

## Chapter 7: Yield Rates

### Section 7.2: Discounted Cash Flow Analysis

The cash flow of an investment can be analyzed in terms of withdrawals (returns) of the investment.  $R_t$  represents the **net return** (payment) to the investor at time  $t$ . (From the lender's perspective.)

For  $R_t > 0$ , there is a cash inflow from the investment to the investor.

For  $R_t < 0$ , there is a cash outflow from the investor to the investment.

Time	0	3	7
contributions	5000	1000	0
returns	0	3000	4000
$R_t$			

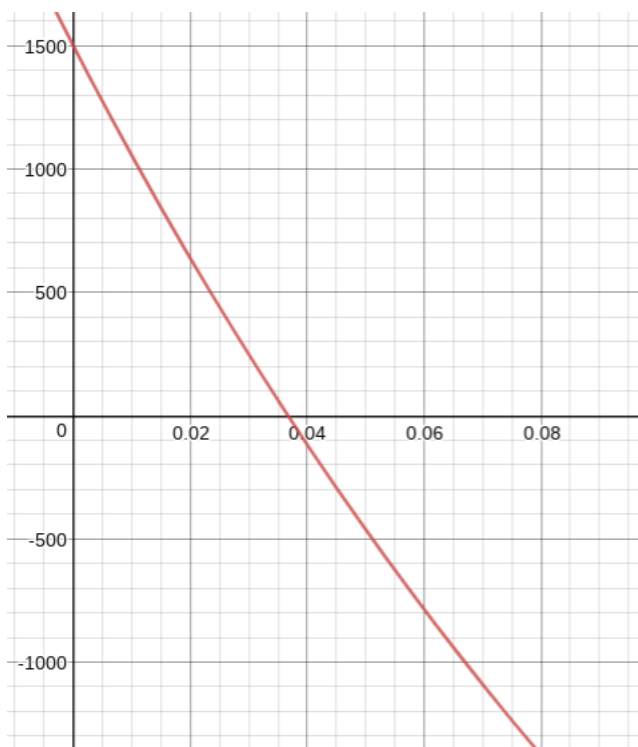
The profitability of investment projects can be compared by finding the net present value (NPV) of the project.

The **internal rate of return**, IRR or yield rate, of an investment is that rate of interest at which the present value of cash inflows equals the present value of cash outflows.

Example: A certain 6-year project requires an initial investment of \$10,000 and a maintenance fee of \$1000 at the end of each year for the last three years. The project is expected to provide a return of \$5000 at the end of the first year, \$500 at the end of the 4th year, and \$9000 at the end of the 6th year.

(A) Find the NPV of this investment assuming a cost of capital (effective interest rate) of 7%.

(B) Find the internal rate of return (IRR) for this investment.



In general, the higher the yield rate, the better for the investor. The lower the yield rate, the better for the borrower.

Yield rates can be negative, indicating that the investor lost money on the investment.

It is valid to use yield rates to compare alternative investments only if the period of investment is the same for all investments.

Example: A six-year \$1,000 par value floating-rate bond with annual coupons had annual coupon rates of 5%, 5.4%, 5.6%, 6.2%, 5.8%, and 6.6% successively.

A) Find the annual yield rate on the bond if it was bought at its face value.

B) Find the price of the bond at an effective rate of 7%.