

# Capital Budgeting

**[Compiled from (a) Van Horne & Wachowicz, and (b) Gitman]**

# **Estimating After-Tax Incremental Cash Flows**

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## **Basic characteristics of relevant project flows**

- Cash (not accounting income) flows**
- Operating (not financing) flows**
- After-tax flows**
- Incremental flows**

# Estimating After-Tax Incremental Cash Flows

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Principles that must be adhered to in the estimation

- ☑ **Ignore sunk costs**
- ☑ **Include opportunity costs**
- ☑ **Include project-driven changes in working capital**
- ☑ **Include effects of inflation**

# **Depreciable Basis**

In tax accounting, the fully installed cost of an asset. This is the amount that, by law, may be written off over time for tax purposes.

$$\text{Depreciable Basis} = \text{Cost of Asset} + \text{Capitalized Expenditures}$$

# ***Capitalized Expenditures***

Capitalized Expenditures are expenditures that may provide benefits into the future and therefore are treated as capital outlays and not as expenses of the period in which they were incurred.

*Examples:* Shipping and installation

# ***Calculating the Incremental Cash Flows***

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- Initial cash outflow -- the initial net cash investment.
- Interim incremental net cash flows -- those net cash flows occurring after the initial cash investment but not including the final period's cash flow.
- Terminal-year incremental net cash flows -- the final period's net cash flow.

# ***Initial Cash Outflow***

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- a) *Cost of "new" assets*
- b) + Capitalized expenditures
- c) + (-) Increased (decreased) NWC
- d) - Net proceeds from sale of "old" asset(s) if replacement
- e) + (-) Taxes (savings) due to the sale of "old" asset(s) if replacement

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- f) = Initial cash *outflow*

# ***Incremental Cash Flows***

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- a) Net incr. (decr.) in operating revenue  
less (plus) any net incr. (decr.) in  
operating expenses, excluding depr.
- b) - (+) Net incr. (decr.) in tax depreciation
- c) = Net change in income before taxes
- d) - (+) Net incr. (decr.) in taxes
- e) = Net change in income after taxes
- f) + (-) Net incr. (decr.) in tax depr. charges
- g) = Incremental net cash flow for period



# ***Terminal-Year Incremental Cash Flows***

- a) Calculate the incremental net cash flow for the terminal period
- b) + (-) Salvage value (disposal/reclamation costs) of any sold or disposed assets
- c) - (+) Taxes (tax savings) due to asset sale or disposal of "new" assets
- d) + (-) Decreased (increased) level of "net" working capital
- e) = Terminal year incremental net cash flow

# Profitability Index (PI)

PI is the ratio of the present value of a project's future net cash flows to the project's initial cash outflow.

$$PI = \left[ \frac{CF_1}{(1+k)^1} + \frac{CF_2}{(1+k)^2} + \dots + \frac{CF_n}{(1+k)^n} \right] \div ICO$$

# Capital Rationing

*Capital Rationing* occurs when a constraint (or budget ceiling) is placed on the total size of capital expenditures during a particular period.

Example: Sameer must determine what investment opportunities to undertake for *Sameer Baskets (SB)*. He is limited to a maximum expenditure of \$32,500 *only* for this capital budgeting period.

# Available Projects for SB

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<b>Project</b>	<b>ICO</b>	<b>IRR</b>	<b>NPV</b>	<b>PI</b>
<b>A</b>	<b>\$ 500</b>	<b>18%</b>	<b>\$ 50</b>	<b>1.10</b>
<b>B</b>	<b>5,000</b>	<b>25</b>	<b>6,500</b>	<b>2.30</b>
<b>C</b>	<b>5,000</b>	<b>37</b>	<b>5,500</b>	<b>2.10</b>
<b>D</b>	<b>7,500</b>	<b>20</b>	<b>5,000</b>	<b>1.67</b>
<b>E</b>	<b>12,500</b>	<b>26</b>	<b>500</b>	<b>1.04</b>
<b>F</b>	<b>15,000</b>	<b>28</b>	<b>21,000</b>	<b>2.40</b>
<b>G</b>	<b>17,500</b>	<b>19</b>	<b>7,500</b>	<b>1.43</b>
<b>H</b>	<b>25,000</b>	<b>15</b>	<b>6,000</b>	<b>1.24</b>