PDV Example

Suppose you are deciding if you want to go to college or not. For simplicity, assume you know what income you will earn each year and that your income will not grow over time.

- College:
  - Costs $50k up front
  - You do not earn any income for the 4 years you are in school
  - You will earn $50k per year for 30 years after 4 years of earning 0
- No college:
  - You earn $30k per year for 34 years
- Both:
  - Assume you discount the future at 7% per year (approximately the stock market return)

We can use the PDV formula from the textbook to evaluate the PDV of the no college option.

($PDV_{NC,2023}$ = PDV no college, evaluated in 2023)

$$PDV_{NC,2023} = x\frac{1-\left[\frac{1}{1+r}\right]^{t}}{1-\frac{1}{1+r}}$$

$$PDV_{NC,2023} = 30{,}000\ \frac{1-\left[\frac{1}{1.07}\right]^{34}}{1-\frac{1}{1.07}}$$

$$PDV_{NC,2023} = \mathbf{412{,}613.70}$$

The college option is a bit more complicated. We'll use the same PDV equation to calculate the value of college earnings, but those earnings start 4 years from today (2027).

($PDV_{C,2027}$ = PDV of college, with earning starting in 2027)

$$PDV_{C,2027} = 50{,}000\ \frac{1-\left[\frac{1}{1.07}\right]^{30}}{1-\frac{1}{1.07}}$$

$$PDV_{C,2027} = 687{,}689.50$$

Next, we have to compare the earnings to 2023 values:

$$PDV_{C,2023} = \frac{PDV_{c,2027}}{1.07^4} = \frac{687{,}689.50}{1.07^4} = 506{,}473.70$$

Finally, we should subtract the cost of college to see which provides a higher PDV.

College value = $PDV_{c,2023}$ – cost of college = $506,473.70 - $50,000 = **$456,473.70**

In this example, college provides a higher value. However, that can change depending on career length, earnings in each sector, tuition costs, etc.