Aug 31st

Stock Investment

\[ \text{Stock Appreciation} \quad \leftarrow \text{Dividends} \]

-- RISKY --

The PROJECTED dividend SCHEDULE is not risky?

Discrete dividends

\[
\begin{align*}
D_1 & \quad D_k & \quad D_n \\
0 & \quad t_1 & \quad \ldots & \quad t_k & \quad \ldots & \quad t_n & \quad T
\end{align*}
\]

TODAY \quad Dividend payment times

\[ \text{dividend amounts: deterministic per share} \]

\[ \text{a finite, deterministic time horizon} \]

Continuous dividends

Example #1: A savings account governed by a continuously compounded, risk-free interest rate \( r \)

\[
\begin{align*}
0 & \quad t & \quad T \\
B(t) & \quad \text{balance in the account at time } t \\
B(0) & = b_0
\end{align*}
\]
\[ \frac{dB(t)}{dt} = r B(t) \]

\[ dB(t) = B(t+dt) - B(t) = r \cdot B(t) \, dt \]

\[ B(t) = b_0 e^{rt} \]

Example #2. FOREIGN CURRENCY

- Domestic Currency: DC
- Foreign Currency: FC

\( x(t) \) ... the EXCHANGE RATE from FC to DC

\( \rightarrow \) A random function of time: STOCHASTIC PROCESS.