### Background Page:

You may use the information on this page for any part of the exam.

<table>
<thead>
<tr>
<th>Company</th>
<th>Business</th>
<th>Equity Beta</th>
<th>Standard Deviation</th>
<th>Debt</th>
<th>Equity</th>
<th>Firm Value</th>
<th>Stock Price</th>
<th>Dividend per year</th>
<th>Cash flows per share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apple</td>
<td>Consumer Electronics</td>
<td>1.2</td>
<td>40%</td>
<td>0%</td>
<td>100%</td>
<td>$500 bil</td>
<td>$550</td>
<td>$10.60</td>
<td>$55</td>
</tr>
<tr>
<td>Amazon</td>
<td>Online Retail</td>
<td>0.9</td>
<td>50%</td>
<td>2%</td>
<td>98%</td>
<td>$215 bil</td>
<td>$250</td>
<td>$0.00</td>
<td>$9</td>
</tr>
<tr>
<td>Nokia</td>
<td>Mobile</td>
<td>1.6</td>
<td>45%</td>
<td>10%</td>
<td>90%</td>
<td>$21 bil</td>
<td>$4</td>
<td>$0.25</td>
<td>$0.60</td>
</tr>
<tr>
<td>BNE</td>
<td>Conglomerate</td>
<td>0.9</td>
<td>30%</td>
<td>0%</td>
<td>100%</td>
<td>$100 mil</td>
<td>$100</td>
<td>$1.50</td>
<td></td>
</tr>
<tr>
<td>SYD</td>
<td>Conglomerate</td>
<td>1.0</td>
<td>35%</td>
<td>20%</td>
<td>80%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Expected dividends for SYD (paid once per year with the next dividend due exactly 1 year from today):

<table>
<thead>
<tr>
<th></th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016 …</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYD</td>
<td>1.50</td>
<td>1.65</td>
<td>1.75</td>
<td>Grow at 3% per year</td>
</tr>
</tbody>
</table>

**Assumptions:**

Risk-free rate: 0.02  
Market Risk Premium: 0.07

Assume that the beta of debt is always zero.

Capital structure changes do not affect investment policy and have no transaction costs.

The corporate tax rate is 40%.

Note: A conglomerate is a company that is in more than one very different lines of business.
1. Your friend says he thinks the ex-dividend (right after dividend) price of SYD will be $30 in 2013, do you agree? Briefly explain. [7]

2. You buy 100 shares of Apple and 100 shares of BNE at the current listed prices. One year later, you sell them immediately after they pay their next dividend. At the time you sell them, Apple’s price is $590 and BNE’s is $107.
   
a. What return did you earn on your portfolio? [8]

b. How did your portfolio do relative to what should have been expected? Explain. [7]
3. If Apple were to borrow $100 billion in permanent debt and buy back $100 billion in equity,
   a. What would the new value of its equity be? What would the value of its debt be? [7]

   b. What would its new equity beta be? [7]

   c. How much of Apple’s cost of equity would come from financial risk? [6]

   d. What would Apple’s pre-tax WACC be? What would its after-tax WACC be? [7]
4. SYD is financed 10% with preferred stock, 60% with common equity, and 30% with debt. The preferred stock has an annual dividend of $3 and a price of $37.50, and its debt has an interest rate of 2%. What is its after-tax WACC? [7]

5. If you create a portfolio of SYD and Apple, is it possible for its standard deviation to be less than 35%? Explain. [6]

6. What can you conclude about Amazon’s growth prospects relative to Apple’s? Explain. [6]
7. If you believe Amazon’s price will be $265 one year from now, should you buy it? Explain. [6]

8. Explain the Modigliani and Miller (M&M) proposition about capital structure. Make sure you explain why it is useful. [7]

9. Both Apple and Google have mobile phone divisions. What discount rate should they use for projects in those divisions? [7]

11. BNE has two divisions. One of them sells consumer electronics and generates cash flow of $3 million. Estimate the WACC of the other division. [HARD] [5]

BONUS: In class, you learned 3 Nobel Prize-winning concepts. Name them. [+2]