

Answer on Question #38989, Economics, Economics of Enterprise

Near new car is expected to earn an economic profit of \$20,000 each year for the next years. The discount rate is 10 percent. Assume profits are received at the end of the year.

1. what is the present value of the firm?
2. how is that present value affected if a 15 percent discount rate is used?

Solution

1. The present value of the firm is

$$PV = \sum_{k=1}^n \frac{CF_k}{(1+r)^k} = 20,000/(1+0.1) + 20,000/1.1^2 + \dots + 20,000/1.1^n$$

(we can't find the exact value, as we don't know the number of years n).

If we consider the infinite sum instead of the finite sum, we will come to the formula

$$PV = \sum_{k=1}^{\infty} \frac{CF_k}{(1+r)^k} = 20,000 * \frac{\frac{1}{1.1}}{1 - \frac{1}{1.1}} = 20,000 * 10 = 200,000$$

2. The present value of the firm is

$$PV = \sum \frac{CF_n}{(1+r)^n} = 20,000/(1+0.15) + 20,000/1.15^2 + \dots + 20,000/1.15^n,$$

so the present value will be lower, if a 15 percent discount rate is used