Exam #2 Formula Sheet

No-arbitrage price of a fixed-income security

\[ \mathcal{P} = \sum_{i=1}^{N} \frac{F_i}{(1 + R_s(T_i))} = \sum_{i=1}^{N} F_i D(T_i) = \sum_{i=1}^{N} \frac{F_i}{(1 + R_I)^{T_i}} \]

Sum of a geometric series

\[ \sum_{i=1}^{N} \lambda^i = \frac{\lambda (1 - \lambda^N)}{1 - \lambda}, \quad \lambda \neq 1 \]

Swap rate

\[ q_{\text{swap}}[m] = \frac{m(1 - D(n))}{\sum_{i=1}^{mn} D(\frac{i}{m})} \]

Forward exchange rate (forward price in units of A for a unit of B delivered at T)

\[ F_A^B = E_A^B \frac{D_B(T)}{D_A(T)} \]

Forward price for delivery of a fixed-income security at time \( T_j \)

\[ \mathcal{F} = \sum_{i=j+1}^{N} \frac{F_i D(T_i)}{D(T_j)} \]

Forward price for delivery of a share of stock at time \( T \) (no dividends)

\[ \mathcal{F} = \frac{S_0}{D(T)} = S_0 (1 + R_s(T))^T \]

Forward price for delivery of a share of stock at time \( T \) (known dividends)

\[ \mathcal{F} = \left( S_0 - \sum_{i=1}^{N} D(\tau_i) d_{\tau_i} \right) (1 + R_s(T))^T \]

Forward price for delivery of a share of stock at time \( T \) (known dividend yield)

\[ \mathcal{F} = (1 - \alpha)^N S_0 (1 + R_s(T))^T \]

Put-call Parity

\[ P_0 - C_0 = D(T)(K - \mathcal{F}) \]

Formula used to derive put-call parity

\[ (x - y)^+ - (y - x)^+ = x - y \]