Quiz 3: Corporate Finance

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

1. You are assessing the optimal capital structure for Totem Holdings, a large publicly traded chemical company with 100 million shares trading at $30 per share and $1 billion in debt outstanding. The firm currently has a pre-tax cost of debt of 6% and you have correctly estimated the current cost of capital to be 9%. The firm is planning to borrow an additional $2 billion (which will push up the pre-tax cost of debt to 7%) and use the proceeds to buy back $1 billion in stock and invest $1 billion in its existing business. The firm’s tax rate is 40%, the current riskfree rate is 5% and the market risk premium is 4%.

   a. Estimate the new cost of equity for this firm after the transaction. (3 points)
b. Estimate the new cost of capital after the transaction. (1 point)

c. Estimate the change in the value per share if the firm moves to its optimal by buying back shares at $33 per share. (You can ignore the NPV of the investment in the existing business) (3 points)
2. Totem has also asked you to examine whether they have the right kind of debt. Their existing debt of $1 billion is composed of

<table>
<thead>
<tr>
<th>Type of debt</th>
<th>Amount of debt</th>
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<tbody>
<tr>
<td>Commercial paper (due in 6 months)</td>
<td>$0.4 billion</td>
</tr>
<tr>
<td>Zero coupon bond (due in 3 years)</td>
<td>$0.6 billion</td>
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Your assessment is that the duration of Totem’s assets is 5 years and that a third of Totem’s cashflows are in Euros.

a. Estimate the duration of the new debt ($2 billion) that Totem is planning to issue, assuming that you want to have debt of the right duration after the issue. (2 points)

b. Estimate the currency break down on the new debt ($2 billion) that Totem is planning to issue, assuming you want debt with the right currency mix after the issue. (1 point)