Quiz 3: Equity Instruments

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

1. You have been asked to assess the relative valuations of four companies, with significant cross holdings. You have been provided with the following information on the companies:

<table>
<thead>
<tr>
<th>Company</th>
<th>Market Value of Equity</th>
<th>Debt</th>
<th>EBITDA</th>
<th>Cash</th>
<th>Minority holdings</th>
<th>Minority interests</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1000</td>
<td>500</td>
<td>200</td>
<td>200</td>
<td>100</td>
<td>400</td>
</tr>
<tr>
<td>B</td>
<td>500</td>
<td>500</td>
<td>100</td>
<td>200</td>
<td>350</td>
<td>150</td>
</tr>
<tr>
<td>C</td>
<td>1000</td>
<td>200</td>
<td>100</td>
<td>200</td>
<td>50</td>
<td>250</td>
</tr>
<tr>
<td>D</td>
<td>1500</td>
<td>750</td>
<td>250</td>
<td>400</td>
<td>300</td>
<td>200</td>
</tr>
</tbody>
</table>

The accounting numbers (including debt) come from the firm’s consolidated financial statements, and you can assume that both minority holdings and minority interests are in market value terms.

a. Based on the EV/EBITDA ratio, which of these firms is the cheapest on a consolidated basis, assuming that they are equivalent on risk and growth characteristics? (2 points)

b. Now assume that company C announced that is will use its entire cash balance to buy back shares. Which of the following consequences would you predict for the EV/EBITDA multiple.

a. The EV/EBITDA will go up, since a stock buyback will increase the stock price.
b. The EV/EBITDA will go down, since the market value of equity will decrease
c. The EV/EBITDA will remain unchanged
d. The EV/EBITDA will go up but only if the firm was over levered before the buyback
e. The EV/EBITDA will go up but only if the firm was under levered before the buyback.
2. You have been asked to assess the price earnings multiple for an insurance company that is expected to generate $1.5 billion in net income next year. The firm has a book value of equity today of $10 billion and is expects net income to grow 3% a year in perpetuity. The cost of equity for the firm is 11%.

a. Given this information, estimate the intrinsic value of equity as a multiple of net income for the firm. (2 points)

b. Now assume that you are told that the firm has 900 million shares outstanding (primary) and 100 million options. The options have an estimated value of $0.5 billion. Estimate the intrinsic PE ratio for the traded shares in this firm, using fully diluted earnings per share as the base. (Hint: Start with the value of equity that you have already derived in part a) (2 points)
3. Ginkoba Inc. is a private company that has been valued by an analyst at $7.5 million for a private-to-private transaction. You agree with the assessments of cash flows and growth, made by the analyst, but you have two areas of disagreement:

- The firm is all equity funded, and the analyst used a cost of equity of 20% for the company, which he derived by adding 10% on to the market-beta based cost of equity. The riskfree rate was 4% and the equity risk premium was 6%. You have reviewed the firms in the sector and have concluded that the average correlation of these firm with the market, across these firms, is 60%.

- The analyst also reduced his estimated value of equity by 25%, to reflect an illiquidity discount. You believe that the size of the firm merits a smaller illiquidity discount.

a. Assuming that the analyst used an expected growth rate of 4% in perpetuity, estimate the correct value of equity (prior to applying an illiquidity discount). (You can assume that the riskfree rate, equity risk premium and market beta used by the analyst are correct) (2 points)

b. Now assume that you have a regression equation, relating the illiquidity discount to revenues, derived from other transactions:
Illiquidity Discount = 0.30 – 0.125 ln (Revenues)
If Ginkoba had revenues of $2 million last year, estimate the value of equity, after adjusting for illiquidity. (1 point)