

Chapter 10

Practice Problems

1. You are considering building a factory. The initial cost to build the factory is \$3 billion, the factory will last 5 years and have a salvage value of \$1 billion. You plan to use straight line depreciation, and depreciate the factory towards a book value of \$0.4 billion. Sales from the factory are expected to be \$2 billion each year for the next 5 years, and costs (other than depreciation) will be 60% of revenues. Additional capital expenditures of \$100 million will be required at the end of each of the next 5 years. Inventories and accounts payable will immediately rise by \$500 million and \$100 million, respectively, and will remain at these levels until returning back to original levels at the end of the project. Accounts receivable will rise by \$400 million after the 1st year (i.e., at $t=1$), and remain at that level until falling back to original levels at the end of the project's life. If the WACC for the project is 15%, the marginal tax rate is 40%, and the capital gains tax rate is 40%, what is the project's NPV?
2. Suppose it turns out that you are using an existing structure that you built 5 years ago for \$550 million, but that still required \$3 billion to adapt for current purposes. In addition, you can rent the building for the equivalent of \$100 million FCFF each year. How does this affect your decision?
3. You are considering replacing an existing machine. The new machine will cost \$10 million, produce FCFF of \$3 million each year for 5 years, and will have a salvage value of \$4 million. You will depreciate the new machine towards a book value of \$2 million using straight line depreciation. The old machine will produce FCFF of \$1 million each year for the next 5 years. It currently has a book value of \$5 million, a current salvage value of \$6 million, and will have a book value of \$0 but a salvage value of \$1 million if left in place for those 5 years. If the cost of capital is 10%, should you replace the machine?

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1. NPV = -\$1.001
2. NPV = -\$1.336
3. NPV = \$4.80. Replace the machine.