

## **B02031: FINANCIAL PLANNING AND POLICY**

**EX1:** Carson Electronics is currently considering whether to acquire a new materials-handling machine for its manufacturing operations. The machine costs \$760,000 and will be depreciated using straight-line depreciation toward a zero salvage value over the next five years. During the life of the machine, no new capital expenditures or investments in working capital will be required. The new materials-handling machine is expected to save Carson Electronics \$250,000 per year before taxes of 30%. Carson's CFO recently analyzed the firm's opportunity cost of capital and estimated it to be 9%.

- a) What are the annual free cash flows for the project?
- b) What are the project's NPV and IRR? Should Carson Electronics accept the project?

### **EX2:**

HMG Corporation is considering the manufacture of a new chemical compound that is used to make high-pressure plastic containers. An investment of \$4 million in plant and equipment is required. The firm estimates that the investment will have a five-year life, and will use adjusted declining balance depreciation method. However, the investment has an anticipated salvage value equal to 10% of its original cost.

The number of pounds (in millions) of the chemical compound that HMG expects to sell over the five-year life of the project are as follows: 1.0, 1.5, 3.0, 3.5, and 2.0. To operate the new plant, HMG estimates that it will incur additional fixed cash operating expenses of \$1 million per year and variable operating expenses equal to 45% of revenues. HMG also estimates that in year  $t$  it will need to invest 10% of the anticipated revenues for year  $t + 1$  in net working capital. The price per pound for the new compound is expected to be \$2.00 in years 1 and 2, then \$2.50 per pound in years 3 through 5. HMG's tax rate is 38%, and it requires a 15% rate of return on its new-product investments.

- a) Make a table to calculate depreciation expense.
- b) What are the project cash flows?
- c) Should Anpha undertake the investment? Explain your answer by NPV, IRR, discounted payback period
- d) What if the estimate of the sale prices were to rise to 8% each year? What are the project cash flows?

**EX3:** Steve's Sub Stop (Steve's) is considering investing in toaster ovens for each of its 120 stores located in the southwestern United States. The high-capacity conveyor toaster ovens, manufactured by Lincoln, will require an initial investment of \$15,000 per store plus \$500 in installation costs, for a total investment of \$1,860,000. The new capital (including the costs for installation) will be depreciated over five years using straight-line depreciation toward a zero salvage value. Steve's will also incur additional maintenance expenses totaling \$120,000 per year to maintain the ovens. At present, firm revenues for the 120 stores total \$9 million, and the

company estimates that adding the toaster feature will increase revenues by 10% per year for the first year, 12% per year for the second year and 15% per year (for the next three year).

a) If Steve's faces a 30% tax rate, what expected project FCFs for each of the next five years will result from the investment in toaster ovens?

b) If Steve's uses a 9% discount rate to analyze its investments in its stores, what is the project's NPV? Should the project be accepted?

**EX4:** United Pigpen (UP) is considering a proposal to manufacture high protein hog feed. The project would make use of an existing warehouse, which is currently rented out to a neighboring firm. The next year's rental charge on the warehouse is \$100,000, and thereafter the rent is expected to grow in line with inflation at 4% a year. In addition to using the warehouse, the proposal envisages an investment in plant and equipment of \$ 1.2 million. This could be depreciated for tax purposes over 10 years. However, UP expects to terminate the project at the end of eight years and to resell the plant and equipment in year 8 for \$ 400,000. Finally, the project requires an initial investment in working capital of \$350,000. Thereafter, working capital is forecasted to be 10% of sales in each of years 1 through 7. Year 1 sales of hog feed are expected to be \$ 4.2 million, and thereafter sales are forecasted to grow by 5% a year, slightly faster than the inflation rate. Manufacturing costs are expected to be 90% of sales, and profits are subject to tax at 25%. The cost of capital is 12%. What is the NPV of UP's project?