

Topics: Discounted Cash-Flow Analysis

— Focus on estimating the expected cash flows of an investment project

— Determine the “incremental” cash flow impact of a new project

[Incremental C.E = (CF with the project) - (CF without the project)]

(1) Include all incidental effects.

[i.e., New products could help or damage the sales of an existing product.]

(2) Include opportunity costs.

(3) (Remember working capital

[Net W.C. = current assets - current liabilities.]

[Investment in W.C. results in a cash outflow.]

(4) Forget sunk costs:

[Sunk costs the past and irreversible outflows which are irrelevant to the project.]

(5) Allocated overhead costs: (i.e., rent, heat, and electricity)

[the extra expenses resulting from the project]

— Calculate the CF of a project from standard financial statements

— Understand the impact of depreciation on tax and CF.

— Analyze project interactions:

(1) Investment timing:

[When is it best to commit to positive -NPV projects?]

(2) Long-lived vs. short-lived projects:

[Put them on an equal footing by comparing their equivalent annual costs (EAC)]

(3) Replacing an old machine:

[Compare the annual cost of the old one with the EAC of the new one.]

Example:

Calculate Blooper' s Project Cash Flows:

CF from investments in plant and equipment (capital investment)
+ CF from investments in working capital
+ CF from operations (= net profit + depreciation)
= Total project CF

Important Concepts:

1. **Discount CF, not profits.**

(Opp. Cost of capital: 10%)

	C_0	C_1	C_2
CF	--\$2000	+\$1500	+\$ 500
Depreciation		- \$1000	- \$1000
Accounting Income		+\$ 500	- \$500

If discount profits, NPV = 41.32 [= (500/1.1) - (500/1.1)²]

If discount CF, NPV = - 223.14 [-2000 + (1500/1.1) + (500/1.1)²]

2. **Separate investment and financing decisions:**

- Regardless of the actual financing, we should view the project as if it **were** all equity-financed, treating all cash outflows required for the project as coming from stockholders and all cash inflows as going to them.
- Do not include debt interest or the cost of repaying a loan while calculating NPV.

3. **Be consistent in handling inflation:**

- Nominal CF → discounted at nominal rate
(real) (real)

4. **Depreciation tax shield: Reduction in tax attributable to the depreciation allowance.**

Depreciation tax shield = depreciation x tax rate