Quiz 3: Equity Instruments and Markets

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

1. You are comparing two firms - BigName Inc. and NoName Inc., both of which are mature and growing at a stable growth rate of 4%. Both firms have revenues of $5 billion, book value of capital invested of $2.5 billion and a cost of capital of 9%. BigName Inc., though, has an after-tax operating margin of 12%, whereas NoName Inc. has an after-tax operating margin of 6%. Estimate the value of BigName Inc.'s brand name. (4 points)
2. You are trying to value Hot Tickets, a private firm that stages concerts for purchase by a private individual (who is not diversified). The firm reported net income of $2.6 million last year on a book value of equity of $10 million. However, you note that this net income was before assessing a salary for the current owners of the business. You estimate that you would have to pay $1 million as salaries to the managers you would have to hire to replace these owners; the firm’s tax rate is 40%. Looking at all entertainment companies, you have come up with the following regression:

Price to Book Equity = 0.83 + 11.60 (Return on Equity) – 0.44 (Beta)

(For example, the price to book ratio for a firm with a 10% return on equity and a beta of 0.80 would be 0.83 + 11.60 (.10) – 0.44 (0.80) = 1.64)

Finally, you estimated the average levered beta of entertainment companies to be 1.10 and the average correlation of these firms with the market is 0.40. (You can assume that the debt to equity ratio of the private firm is similar to the average debt to equity ratio for the industry).

Estimate the value of the equity in this firm (prior to any illiquidity discount). (3 points)
3. You are trying to value a young technology company with no existing products and a patent on a technology that may or may not be viable yet. You expect the technology to generate $20 millions in cash flows every year for the next 8 years and your current analysis suggests a net present value (after subtracting out the initial investment) of – $25 million. Your technology firm has been listed for only 1 year but it has call options traded on the Chicago Board of Options – the implied standard deviation\(^1\) on these options is 15%. You have the exclusive rights to this technology for the next 12 years and the cost of capital for the firm is 10%. The treasury bill rate is 2% and the 12-year treasury bond rate is 5%. Estimate the value of the inputs to the option pricing model. (3 points)

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Riskless rate =

Life of the option = \( t = \)

Standard deviation =

Dividend Yield (Cost of delay) =

\(^1\) Implied variance is the variance that makes the market value of an option equal to the estimated value from the option pricing model.