

EQUATION 1

$$\begin{aligned} \max_Q \quad & Q \{E[F(1,T)] - F(0,T)\} - b Q^2 \sigma_f^2 \\ \frac{\partial EU}{\partial Q} = & \{E[F(1,T)] - F(0,T)\} - 2b Q \sigma_f^2 = 0 \\ \rightarrow \quad & Q^* = \frac{E[F(1,T)] - F(0,T)}{2b \sigma_f^2} \end{aligned}$$

EQUATION 2

$$\frac{\partial EU}{\partial Q_H} = 2Q_H \sigma_f^2 - 2Q_L \sigma_H = 0 \quad \rightarrow \quad \left(\frac{Q_H}{Q_L}\right)^* = \frac{\sigma_H}{\sigma_f^2} = \frac{\sigma_L}{\sigma_f} \rho_H$$

EQUATION 3

$$\begin{aligned} \max_{Q_H} \quad & EU[x] = E[x] - b \text{var}[x] \\ \frac{\partial EU}{\partial Q_H} = & (F(0,T) - E[F(1,T)]) - b (2Q_H \sigma_f^2 - 2\overline{Q}_S \sigma_H) = 0 \\ \rightarrow \quad & \frac{Q_H^*}{\overline{Q}_S} = \frac{\sigma_H}{\sigma_f^2} + \frac{F(0,T) - E[F(1,T)]}{2b \overline{Q}_S \sigma_f^2} \end{aligned}$$