

Corporate Finance, Module 11: "Maximizing Net Present Value"

Economic Income: Two Perspectives

(The attached PDF file has better formatting.)

Question: We have two definitions of economic income:

- The cash flow during the year minus the economic depreciation, which is the decline in the present value of the project during the year.
- The opportunity cost of capital times the market value of the capital held at the beginning of the year. (We assume for simplicity that this is the capital held during the year.) This market value is the present value of the project at the beginning of the year.

Are these two definitions the same?

Answer: To see the equivalence, assume the cash flows occur at the end of the year. Let CF_N be the cash flow at the end of year N , PV_N be the present value of the project at the end of year N , PV_{N-1} be the present value of the project at the end of year $N-1$, and r be the opportunity cost of capital.

- $PV_{N-1} = (PV_N + CF_N) / (1+r) \Rightarrow PV_{N-1} \times (1+r) = PV_N + CF_N$
- economic depreciation = $PV_{N-1} - PV_N = CF_N - r \times PV_{N-1}$
- economic income = cash flow – economic depreciation = $r \times PV_{N-1}$