

TA Session 3

Marco Sammon

Question 1

You have conducted a pro-forma analysis over 3 years ($t=1,2,3$) of the target company for a potential merger and acquisition (M&A) transaction, resulting in the following table

Forecast Horizon t	1	2	3
Free Cash Flow (FCF in M)	50	100	105

After a careful analysis using the CAPM you have determined that the appropriate risk-adjusted discount rate for the free cash flows of this company is 10%. *Starting with year 3, you expect the company to grow at a constant long-term rate of 3.5%. What is the fundamental value of this company today (year $t=0$)?*

(End of question)

Question 2

You want to determine your optimal savings plan for retirement.

- Assume you are now 45 years old ($t=0$) and you will retire at the age of 65 ($t=20$) and you will die at the age of 90 ($t=45$).
- **In real terms, you want to have \$125,000** per year during your retirement years, from age 66 to 90.
- You will earn a nominal APR of 4% **compounded monthly on your savings**.
- Inflation will be 2.5% per year for your lifetime.
- There are no relevant taxes.
- You currently have no retirement savings.
- When you die there will be no money left in your savings (**you should have zero savings in the bank when you die, i.e. you save just enough to live until 90** and maintain your spending throughout).
- Assume you will start saving when you are 46 ($t=1$) and will save the same amount each year in real terms. You will save from the age of 46 to 65 ($t=20$).
- Use time $t=0$ (age 45) as the base year to calculate all real values.

(a) How much do you need to save each year in real terms?

(b) How much cash will you have in your retirement account when you retire at the age of 65?

Question 3

You are considering a new line of business of selling Android phones. You will outsource most of the production to a foreign company. You will run this line of business for only four years ($t=1$ to $t=4$) and then you will shut it down. You have the following information about the financial implications of outsourcing over the next four years. Your company is listed on the stock exchange and has no debt.

- You will need to buy some equipment worth *\$60 million at time 0 ($t=0$), which will be depreciated straight line over the next 6 years. **You will sell the used equipment right at the end of the fourth year, $t=4$ for \$25 million.***
- Your outsource partner will charge you \$50 million at the end of each year for the phones that they have produced for you. You will **pay the outsource partner one year after they charge you for the phones.**

- You will have selling, administration and additional production costs (SG&A) of 12% of your sales.
- You expect that sales will be \$80 million per year for years 1 to 4, and then you will close this line of business down.
- There are no other costs or working capital items besides those listed.
- Your firm's tax rate is 30% and its relevant cost of capital (discount rate) is 10%.

(a) Determine the appropriate free cash flows for this new line of business for years $t=0$ to $t=5$.

(b) Calculate the relevant NPV and state whether the firm should go into this line of business or not.

(c) Calculate the internal rate of return for this new line of business. If the firm has a hurdle rate of 10%, should they go into this business using the IRR rule?