Corporate finance, CAPM, debt beta, practice exam problems

(The attached PDF file has better formatting.)

*Question 1.1: Debt Beta

Suppose the beta for a corporation's debt is 0.250, the risk-free rate is 7% and the market risk premium is 8%. What is the yield to maturity on the corporation's debt?

A. 7.0%
B. 7.5%
C. 8.0%
D. 8.5%
E. 9.0%

Answer 1.1: E

The Brealey and Myers textbook assumes the CAPM equation can be applied to all risky securities, including corporate bonds. This is a valid perspective, but it is not universal. In this perspective, the yield to maturity is after adjustment for defaults. It is hard to judge this perspective, since it is hard to estimate the covariance of corporate bonds with stock returns. Using the CAPM equation, we get: 7% + 0.250 × 8% = 9.00%

*Question 1.2: Debt Beta

Suppose the risk-free rate is 7% and the market risk premium is 6%. A corporation's debt has a coupon rate of 9.5% and a yield to maturity of 8.5%. What is the debt's beta?

A. 0.167
B. 0.250
C. 0.875
D. 1.143
E. 1.400

Answer 1.2: B

The coupon rate is the accounting return; the yield to maturity is the market return. The CAPM formula relates to market returns, not accounting returns. We use the yield to maturity, not the coupon rate.

$$8.5\% = 7\% + \beta \times 6\% \Rightarrow \beta = 1.5\% / 6\% = 0.250$$