QUESTIONS

1. Investments A and B, suppose that each has a cost of capital of 10%. How long does it take for each investment’s discounted cash flows to pay back its $1,000,000 investment?

|  |  |  |
| --- | --- | --- |
| Year | Investment A | Investment B |
| 2001 | $400,000 | $100,000 |
| 2002 | 400,000 | 100,000 |
| 2003 | 400,000 | 100,000 |
| 2004 | 400,000 | 100,000 |
| 2005 | 400,000 | 100,000 |

|  |
| --- |
| Cash flows ($) |
| Project | C0 | C1 | C2 | C3 | C4 |
| A | −5,000 | +1,000 | +1,000 | +3,000 | 0 |
| B | −1,000 | 0 | +1,000 | +2,000 | +3,000 |
| C | −5,000 | +1,000 | +1,000 | +3,000 | +5,000 |

a.What is the payback period on each of the following projects?

b.Given that you wish to use the payback rule with a cutoff period of two years, which projects would you accept?

**Project** Cr **CF** *e3 e*

c.If you use a cutoff period of three years. which projects would you accept?

d.If the opportunity cost of capital is 10%. which projects have positive NPVs?

e.If a firm uses a single cutoff period for all projects. it is likely to accept too many shortlived projects? True or false?

f.If the firm uses the discounted payback rule, will it accept any negative NPV projects? Will it turn down any positive NPV projects?

3. Consider the following projects:

|  |  |
| --- | --- |
| Cash flows ($) |  |
| Project | C0 | C1 | C2 | C3 | C4 | C5 |
| A | −1,000 | +1,000 | 0 | 0 | 0 | 0 |
| B | −2,000 | +1,000 | +1,000 | +4,000 | +1,000 | +1,000 |
| C | −3,000 | +1,000 | +1,000 | 0 | +1,000 | +1,000 |

1. If the opportunity cost of capital is 10%, which projects have a positive NPV?
2. Calculate the payback period of each project.
3. Which Project(s) would a firm using the payback rule accept if the cutoff period is three years?
4. Calculate the discounted payback period for each Project.
5. Which Project(s) would a firm using the discounted payback rule accept if the cutoff period is three years?
6. a) Calculate the NPV of the following Project for discount rates of 0, 50, and 100%.

b) What is the IRR of the project?

|  |
| --- |
| **Cash flows ($)** |
| **C0** | **C1** | **C2** |
| -6,750 | +4,500 | +18,000 |

1. Assume that the projects are mutually exclusive and that the opportunity cost of capital is 10%. Calculate the profitability index for each Project.

|  |
| --- |
| **Cash flows ($)** |
| **Project** | **C0** | **C1** |
| D | -10,000 | +20,000 |
| E | -20,000 | +35,000 |

1. Suppose you have the following investment opportunities, but only $90,000 available for investment. Which projects should you take?

|  |  |  |
| --- | --- | --- |
| **Project** | **NPV ($)** | **Investmet ($)** |
| 1 | 5,000 | 10,000 |
| 2 | 5,000 | 5,000 |
| 3 | 10,000 | 90,000 |
| 4 | 15,000 | 60,000 |
| 5 | 15,000 | 75,000 |
| 6 | 3,000 | 15,000 |

1. The following investment proposals are independent. Assuming a required rate of return of 10 per cent, and using both the internal rate of return and net present value methods, which of the proposals are acceptable?

|  |
| --- |
| **Cash flows ($)** |
| **Project** | **Year 0** | **Year 1** | **Year 2** |
| A | -40,000 | 8,000 | 48,000 |
| B | -40,000 | 42,000 |  |
| C | -40,000 | 48,000 |  |

1. A company wishes to evaluate the following mutually exclusive investment proposals:

|  |  |  |  |
| --- | --- | --- | --- |
| **Cash flows ($)** |  |  |  |
| **Project** | **Year 0** | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** |
| A | -97,400 | 34,000 | 34,000 | 34,000 | 34,000 | 34,000 |
| B | -63,200 | 24,000 | 24,000 | 24,000 | 24,000 | 24,000 |

1. Calculate each proposal’s NPV and IRR. Assume the required rate of return is 8%.
2. How would you explain the different rankings given by the NPV and IRR methods?
3. Suppose you have an investment with the following expected cash flows:

|  |  |
| --- | --- |
| Year | Investment A |
| 0 | −$10,000 |
| 1 | +$3,000 |
| 2 | +$3,000 |
| 3 | +$6,000 |

The IRR of this project is 8.55% per year. What you would have at the end of the third year if you rein­vested each cash flow at 8.55%?

1. Here are the cash-flow forecasts for two mutually exclusive projects:

|  |  |  |
| --- | --- | --- |
| Year | Project A | Project B |
| 0 | -$100 | -$100 |
| 1 | 30 | 49 |
| 2 | 50 | 49 |
| 3 | 70 | 49 |

1. Which project would you choose if the opportunity cost of capital is 2%?
2. Which would you choose if the opportunity cost of capital is 12%?