Dr.ir. Z. Roosenboom-Kwee
Aleksandrina Ralcheva

Instructions for Workshop 2

Based on Lectures 2&3

Please read and potentially try to solve the following questions (on your own or in a group) before the workshop. We will discuss the solutions during the workshop on September 28, 2023 at 10:45-12:30. You can use the Formula Sheet and PV tables provided on Brightspace.

Note that the bonus question is not included here. After the workshop, you have the opportunity to solve the second bonus question in Ans. There will be one question and a correct answer and proof of computation will be awarded 0.1 bonus point. Solving the bonus question is an individual work (thus, NOT a group work)!

Exercise W2-1:

Your close friend considers starting a new venture on January 1st, 2024. She plans to invest €300,000 in its initial operation. According to her five-year projection, the venture is expected to earn a revenue equal to 60% of its investment during the first year with an annual increase of €8,000 until the end of the fifth year. The firm's annual fixed cost is €88,000 and the yearly depreciation is €35,000. Additionally, your friend expects to have no investing and financing activities at all during the first five years. As you have a background in finance, she asks you to help her estimate the NPV of the projected cash flows. Given the tax rate of 35% and interest rate of 12%, do you think her venture investment is a profitable one? (To convince her, show the full details of your calculation.)

Exercise W2-2:

Your firm needs to invest in a new delivery truck. The life expectancy of the delivery truck is five years. You can purchase a new delivery truck for €200,000 today, or you can lease a truck from the manufacturer for five years for a monthly lease payment of €4,000 (paid at the end of each month). Your firm can borrow at 6% APR from a bank with quarterly compounding. Using the EAR in your computation, should you buy or lease the truck?

Exercise W2-3:

A utility company has the opportunity to invest in six independent projects whose cash flows (in millions) are shown below. The appropriate discount rate is 15%.

Project	CF_0	CF_1	CF_2
A	-$10	$10	$10
B	-$15	$8	$12
C	-$10	$5	$15
D	-$25	$16	$24
E	-10	30	-15
F	-5	5	1

Suppose that the investment opportunities confronting the company are short-lived, and that it must commit to the projects immediately. The company has only $25 million in cash available and has no hope of raising additional capital before the investment opportunities disappear. In which project, or projects, should the company invest? Provide your recommendation based on three techniques: NPV, IRR, and Profitability Index.

Exercise W2-4:

Consider a bond with semi-annual coupon payments. The face value of the bond is $1,000 and its current price is $1,067.55. The bond will mature in 10 years and its yield to maturity is 8%. What is the bond's annual coupon rate?

Exercise W2-5:

Suppose you bought a six-year French government bond, also known as OAT (Obligations Assimilables du Trésor), that makes an annual coupon payment of 5% and offers a yield of 3% annually compounded. Assume the face value is €1,000. Suppose that one year later the bond's yield drops to 2% and that you sell the bond, what is the rate of return that you as the bondholder have earned over the 12-month period?