

16. The Pan American Bottling Co. is considering the purchase of a new machine that would increase the speed of bottling and save money. The net cost of this machine is \$45,000. The annual cash flows have the following projections:

Net present value and internal rate of return methods

Year	Cash Flow
1.....	\$15,000
2.....	20,000
3.....	25,000
4.....	10,000
5.....	5,000

- a. If the cost of capital is 10 percent, what is the net present value of selecting a new machine?
- b. What is the internal rate of return?
- c. Should the project be accepted? Why?
17. You are asked to evaluate the following two projects for the Norton Corporation. Using the net present value method, combined with the profitability index approach described in footnote 2 on page 375 of this chapter, which project would you select? Use a discount rate of 10 percent.

Use of profitability index

Project X (Videotapes of the Weather Report) (\$10,000 investment)		Project Y (Slow-Motion Replays of Commercials) (\$30,000 investment)	
Year	Cash Flow	Year	Cash Flow
1.....	\$5,000	1.....	\$15,000
2.....	3,000	2.....	8,000
3.....	4,000	3.....	9,000
4.....	3,600	4.....	11,000

18. Turner Video will invest \$48,500 in a project. The firm's cost of capital is 9 percent. The investment will provide the following inflows.

Reinvestment rate assumption in capital budgeting

Year	Inflow
1.....	\$10,000
2.....	12,000
3.....	16,000
4.....	20,000
5.....	24,000

The internal rate of return is 14 percent.

- a. If the reinvestment assumption of the net present value method is used, what will be the total value of the inflows after five years? (Assume the inflows come at the end of each year.)
- b. If the reinvestment assumption of the internal rate of return method is used, what will be the total value of the inflows after five years?
- c. Generally is one investment assumption likely to be better than another?

Deferred cash flows and risk-adjusted discount rate

16. Highland Mining and Minerals Co. is considering the purchase of two gold mines. Only one investment will be made. The Australian gold mine will cost \$1,600,000 and will produce \$300,000 per year in years 5 through 15 and \$500,000 per year in years 16 through 25. The U.S. gold mine will cost \$2,000,000 and will produce \$250,000 per year for the next 25 years. The cost of capital is 10 percent.
- Which investment should be made? (Note: In looking up present value factors for this problem, you need to work with the concept of a deferred annuity for the Australian mine. The returns in years 5 through 15 actually represent 11 years; the returns in years 16 through 25 represent 10 years.)
  - If the Australian mine justifies an extra 5 percent premium over the normal cost of capital because of its riskiness and the relative uncertainty of cash flows, does the investment decision change?

Coefficient of variation and investment decision

17. Mr. Sam Golff desires to invest a portion of his assets in rental property. He has narrowed his choices down to two apartment complexes, Palmer Heights and Crenshaw Village. After conferring with the present owners, Mr. Golff has developed the following estimates of the cash flows for these properties.

Palmer Heights		Crenshaw Village	
Yearly Aftertax Cash Inflow (in thousands)	Probability	Yearly Aftertax Cash Inflow (in thousands)	Probability
\$10	.1	\$15	.2
15	.2	20	.3
30	.4	30	.4
45	.2	40	.1
50	.1		

Risk-adjusted discount rate

- Find the expected cash flow from each apartment complex.
  - What is the coefficient of variation for each apartment complex?
  - Which apartment complex has more risk?
18. Referring to Problem 17, Mr. Golff is likely to hold the complex of his choice for 25 years, and he will use this time period for decision-making purposes. Either apartment complex can be acquired for \$200,000. Mr. Golff uses a risk-adjusted discount rate when considering investments. His scale is related to the coefficient of variation.

Coefficient of Variation	Discount Rate
0–0.20	5%
0.21–0.40	9
0.41–0.60	13
Over 0.90	16

(cost of capital)