**ENGG4900 Module 3 - Financial Evaluation of Projects**

**Tutorial 5 Questions – Financial Principles**

Prioritise the questions marked ‘\*’ in the tutorial.

**Question 1 [\*]**

1. What is discount rate?

* The rate of decline
* Investment rate of return

1. Consider an Australian company that has the opportunity to invest in two similar gas projects. One is in Queensland and the other is in PNG. Would you expect the discount rate to be the same for both projects? Why?

Since PNG is a developing country, the risk associated with the project would be higher and so the discount rate would lower.

**Question 2**

1. What is the future value of $1500 in 5 years if the interest rate is 7%?
2. What is the future value of $10000 in 40 years if the interest rate is 8%? [\*]

**Question 3**

1. What is the present value of $8000 in 6 years if the discount rate is 9%? [\*]
2. What is the present value of $7.5m in 10 years if the discount rate is 11%? [\*]
3. What is the present value if the discount rate is 5% and the future value is $5000 in 10 years time?

**Question 4**

1. What is the difference between real cash flows and nominal cash flows? [\*]

Real cash flow -> adjusted for inflation.

Nominal cash flow -> not adjusted for inflation. (actual dollar)

1. What is the real value of $10,000 spent in 2015? Assume an inflation rate of 2%.

Real Interest Rate Nominal interest rate – Inflation rate

1. What is the real interest rate if the nominal interest rate is 7% and inflation is 2%?

**Question 5 [\*]**

1. When a company invests in a project (like your start-up for example), where does it source the cash from? Explain.

Companies generally source cash from:

* Debt (taken out in a form of a loan, generally from a bank)
* Equity (investment in the form of shares, shares of the company are transacted on an open market)

1. What is the WACC? What is its relevance for a company financing a project?

WACC is a method for establishing the discount rate for projects vary.

**Question 6**

1. A company has raised $4m of capital in the form of $1.5m debt and $2.5m equity.

The debt has an interest rate (KD) of 3.7% and the target return for equity (KE) is 13%.

The tax rate is 30%. What is the WACC for this company?

1. If Cost of Equity (KE) = 10%, Cost of Debt (KD) = 4%, Debt = $50,000, Capital = $70,000 and tax rate = 30%, estimate the WACC of the Company.   [\*]

**Question 7 [\*]**

Which is the most expensive – debt or equity? Why? If one is cheaper, then why not just source all of the finance from that (i.e., debt or equity)?

Debt is more expensive as loans generally apply an interest rate over a fixed term. Equity is not entirely sourced for finance as there is a risk associated with purchasing shares (as not all investments make money).

**Question 8 [\*]**

1. What is Free Cash Flow?

Provides the liquidity of a company.

1. What is NPV?

Sum of all discounted future free cash flows

**Question 9 [\*]**

Consider a new project proposal to invest $3.0 million in new plant capacity. The project is predicted to generate free cash flows of $500k, $900k, $1050k, $1300k and $1200k in years 1-5 respectively. The year 5 free cash flow includes a salvage value of $250k for the equipment. Determine the project NPV using a discount rate of 12%

Do this in Excel and format it as shown below.

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|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Year | 0 | 1 | 2 | 3 | 4 | 5 |
| Investment | - 3,000,000 |  |  |  |  |  |
| FCF | - 3,000,000 | 500,000 | 900,000 | 1,050,000 | 1,300,000 | 1,450,000 |
| DF | 1.00 | 0.88 | 0.77 | 0.68 | 0.60 | 0.53 |
| PV | - 3,000,000 | 440,000 | 696,960 | 715,546 | 779,604 | 765,211 |
| NPV | 397,321 |  |  |  |  |  |