

FINA 3070 Notes 2

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1 PV vs. NPV

1.1 PV

- Expected cash flows in the future.
- Value of a new project.
- Calculated using Weighted Average Cost of Capital (WACC)

1.2 NPV

- Value of a new project 'minus' the 'initial cost' or cash outflow.
- NPV is PV minus initial cost.
- The company needs to forecast the project's cash flows and discount them at the opportunity cost of capital to arrive at the project's NPV.
- A project with a positive NPV increases shareholder value.
- Financing costs (interest payment, repayment of principle, dividends) and tax shields from interest are automatically considered when we discount the cash flows with discount rate.
- $NPV = \sum \frac{C_t}{(1 + r_t)^t}$
- , where C (including initial negative C_0) is cash flow and r_t is annual discount rate (in this chapter the discount rate is constant).

2 Operating cash flow vs. Net cash flow

- $\text{Net cash flow} = \text{Operating cash flow} - \text{after-tax asset purchase} + \text{after-tax asset disposal} - \text{change in net working capital}.$
 - where after-tax asset purchase and after-tax asset disposal is often grouped into the same section (net capital spending).
 - Operating cash flow is calculated as $\text{EBIT} + \text{depreciation} - \text{taxes}.$

3 Sales vs. EBIT (Pre-tax profit) vs. Operating cash flow

- $\text{EBIT} = \text{Sales} - \text{operating costs (including depreciation, calculated according to tax law)}.$
- $\text{Tax on operations} = \text{EBIT} \times \text{tax rate}.$
- $\text{Operating cash flow} = \text{EBIT} - \text{tax on operations} + \text{depreciation}$
 - We add back depreciation to calculate cash flows.
 - Fixed asset purchase is cash outflow.
 - $\text{After-tax cash flow from disposal of asset at project end} = (\text{expected salvage value of used asset}) - (\text{tax rate} \times (\text{expected salvage value} - \text{book value}))$
 - * $\text{Book value} = \text{initial cost} - \text{accumulated depreciation}$
 - * We expect tax refund if expected salvage value is less than book value.

4 Footnote

Check out the example in Homework1 Q1 along with the Excel spreadsheet.