Module 4

The Language and Tools of Financial Analysis

Fair Value Using Net Present Value (Finance meets accounting)

Presenter: Paul Kofman

THE UNIVERSITY OF MELBOURNE

BNY MELLON

Putting DCF to the test

Analysts value firms' equity, CFOs value investment projects.

There is no fundamental difference.

Both assess whether the PV of future cash flows of the firm/project is worth the initial investment outlay (the current share price/ the capital investment in the project).

$$\text{Firm / Project Value} = \frac{CF_1}{(1+r)^1} + \frac{CF_2}{(1+r)^2} + \ldots + \frac{CF_n}{(1+r)^n}$$

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Net present value

To decide, analysts/CFOs use *Net Present Value (NPV):*

$$NPV = PV\left(\text{benefits}\right) - PV\left(\text{costs}\right)$$

$$NPV = \frac{CF_1}{\left(1+r\right)^1} + \frac{CF_2}{\left(1+r\right)^2} + \ldots + \frac{CF_n}{\left(1+r\right)^n} - I_0$$

Accept projects with positive NPV – as they increase shareholder wealth.

Reject projects with negative NPV – as they reduce shareholder wealth.

What if NPV = 0?

Net present value

Consider a project which has a three year life span with positive expected cash flows (50,50,100 in million dollars), and requires an investment of $150m today.

A reasonable discount rate is 5%.

$$NPV = \frac{\$50}{\left(1.05\right)^1} + \frac{\$50}{\left(1.05\right)^2} + \frac{\$100}{\left(1.05\right)^3} - \$150$$

$$= \$47.62 + \$45.35 + \$86.38 - \$150 = \$29.35$$

Go / Don't Go?

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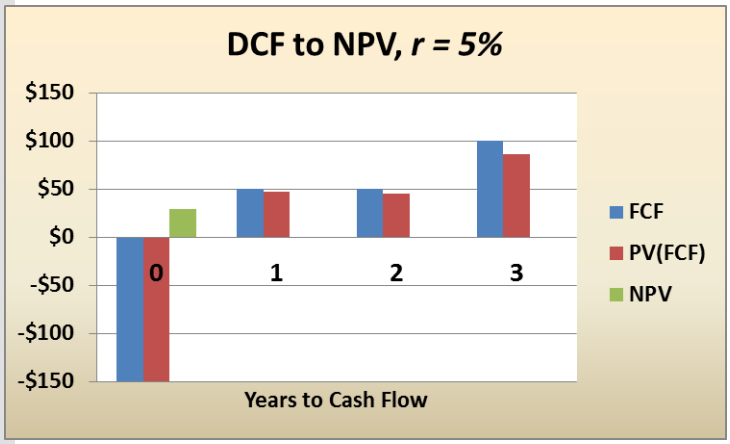
Net present value



Net present value, but now with risk

As it turns out, this project is very risky and the free cash flow forecasts have significant uncertainty.

The CFO decides to increase the discount rate to 20%.

$$NPV = \frac{\$50}{(1.20)^1} + \frac{\$50}{(1.20)^2} + \frac{\$100}{(1.20)^3} - \$150$$

$$= \$41.67 + \$34.72 + \$57.87 - \$150 = -\$15.74$$

Go / Don't Go?

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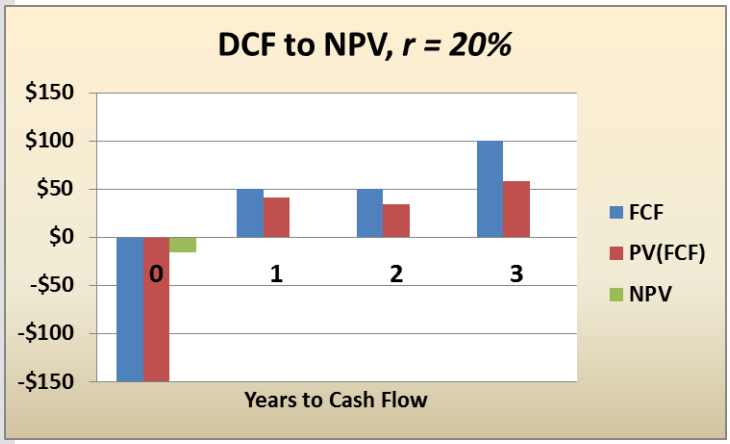
Net present value – but now with risk



Another way of looking at it…

So at some discount rate the present value of the future cash flows no longer "pays off" the initial investment.

What would be the trigger discount rate, at which we *break even?*

$$NPV = \frac{\$50}{(1+r)^1} + \frac{\$50}{(1+r)^2} + \frac{\$100}{(1+r)^3} - \$150 = 0$$

At what discount rate do we Go?
Somewhere between 5% and 20%...

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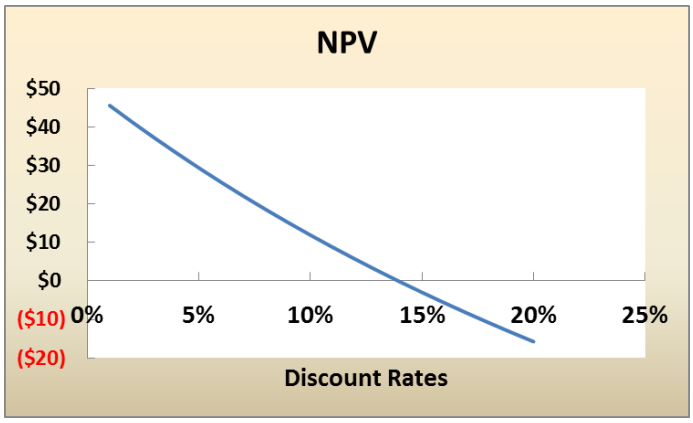
Another way of looking at it…



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