PA 5431/HRIR 5655: Public Policies on Work and Pay

Fall 2020

**Homework 1 Hint**

Jane Doe lives for two periods. If she does not become educated she will earn $2,000 in the end of period 1 and $2,000 in the end of period 2. If she does become educated, she will earn $700 in the end of period 1 and will have to borrow $10,000 to pay for tuition and books in the beginning of period 1. But, she will earn $14,500 in the end of period 2.[[1]](#footnote-1) If the risk adjusted rate of interest is 5% per period, should Jane borrow to make the investment in his education? What is the positive internal rate of return on this investment?

We will calculate the net present value between the two cases and compare. So, we will use the following equation:

such that *r* is the risk adjusted rate of interest in percentage and *t* is the time period.

1.

Case 1: No education

Case 2: Education

The NPV for the second case is positive and larger than that of case one. So, Jane should borrow to make the investment.

2. Recall that the internal rate of return (IRR) is the interest rate when the net present value is 0. To determine the internal rate of return on this investment, define (1 + *r*) = *x* and we will set up the following:

Now, we will use the quadratic formula. Recall that the quadratic formula is the following:

where a = -100, b= 7, and c= 145.

So the positive internal rate of return of this investment is 1.24.

1. No one lives more than two periods, and there is no chance of dying before the end of period 2. [↑](#footnote-ref-1)