

Finance 340 – Financial Management I
Homework 13 – Capital Budgeting

Dr. Stanley D. Longhofer

11-10 Project A: Using a financial calculator, enter the following data: $CF_0 = -400$; $CF_{1-3} = 55$; $CF_{4,5} = 225$; $I/YR = 10$. Solve for $NPV = \$30.16$.

Project B: Using a financial calculator, enter the following data: $CF_0 = -600$; $CF_{1-2} = 300$; $CF_{3,4} = 50$; $CF_5 = 49$; $I/YR = 10$. Solve for $NPV = \$22.80$.

The decision rule for mutually exclusive projects is to accept the project with the highest positive NPV. In this situation, the firm would accept Project A since $NPV_A = \$30.16$ compared to $NPV_B = \$22.80$.

11-11 Project S: Using a financial calculator, enter the following data: $CF_0 = -15000$; $CF_{1-5} = 4500$; $I/YR = 14$. $NPV_S = \$448.86$.

Project L: Using a financial calculator, enter the following data: $CF_0 = -37500$; $CF_{1-5} = 11100$; $I/YR = 14$. $NPV_L = \$607.20$.

The decision rule for mutually exclusive projects is to accept the project with the highest positive NPV. In this situation, the firm would accept Project L since $NPV_L = \$607.20$ compared to $NPV_S = \$448.86$.

11-14 a. HCC: Using a financial calculator, enter the following data: $CF_0 = -600000$; $CF_{1-5} = -50000$; $I/YR = 7$. Solve for $NPV = -\$805,009.87$.

LCC: Using a financial calculator, enter the following data: $CF_0 = -100000$; $CF_{1-5} = -175000$; $I/YR = 7$. Solve for $NPV = -\$817,534.55$.

Since we are examining costs, the unit chosen would be the one that has the lower PV of costs. Since HCC's PV of costs is lower than LCC's, HCC would be chosen.

b. The IRR cannot be calculated because the cash flows are all one sign. A change of sign would be needed in order to calculate the IRR.

c. HCC: $I/YR = 15$; solve for $NPV = -\$767,607.75$.

LCC: $I/YR = 15$; solve for $NPV = -\$686,627.14$.

When the WACC increases from 7% to 15%, the PV of costs are now lower for LCC than HCC. The reason is that when you discount at a higher rate you are making negative CFs smaller and thus improving the results, unknowingly. Thus, if you were trying to risk adjust for a riskier project that consisted just of negative CFs then you would use a lower cost of capital rather than a higher cost of capital and this would properly adjust for the risk of a project with only negative CFs.

11-20 Since the IRR is the discount rate at which the NPV of a project equals zero, the project's inflows can be evaluated at the IRR and the present value of these inflows must equal the initial investment.

Using a financial calculator enter the following: $CF_0 = 0$; $CF_1 = 7500$; $N_j = 10$; $CF_1 = 10000$; $N_j = 10$; $I/YR = 10.98$. $NPV = \$65,002.11$.

Therefore, the initial investment for this project is \$65,002.11. Using a calculator, the project's NPV at the firm's WACC can now be solved.

$CF_0 = -65002.11$; $CF_1 = 7500$; $N_j = 10$; $CF_1 = 10000$; $N_j = 10$; $I/YR = 9$. $NPV = \$10,239.20$.