the above
3. Viaconda Inc. is a tourism company that reported $10 million in net income on a book value of equity of $110 million in the most recent year; the company generated $ 1 million in after-tax interest income on a cash balance of $20 million. The company also reported net capital expenditures of $4 million, an increase in working capital of $ 2 million and an increase in total debt of $3 million during the year. Assuming that it maintains its current non-cash ROE and equity reinvestment rate, estimate the expected growth in non-cash net income in the future.
    a. 3.33%
    b. 6.67%
    c. 3.33%
    d. 6.00%
    e. None of the above
4. Pokemon Inc. is a toy manufacturer that reported after-tax operating income of $50 million in the most recent year. At the start of the year, the company reported book value of equity of $400 million, book value of debt of $250 million and a cash balance of $150 million. The company also reported capital expenditures of $75 million, depreciation of $ 30 million and a decrease in non-cash working capital of $5 million. Assuming that it plans to maintain its current

return on invested capital and reinvestment rate, what is the expected growth in operating income?

a. 6.15%
b. 8.00%
c. 13.33%
d. 10.00%
e. None of the above

5. Nevis Enterprises reported a return on invested capital of 15% in the most recent year and a reinvestment rate of 60%. The firm expects its return on capital to rise to 18% over the next 5 years on both existing investments and new investments. What will the compounded average annual expected growth rate be over the five years?
   a. 10.8%
   b. 9%
   c. 14.51%
   d. 12.71%
   e. None of the above
6. You are forecasting the operating earnings for TalkMedia, a young, high growth social media company.

	Last year	1	2	3	4
Revenues	$100	$200	$320	$450	$600
Operating Margin	-10%	-5%	0%	5%	10%
Operating Income	-$10.00	-$10.00	$0.00	$22.50	$60.00

The firm currently has invested capital of $50 million. If the sales-to-capital ratio is 2.00, what will the pre-tax return on capital be in year 4?

a. 120%
b. -20%
c. +20%
d. 10%
e. None of the above

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1. **b. 14.87%**. To compute the geometric average growth rate, you just need the starting and ending numbers:
   Geometric average = (180/90)^(1/5)-1 = 0.1487 or 14.87%
   The arithmetic average annual growth rate is 21.25%.

Year	Earnings (in millions)	Growth rate
Current	$180.00	80.00%
Year -1	$100.00	-33.33%
Year -2	$150.00	30.43%
Year -3	$115.00	-4.17%
Year -4	$120.00	33.33%
Year -5	$90.00	
Arithmetic average		21.25%

2. **d. 2.5%.** The payout ratio is 80% (80/100) and the return on equity is 12.5% (100/800). The expected growth rate in earnings per share = (1- Payout ratio) (Return on equity) = (1-.8) (.125) = 2.5%.
3. **a. 3.33%.** First, compute the non-cash ROE and equity reinvestment rate
   - Non-cash Net Income= 10 -1 = $9
   - Non-cash ROE = (10-1)/ (110-20) = 10%
   - Equity reinvestment rate = (4+2-3)/ 9 = 33.33%
   - Expected growth rate = 10% (.3333) = 3.33%
4. **b. 8%.** The keys are the reinvestment rate and return on invested capital:
   - ROIC = 50/ (400 +250-150) = 10%
   - Reinvestment Rate = (75-30-5)/50 = 80% (Decrease in WC reduces reinvestment)
   - Expected growth rate = 10% (.80) = 8%
5. **c. 14.51%**. Since the return on capital is changing on existing and new investments, there are two components to the expected growth:
   - Expected growth from new investments = .6*.18 = 10.8%
   - Expected efficiency growth over 5 years = (.18-.15)/.15 = 20%
   - Expected efficiency growth per year= $(1.20)^{1/5}$-1 = 3.71%
   - Expected annual growth = 10.8% + 3.71% = 14.51%
6. **c. 20%**. The key is to estimate the reinvestment each year, based upon the change in revenues and the sales to capital ratio. That reinvestment adds to the invested capital each year:

	Last year	1	2	3	4
Revenues	$100	$200	$320	$450	$600
Operating Margin	-10%	-5%	0%	5%	10%
Operating Income	-$10.00	-$10.00	$0.00	$22.50	$60.00
Reinvestment		$50.00	$60.00	$65.00	$75.00
Invested Capital	$50.00	$100.00	$160.00	$225.00	$300.00

Return on capital	-20%	-10%	0%	10%	20%