

$$\begin{aligned}
 F_2 [\{1, i_{\theta_}, j_{\theta_}\}, \{1, i_{1_}, j_{1_}\}] &= \frac{(\tau_1 - 1) \tau_2 (\tau_3 - 1) g_{1,j_1,i_{\theta}} g_{2,i_1,i_{\theta}} g_{3,j_{\theta},i_1}}{\tau_2 - 1} - \frac{(\tau_1 - 1) (\tau_3 - 1) g_{1,j_1,i_{\theta}} g_{2,i_1,j_{\theta}} g_{3,j_{\theta},i_1}}{\tau_2 - 1} \\
 &\quad - \frac{(\tau_1 - 1) \tau_2 (\tau_3 - 1) g_{1,j_1,i_{\theta}} g_{2,j_1,i_{\theta}} g_{3,j_{\theta},i_1}}{\tau_2 - 1} + \frac{(\tau_1 - 1) (\tau_3 - 1) g_{1,j_1,i_{\theta}} g_{2,j_1,j_{\theta}} g_{3,j_{\theta},i_1}}{\tau_2 - 1};
 \end{aligned}$$