

## PV Examples:

---

- ◆ You are valuing a project that is expected to earn a one-time cash flow of \$500m in five years. You estimate a discount rate of 11%. What is the present value of this cash flow?

$$PV = \frac{500}{(1+.11)^5} = \$296.73m$$

- ◆ What is the present value if the project instead pays cash flows of \$100m per year for each of the next five years?

$$PV = 100 \left( \frac{1 - (1+.11)^{-5}}{.11} \right) = \$369.59m$$

- ◆ What is the present value if the project instead pays cash flows that grow at a rate 10% per year for five years, starting with a cash flow of \$100m next year?

$$PV = 100 \left( \frac{1 - \left(\frac{1.10}{1.11}\right)^5}{(.11 - .10)} \right) = \$442.41m$$

$$OR \quad PV = \frac{100}{1.11} + \frac{100(1.10)}{1.11^2} + \frac{100(1.10)^2}{1.11^3} + \frac{100(1.10)^3}{1.11^4} + \frac{100(1.10)^4}{1.11^5} = \$442.41m$$

## PV Examples:

---

- ◆ You are valuing a firm that is expected to earn cash flows of \$100m per year in perpetuity. You estimate a discount rate of 11%. What is the present value of these cash flows?

$$PV = \frac{100}{.11} = \$909.09m$$

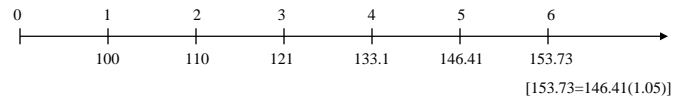
- ◆ What is the present value if the firm instead earns cash flows that start at \$100m next year and grow at 5% in perpetuity thereafter?

$$PV = \frac{100}{(.11 - .05)} = \$1666.67m$$

## PV Examples:

---

- ◆ You are valuing a firm that is expected to earn cash flows that grow at 10% for the first five years and at 5% in perpetuity thereafter. The forecasted cash flow next period is \$100m (which includes the 10% growth) and you estimate a discount rate of 11%. What is the present value of these cash flows?



$$TerminalValue_5 = \frac{153.73}{(.11 - .05)} = \$2562.18m$$

$$PV \text{ of Terminal Value} = \frac{2562.18}{(1.11)^5} = \$1520.53m$$

$$PV \text{ of High Growth Cash Flows} = 100 \left( \frac{1 - \left(\frac{1.10}{1.11}\right)^5}{(.11 - .10)} \right) = \$442.41m$$

$$Total PV = 442.41 + 1520.53 = \$1962.94m$$