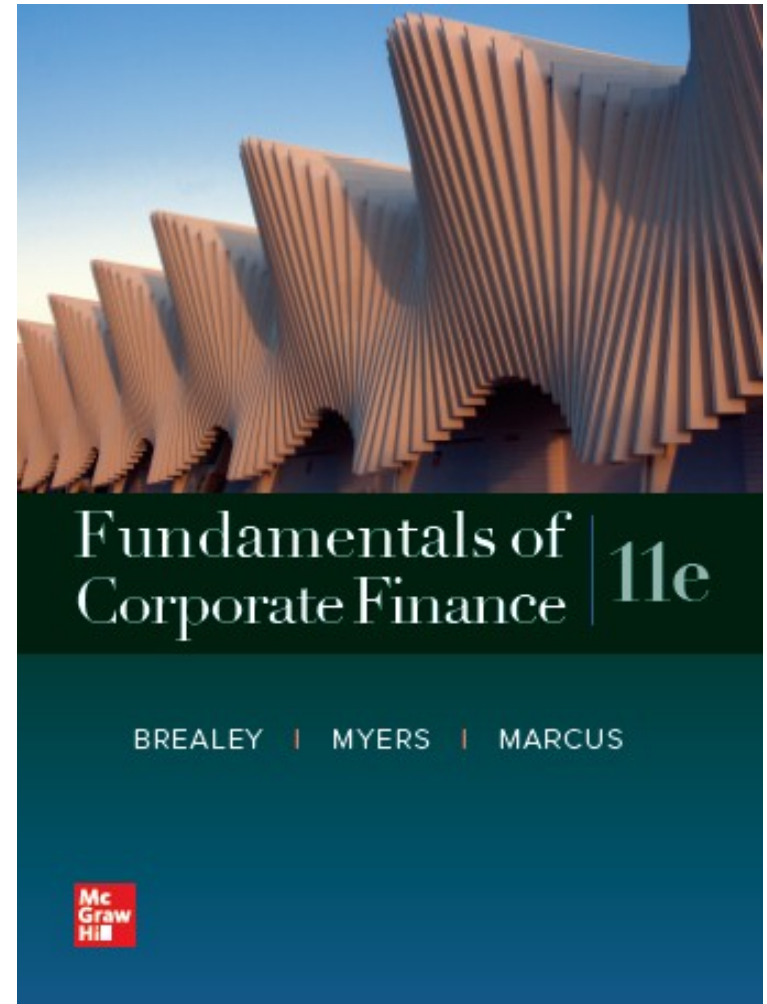


Fundamentals of Corporate Finance, 11th Edition

CHAPTER 5: The Time Value Of Money



Present Values

Present Value

Value today of a future cash flow

Discount Factor

Present value of a \$1 future payment

Discount Rate

Interest rate used to compute present values of future cash flows

Present Values

$$PV = \frac{\text{Future value after } t \text{ periods}}{(1 + r)^t}$$

Present value = PV

Present Values

- Discounted Cash Flow (DCF)
 - Method of calculating present value by discounting future cash flows

Future cash flow



Present value

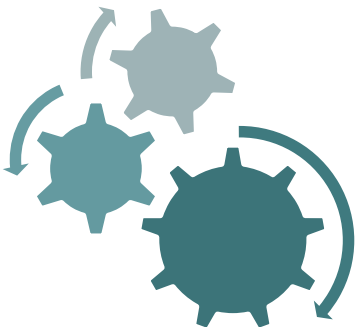
Go to Excel

Present Values

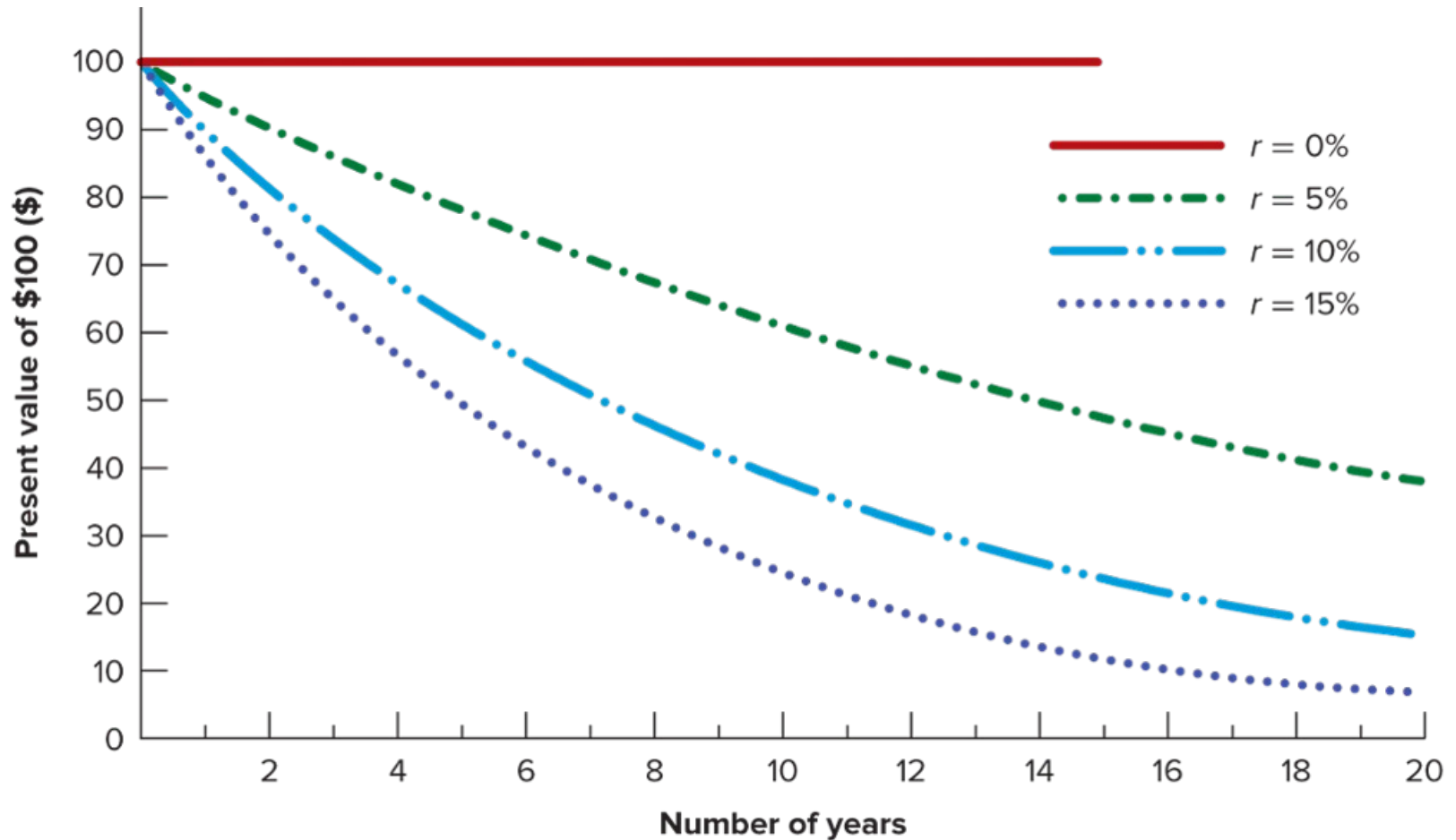
Example

*You own a contract that will pay you \$3,000 in two years. If you need cash today, you can sell the contract to another investor. If that investor needs 8% to justify the risks of waiting for payment, what should be the selling price of the contract? **Excel***

\$2,572



Present Values



Time Value of Money (Applications)

- The PV formula has many applications. Given any variables in the equation, you can solve for the remaining variable.

$$PV = \text{future payment} \times \frac{1}{(1 + r)^t}$$

Time Value of Money (Applications)

Example

Italy borrowed money for 2 years, but it did not announce an interest rate. It simply offered to sell each IOU for €992.34. What is the interest rate?

Go to Excel

Future Value of Multiple Cash Flows

Example

You are able to put \$1,200 in the bank now, and another \$1,400 in 1 year. If you earn an 8% rate of interest, how much will you be able to spend on a computer in 2 years?

Present Value of Multiple Cash Flows (1 of 3)

- PVs can be added together to evaluate multiple cash flows

...

Present Value of Multiple Cash Flows (2 of 3)

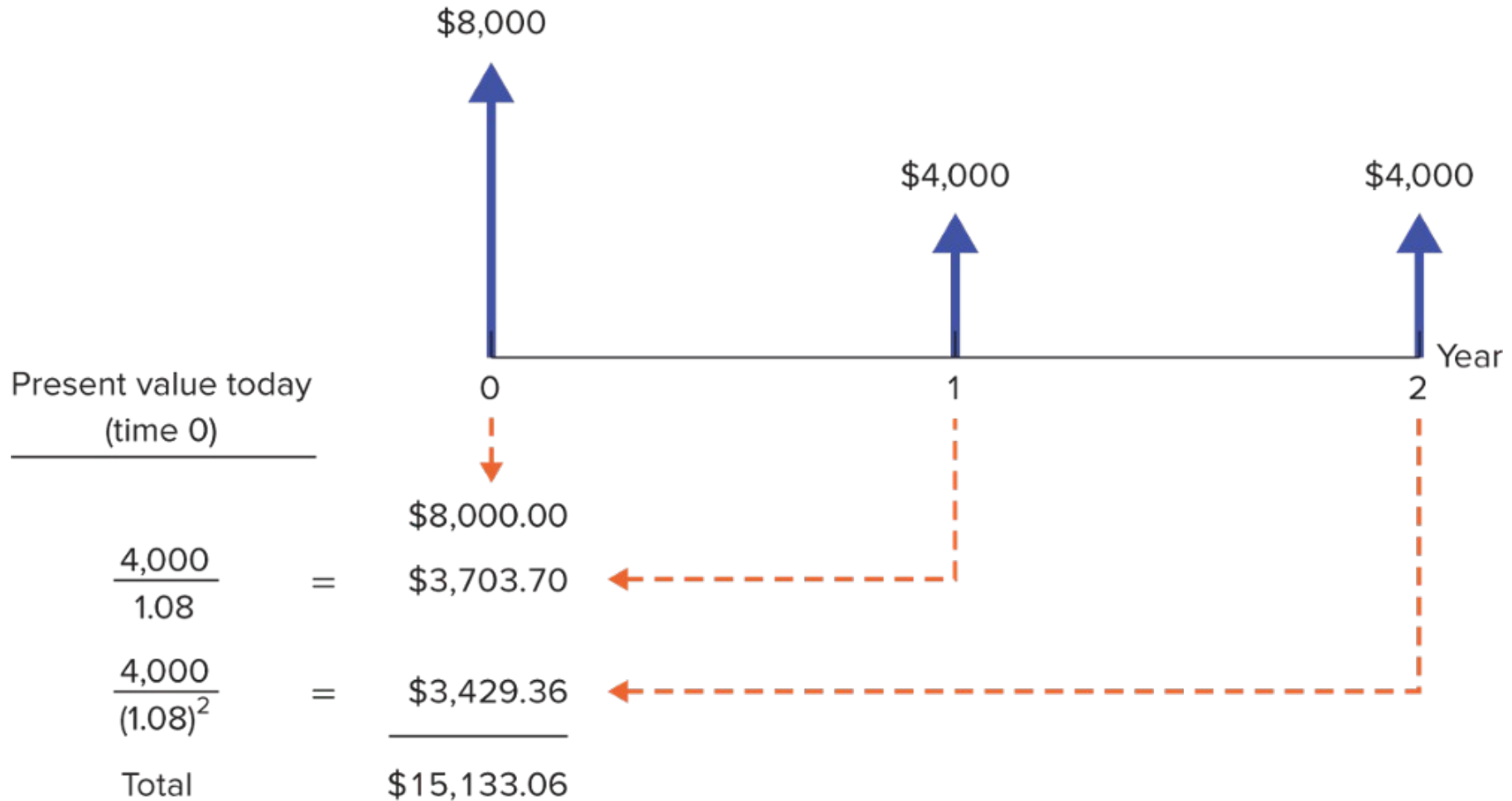
Example

Your auto dealer gives you the choice to pay \$15,500 cash now, or make three payments: \$8,000 now and \$4,000 at the end of the following two years. If your cost of money is 8%, which do you prefer?

payment 8,000.00

Go to Excel

Present Value of Multiple Cash Flows (3 of 3)



Perpetuities and Annuities

- Annuity
 - Level stream of cash flows at regular intervals with a finite maturity
 - Can use similar approach as you use for Cash Flow Stream
 - Can also use PMT (payment) function in Excel or calculator

Calculations: Part 1 – Financial Calculators

Example

You need a 6.5% annual return to justify the risks of the following financial contract: you will receive annual payments of \$50 for five years and one lump sum payment of \$1,000 in five years. What price should you pay for the contract?

To get the final answer, use Excel to draw a timeline and determine the variables that you know. Because you know all variables EXCEPT the Present Value, use the PV function. (The minus sign in the solution indicates you will have a cash outflow to buy the contract; you are the investor.)

End of first week F370

**Homework #1 due no later than Friday
at 5pm (end of business week)**