where s_{ij} is a symmetric function of i and j chosen so that $0 \leqslant \alpha_{ij} \leqslant 1$ for all i and j. With this form for p_{ij} it is readily verified that $\pi_i p_{ij} = \pi_j p_{ji}$, as required. In order to simulate this process we carry out the following steps for each time t:

(i) assume that $X(t) = i$ and select a state j using the distribution given by the ith row of $\mathbf{Q}$;

(ii) take $X(t+1) = j$ with probability α_{ij} and $X(t+1) = i$ with probability $1 - \alpha_{ij}$.

For the choices of s_{ij} we will consider, only the quantity $(\pi_j q_{ji})/(\pi_i q_{ij})$ enters into the simulation and we will henceforth refer to it as the test ratio.