

For $a, b, L, \ell, H > 0$, define $\mathcal{F} : \mathbb{R} \rightarrow \mathbb{R}^+$ such that

$$\mathcal{F}(x) = L + \max \left\{ 0, -\ell + \frac{H + \ell}{1 + \left(\frac{H}{\ell}\right) e^{-b(x-a)}} \right\} \quad (4.2.1)$$

For $c_1, c_2 > 0$

$$y \mid x, \Omega, c_1, c_2 \sim \text{Gamma}(\mu \cdot \beta, \beta) \quad (4.2.2)$$

$$\mu = \mathcal{F}(x \mid \Omega) = \mathbb{E}(y \mid x, \Omega, c_1, c_2) \quad (4.2.3)$$

$$\beta = \frac{1}{c_1} + \frac{1}{c_2 \cdot \mu} \quad (4.2.2)$$

$$\Omega = \{a, b, L, \ell, H\} \quad (4.2.4)$$