Module 1

Corporate Financial Decision-Making for Value Creation

Discounted Cash Flow Analysis (Time is money…)

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Discounted Cash Flow (DCF) analysis

Which of the following would you prefer?

$1000 now or a promise of $1000 a year from now? Why?

There are at least three reasons:

1. Expected inflation
2. Risk
3. Opportunity cost.

The net result is that we can't directly compare cash flows that occur at different points in time without thinking about expected inflation, risk and opportunity cost!

Discounted Cash Flow (DCF) analysis

The way that we account for the *time value of money* is by systematically *discounting* future cash flows:

$$PV = \frac{Cash\ Flow_n}{(1+r)^n}$$

This results in future cash flows being re-expressed in terms of their *present value* today!

As present values are recorded at the same point in time (now) they can be compared, added together etc!

Discounted Cash Flow (DCF) analysis

Example:

What is the present value of $800,000 expected in 1 year's time, assuming a discount rate of 10% p.a.?

$$PV = \frac{Cash\ Flow_n}{(1+r)^n} = \frac{\$800,000}{(1.10)^1} = \$727,273$$

What if the cash flow was expected in two years' time?

$$PV = \frac{Cash\ Flow_n}{(1+r)^n} = \frac{\$800,000}{(1.10)^2} = \$661,157$$

Intuition?

Discounted Cash Flow (DCF) analysis

$$PV = \frac{Cash\ Flow_n}{(1+r)^n}$$

The discount rate, *r*, reflects: risk, opportunity cost and expected inflation.

The greater the influence of these factors the greater the discount rate applied to the future cash flows and the smaller the present value.

Discounted Cash Flow (DCF) analysis

Example continued:

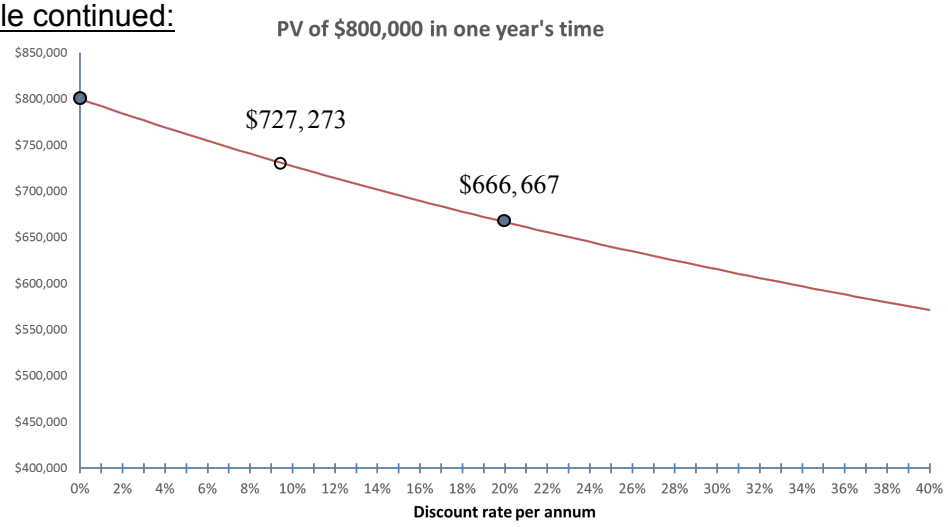
Going back to our expectation of $800,000 in 1 year's time – what would happen to the PV if the discount rate was 20% p.a. instead of 10% p.a.?

$$PV = \frac{Cash\ Flow_n}{(1+r)^n} = \frac{\$800{,}000}{(1.20)^1} = \$666{,}667$$

Intuition?

Discounted Cash Flow (DCF) analysis

Example continued:



Summary

- Cash flows expected to occur at different points in time aren't directly comparable.
- This is because of *risk*, *opportunity cost* and *expected inflation.*
- Discounting expected cash flows back to their present values solves this problem.
- *Discounted Cash Flow (DCF)* analysis is the basis of the most popular project evaluation methods.

Source list

Slide 7: PV of $800,000 in one year's time graph. Prepared by Sean Pinder. © The University of Melbourne.