

$$R_{\theta, i, j}^+ := \mathbb{E} \left[b_i c_j + b_i^{-1} \left(e^{b_i} - 1 \right) u_i w_j \right];$$

$$R_{\theta, i, j}^- := \mathbb{E} \left[-b_i c_j + b_i^{-1} \left(e^{-b_i} - 1 \right) u_i w_j \right];$$