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

$$x \mapsto L + \max\left(0, -\ell + \frac{H + \ell}{\left[1 + \left(-1 + \left(\frac{H+\ell}{\ell}\right)^v\right) e^{-b(x-a)}\right]^{1/v}}\right) \tag{4.2.1}$$

For $g_1, g_2 > 0$

$$y \mid x, \Omega \sim \mathcal{G}\left(\mu\beta, \beta\right) \quad \Omega = \{a, b, v, L, \ell, H, g_1, g_2\} \tag{4.2.2}$$

$$\mu = \mathbb{E}\left(y \mid x, \Omega\right) = \mathcal{F}\left(x \mid \Omega\right) \tag{4.2.3}$$

$$\beta = g_1 + \frac{g_2}{\mu} \tag{4.2.4}$$