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?

\[ PV = \frac{500}{(1+0.11)^5} = 296.73m \]

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

\[ PV = 100 \left( \frac{1 - (1+0.11)^{-5}}{0.11} \right) = 369.59m \]

- What is the present value if the project instead pays cash flows that start at $100m next year and grow at 10% for the remaining four years?

\[ PV = 100 \left( \frac{1 - (1+0.10)^{-4}}{0.11-0.10} \right) = 442.41m \]

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?

\[ PV = \frac{100}{0.11} = 909.09m \]

- 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?

\[ PV = \frac{100}{0.11-0.05} = 1666.67m \]
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 cash flow next period is $100m and you estimate a discount rate of 11%. What is the present value of these cash flows?

\[
\begin{align*}
0 & \quad 1 \quad 2 \quad 3 \quad 4 \quad 5 \quad 6 \\
100 & \quad 110 \quad 121 \quad 133.1 \quad 146.41 \quad 153.73 \\
\end{align*}
\]

\[
[153.73=146.41(1.05)]
\]

\[
\begin{align*}
Terminal\ Value, \ T & = \frac{153.73}{(1.11-.05)} = $2562.18m \\
PV \ of \ Terminal\ Value & = \frac{2562.18}{(1.11)^5} = $1520.53m \\
PV \ of \ High\ Growth\ Cash\ Flows & = 100 \left( \frac{1-(1+.05)^5}{.11-.10} \right) = $442.41m \\
Total \ PV & = 442.41 + 1520.53 = $1962.94m
\end{align*}
\]