

Project Appraisal

Exercise

30.04.3018

Consider three projects, project A and Project B. The Global Cash Flows are represented in the following table. The WACC is 8%.

	0	1	2	3	4	5
PROJECT A GCF	-1000	150	250	250	400	400
PROJECT B GCF	-1000	300	300	270	250	272

- Compute the **NPV and the IRR** for each project and decide about the project selection of each of the projects. Assume that the projects are independent and both can be done depending on the results obtained.
- Consider now that the **projects are alternative**. Based on the **NPV** metric would you select project A or Project B?
- Maintain the assumption that **the projects are alternative**. Based on the **IRR** would you select project A or Project B?
- Represent in a **graph the NPV of both projects** for different values of discount rate (for example 5%, 6%, 8%, 10%, and 14%)
- In the **graph** (in the axes: horizontal: discount rate; vertical: NPV) indicate the relevant points and the meaning of them. (see point 6.4.2. *Agreement and Conflict Between Measures in Crundwell (2008), p.189-190 and example 6.15 p.190-191*).
- For project A compute the **payback period discounted and not discounted**. Interpret the results.
- For project A compute the **Modified Internal Rate of Return**. Assume a reinvestment rate of 9%. The discount rate is 8%.
- For project A compute the **Profitability Index** (note assume that all capital expenditures are done in year zero; no working capital investment exists)
- For project A assume the following expected residual values and compute the **NPV profile across time**¹. Draw a **graph**. What is the recommended duration for the project based on the calculations and associated graph? Is this the only information you need for deciding about project duration?

	0	1	2	3	4	5
PROJECT A GCF	-1000	150	250	250	400	400
PROJECT A EXPECTED RESIDUAL VALUES ⁽ⁱ⁾		900	880	850	400	0

⁽ⁱ⁾Note that for each NPV value of the profile (for each year) you have to include one and only one of the values for the expected residual values. It means that, for example in year 2 only the value of 880 Residual expected value is included.

¹ Note that this is different from the NPV profile for different levels of discount rate (see your answer d))