IEGR 350: Engineering Economy Spring 2016 M. Salimian

Quiz 3

PROBLEM:

Two projects are considered for evaluation at 8% APR. Both projects can be re-invested with the same conditions. Project 1 is a 2-year investment plan. Pay \$100 now, and \$80 at the end of each season for two years. Withdraw \$150 at the end of each month in the second year. Monthly compounding in effect.

Project 2 is a 3-year investment plan. Pay \$100 now, and \$30 at the end of each month for one and half years. Begin withdrawing \$150 seasonally starting at year 2 to the end of the project. Monthly compounding in effect.

Identify which project is more profitable and how much more.

Since, projects have different life time numbers we need to find the LCM of 2 and 3 which is 6. Thus we need to repeat Alternatinve 1 three times and Alternatinve 2 two times. Before, writing the cashflow for 6 years, we find the equivalent present worth of each project and then set up the 6-year cashflow.

> Alternative 1 cashflow is presented below. Each period is one month. Compounding is monthly. With 8% APR, the monthly interest rate is 8/12=0.67% or 0.0067.







Present worth of Alternative 1 over 6 years: PW = 906.58 [1 + (P/F, 0.67%, 24) + (P/F, 0.67%, 36)] = = 906.58 [1 + (0.8526) + (0.7872)] = 2393.19





Alternative 2 present worth calculations over 3 years: P1 = - 100 - 30 (P/A, 0.67%, 18) = -100 -30 (16.9089) = - \$607.27 P2 = 150 [(P/F, 0.67%, 15) + (P/F, 0.67%, 18) + ... + (P/F, 0.67%, 33) + (P/F, 0.67%, 36)] = \$1014.03 PW = 1014.03 - 607.27 = 406.76



Alternative 1 is better by: 2393.03 - 725.09 = \$1668.10