

Define [

$$b_2 t_i = \mathbb{E}_{\{i\} \rightarrow \{i\}} \left[ \alpha_i a_i - \beta_i t_i / \gamma, \xi_i X_i + \eta_i Y_i, e^{\epsilon \beta_i a_i / \gamma} \right]_{\$k},$$

$$t_2 b_i = \mathbb{E}_{\{i\} \rightarrow \{i\}} \left[ \alpha_i a_i - \tau_i \gamma b_i, \xi_i X_i + \eta_i Y_i, e^{\epsilon \tau_i a_i} \right]_{\$k}$$