

Relevant Cash Flows

Issue

Which cash flows to use in project evaluation?

$$NPV = \sum_{t=0}^n \frac{CF_t}{(1+k)^t}$$

Incremental Cash Flows

Project's $CF_t = \text{Firm's } CF_t \text{ with project} - \text{Firm's } CF_t \text{ without project}$

CF vs. NI

Credit vs. Cash Sales and Expenses

Capital Outlays vs. Depreciation

Timing

Some Specifics

Sunk Costs

Financing Costs

Opportunity Costs (actually, implicit costs)

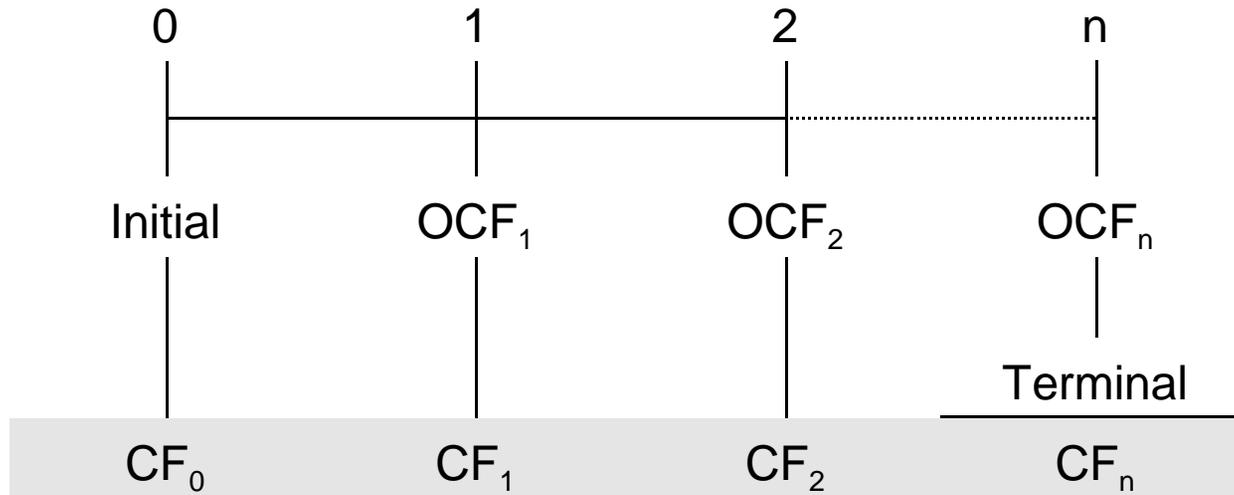
Externalities: cannibalism & synergy

Change in Net Working Capital (ΔNWC)

Taxes

Classifying Cash Flows

Chronologically



Examples

Initial (t=0): purchase, shipping & installation; change in NWC

Operating (t=1,...n): cash sales/expenses, taxes

Terminal (t=n): net salvage value, reversal of Δ NWC

Calculating Cash Flows

Initial Cash Flows

Operating Cash Flows

$$OCF_t = NI_t + Dep_t$$

$$OCF_t = (R_t - C_t)(1 - T) + TDep_t$$

Terminal Cash Flows

Reversal of ΔNWC

$$\Delta NWC_T = -\Delta NWC_0$$

Net Salvage Value

$$NSV = SV - T(SV - BV)$$

Taxes

Depreciation

Opposite Effects on NI and CF

$$Dep_t = MACRS_t \times Basis$$

Basis: purchase, shipping & installation

Arbitrary Recovery Period

Half-Year Convention

Investment Tax Credit

Intermittent Fiscal Policy Tool

Sale of Depreciable Asset

at time of sale: $-T(SV - BV)$

each period: $+T \Delta Dep_t$

MACRS Recovery Allowances

| Year | Class-Life of Investment | | | |
|------|--------------------------|--------|--------|---------|
| | 3-Year | 5-Year | 7-Year | 10-Year |
| 1 | 33% | 20% | 14% | 10% |
| 2 | 45 | 32 | 25 | 18 |
| 3 | 15 | 19 | 17 | 14 |
| 4 | 7 | 12 | 13 | 12 |
| 5 | | 11 | 9 | 9 |
| 6 | | 6 | 9 | 7 |
| 7 | | | 9 | 7 |
| 8 | | | 4 | 7 |
| 9 | | | | 7 |
| 10 | | | | 6 |
| 11 | | | | 3 |
| | 100% | 100% | 100% | 100% |

Selected MACRS Class Lives

| 3-Year | 5-Year | 7-Year | 10-Year |
|-----------------|------------|-------------|-------------|
| Tractor/Trailer | Car | Furniture | Mobile Home |
| R Horse (>2) | Truck | Washer | Barge |
| Horse (>12) | Computer | A/C | Tug |
| | Software | Telephone | |
| | Typewriter | Farm Equip. | |
| | Dairy Cow | Power Tool | |
| | Br. Sheep | | |

Miscellaneous

Replacement

$$\Delta OCF_t = (\Delta R_t - \Delta C_t)(1 - T) + T \Delta Dep_t$$

NSV of old equipment may be “shifted” toward present

Inflation

Be consistent: nominal CFs, nominal k

$$NPV = \sum_{t=0}^n \frac{CF_t}{(1+k)^t}$$

Abandonment

Disinvestment also a capital budgeting decision