

Chapter 12

Cash Flow Estimation and Risk Analysis

Stardoes is considering expanding its chilled cappacino business to college vending machines. The drinks would be produced in an unused adjacent building. Stardoes owns the building, which is fully depreciated. The required equipment would cost \$200,000, plus an additional \$40,000 for shipping and installation. In addition, inventories would rise by \$25,000, while accounts payable would go up by \$5,000. All of these costs would be incurred at time 0. The machinery could be depreciated under the MACRS system as a 3-year property (see next page for MACRS depreciation percentages).

The project is expected to operate for 4 years, at which time it will be terminated. The cash inflows are assumed to begin 1 year after the project is undertaken—at $t=1$ —and continue out to $t=4$. At the end of the project's life ($t=4$), the equipment is expected to have a salvage value of \$25,000.

Unit sales are expected to total 100,000 bottles per year, and the expected sales price is \$2.00 per bottle. Cash operating costs for the project (total operating costs excluding depreciation) are expected to total 60 percent of dollar sales. Stardoes' tax rate is 40 percent, and its weighted average cost of capital is 10%. Tentatively, the project is assumed to be of equal risk to Stardoes' other assets.

1. Initial net investment (investment outlay at $t = 0$)
2. Depreciation schedule. See end of outline for MACRS allowances.
3. Operating Cash Flows for Years 1-4.

Alternate method: $OCF = (Sales - Costs)(1-T) + Depreciation * T$

4. Terminal year cash flows
 - a. return of net working capital
 - b. salvage value of equipment
 - c. tax on sale of equipment—note, market value is the selling price
 - i. Market value > Book value, then must pay tax on gain ($MV - BV$)
 - ii. Market value = Book value, no tax consequences
 - iii. Market value < Book value, then have loss for tax purposes—“save” taxes on the loss ($BV - MV$)
5. Calculate the project's NPV, IRR, etc.. Should the project be accepted?
6. Incremental cash flows
 - a. If the project will be financed with debt, should we revise the cash flows to reflect interest expense?
 - b. If Stardoes spent \$50,000 to renovate the building last year, should this cost be reflected in the analysis? *Sunk cost*
 - c. Suppose Stardoes could lease the building to another party and earn \$25,000 per year. Should that fact be reflected in the analysis? *Opportunity cost*
 - d. Assume that this project would take away profitable sales from Stardoes' other drink businesses. Should that fact be reflected in your analysis? *Externalities (cannibalization, positive, environmental)*
 - e. If this project had been a replacement rather than an expansion, how would the analysis have changed?

7. Incorporating risk in capital budgeting
 - a. Stand-alone risk
 - b. Corporate, or within-firm, risk
 - c. Market, or beta risk
 - d. risk-adjusted discount rate
8. Sensitivity, Scenario, and Monte Carlo analysis

The sample problems are worked with the following MACRS schedule (see Appendix 12A, pg. 397):

Year	<i>Property Class</i>		
	3-Year	5-Year	7-Year
1	33%	20%	14%
2	45	32	25
3	15	19	17
4	7	12	13
5		11	9
6		6	9
7			9
8			4
	100%	100%	100%