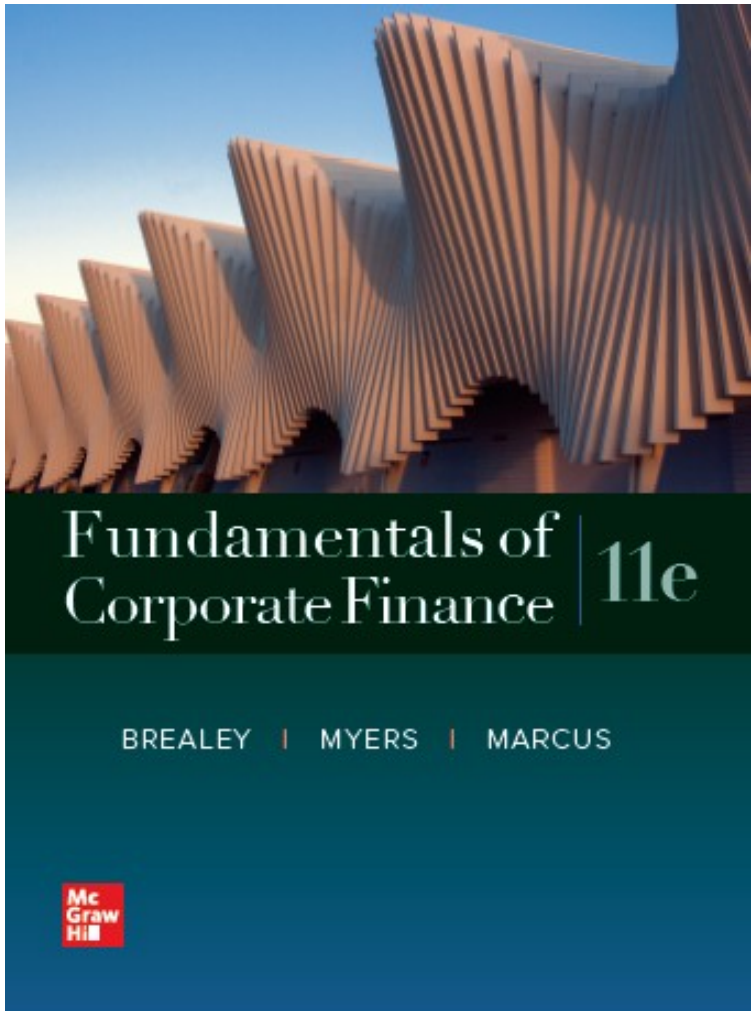
Fundamentals of Corporate Finance, 11th Edition

CHAPTER 5: The Time Value Of Money



Topics Covered

5.1 Future Values and Compound Interest

5.2 Present Values

5.3 Multiple Cash Flows

5.4 Reducing the Chore of the Calculations: Part 1

5.5 Level Cash Flows: Perpetuities and Annuities

5.6 Reducing the Chore of the Calculations: Part 2

5.7 Effective Annual Interest Rates

5.8 Inflation & The Time Value of Money

Future Values and Compound Interest (1 of 8)

- Future Value
  - Amount to which an investment will grow after earning interest
- Compound Interest
  - Interest earned on interest
- Simple Interest
  - Interest earned only on the original investment

Future Values and Compound Interest (2 of 8)

Example — Simple Interest

Interest earned at a rate of 6% for five years on a principal balance of $100

$$\text{Interest earned per year} = 100 \times .06 = \$6$$

Future Values and Compound Interest (3 of 8)

Example — Simple Interest

Interest earned at a rate of 6% for five years on a principal balance of $100

	Today	Future Years				
	1	**2**	**3**	**4**	**5**	**6**
Interest Earned		6	6	6	6	6
Value	100	106	112	118	124	130

Value at the end of Year 5 = $130

Future Values and Compound Interest (4 of 8)

Example — Compound Interest

Interest earned at a rate of 6% for five years on the previous year's balance

$$\text{Interest earned per year} = \text{prior year balance} \times .06$$

Future Values and Compound Interest (5 of 8)

Example — Compound Interest

Interest earned at a rate of 6% for five years on the previous year's balance

	Today	Future Years				
		1	**2**	**3**	**4**	**5**
Interest Earned		6	6.36	6.74	7.15	7.57
Value	100	106	112.36	119.10	126.25	133.82

Value at the end of Year 5 = $133.82

Future Values and Compound Interest (6 of 8)

- Future Value = FV

$$FV = \$100 \times \left(1 + r\right)t$$

Future Values and Compound Interest (7 of 8)

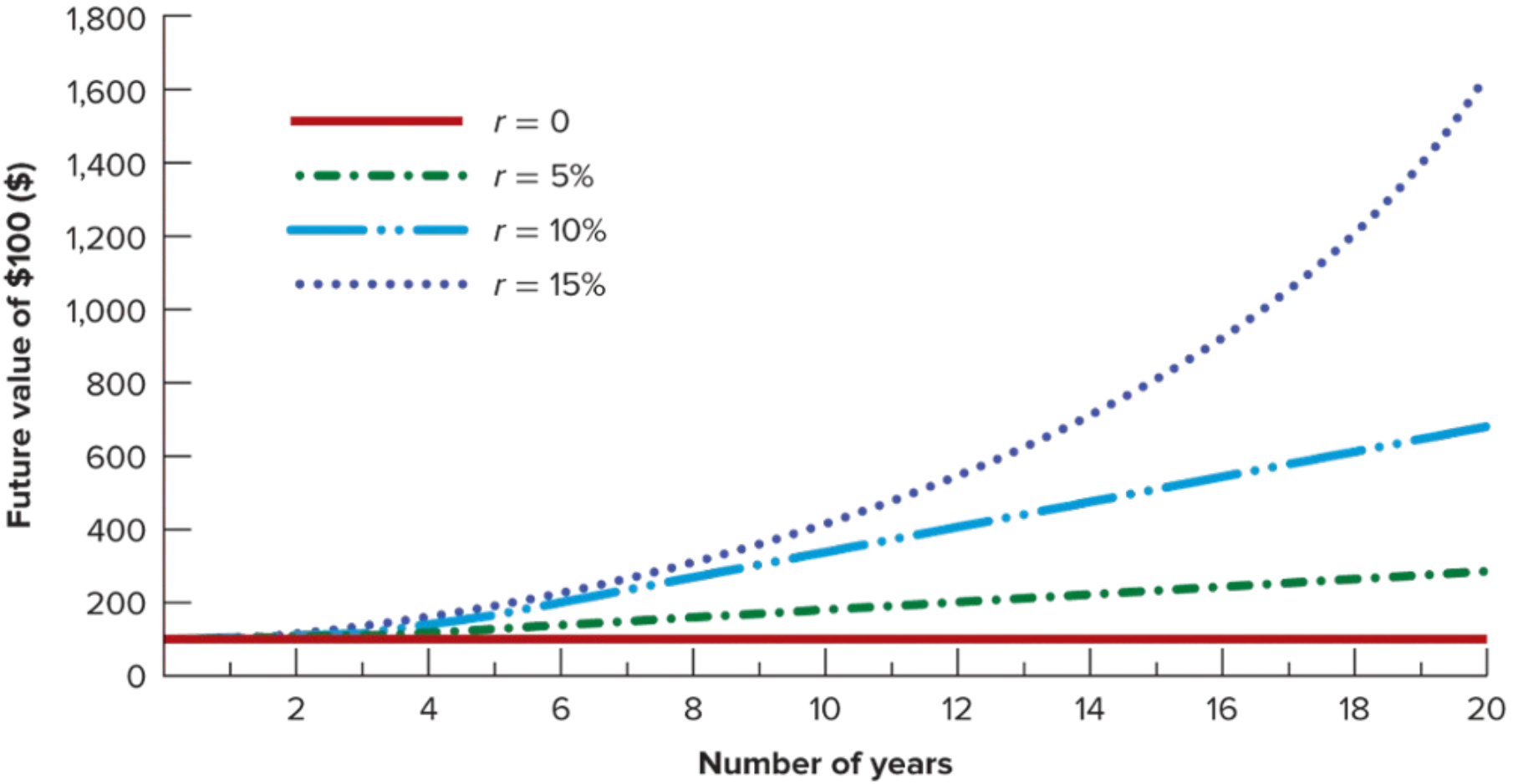
Example — FV

What is the future value of $100 if interest is compounded annually at a rate of 6% for five years?

$$FV = \$100 \times (1 + r)t$$

$$= \$133.82$$

Future Values and Compound Interest (8 of 8)



Future Values and Compound Interest (7 of 8)

Example — Future Value

Go to Excel

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

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

- Same 4variables: PV, FV, time, interest rate