Session 31: Post Class tests

1. 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

2. 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

3. 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

4. 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%
5. You are forecasting the operating earnings for TalkMedia, a young, high growth social media company.

<table>
<thead>
<tr>
<th></th>
<th>Last year</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenues</td>
<td>$100</td>
<td>$200</td>
<td>$320</td>
<td>$450</td>
<td>$600</td>
</tr>
<tr>
<td>Operating Margin</td>
<td>-10%</td>
<td>-5%</td>
<td>0%</td>
<td>5%</td>
<td>10%</td>
</tr>
<tr>
<td>Operating Income</td>
<td>-$10.00</td>
<td>-$10.00</td>
<td>$0.00</td>
<td>$22.50</td>
<td>$60.00</td>
</tr>
</tbody>
</table>

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
Session 31: Post class test solutions

1. **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%.

2. **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%

3. **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%

4. **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%

5. **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:

<table>
<thead>
<tr>
<th></th>
<th>Last year</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenues</td>
<td>$100</td>
<td>$200</td>
<td>$320</td>
<td>$450</td>
<td>$600</td>
</tr>
<tr>
<td>Operating Margin</td>
<td>-10%</td>
<td>-5%</td>
<td>0%</td>
<td>5%</td>
<td>10%</td>
</tr>
<tr>
<td>Operating Income</td>
<td>-$10.00</td>
<td>-$10.00</td>
<td>$0.00</td>
<td>$22.50</td>
<td>$60.00</td>
</tr>
<tr>
<td>Reinvestment</td>
<td>$50.00</td>
<td>$60.00</td>
<td>$65.00</td>
<td>$75.00</td>
<td></td>
</tr>
<tr>
<td>Invested Capital</td>
<td>$50.00</td>
<td>$100.00</td>
<td>$160.00</td>
<td>$225.00</td>
<td>$300.00</td>
</tr>
<tr>
<td>Return on capital</td>
<td>-20%</td>
<td>-10%</td>
<td>0%</td>
<td>10%</td>
<td>20%</td>
</tr>
</tbody>
</table>