HW 1

Your job is to consult potential entrepreneurs who want to appear on the Shark Tank show. Your ultimate goal is to make them understand if it is worth it to appear on the show.

Just to appear on the show, the Shark Tank producers (P) get the maximum of either 2% of future revenues or 5% of equity. Answer each question sequentially.

The goal of this HW is for you to review discounting and start thinking about options in real life.

1. The first part of the HW concerns the value of royalties. Suppose the revenues in the first year R are $100 and they grow every year at a growth rate of g = 10%. If P gets 2% of all the revenues, and if the discount rate d is 15%, what is the present value assuming that the company survives for 10 years. Repeat the same exercise and assume that the company survives 15 years, 20 years and 100 years. Does your answer approach the Gordon growth formula \( PV = \frac{R \times 0.02}{d - g} \)? Why or why not? You can answer the question by plotting your result with PV on the y-axis and survival life on the x-axis.

2. Assume that the company is valued at a revenue multiple M of 0.07. This means that Equity is 0.07 \* R. If P gets 5% of the equity, what is the value of P’s equity? Note, this is a simple question (do not over think it). Does P choose the 2% royalty stream or 5% equity?

3. At what multiple M would P choose to change their answer to question 2? In the class, this multiple was called M*. How does M* change with discount rate d and growth rate g? Interpret the answer.

4. Plot P’s value on the y-axis and multiple M on the x-axis. Remember that P gets the max of either the royalty stream or the equity. Based on the plot, what general conclusions can you make? How does the plot change if the company grows by 12%? Interpret the plot.

5. With the analysis, how can you consult the company, which wants to appear on the show? You can either explain your answer in English or do some analysis.