

**Table S1: Relative expected lengths of external branches.** The relative expected lengths of external branches  $e_{\underline{n}}^{(a)} / (e_{\underline{n}}^{(a)} + e_{\underline{n}}^{(d)})$  from Prop. S1.3 with sample configuration  $\underline{n} = (10, 0, 10, 0)$ .

$K = 0.01$ , values of $d$						
$c$	0.001	0.01	0.1	1	10	100
0.001	0.0161	0.0449	0.0426	0.0195	0.0869	0.338
0.01	0.00973	0.0161	0.0457	0.0521	0.0928	0.338
0.1	0.00914	0.00987	0.0166	0.0519	0.116	0.335
1	0.00955	0.00963	0.0104	0.0183	0.0756	0.289
10	0.00985	0.00986	0.00995	0.0108	0.0194	0.095
100	0.0099	0.0099	0.00991	0.00999	0.0109	0.0196
$K = 1$ , values of $d$						
$c$	0.001	0.01	0.1	1	10	100
0.001	0.0313	0.02	0.0876	0.338	0.725	0.954
0.01	0.0516	0.0499	0.0984	0.339	0.725	0.954
0.1	0.116	0.12	0.155	0.349	0.723	0.953
1	0.287	0.289	0.301	0.396	0.704	0.946
10	0.449	0.45	0.452	0.471	0.605	0.884
100	0.494	0.494	0.494	0.496	0.517	0.659
$c = 1$ , values of $d$						
$K$	0.001	0.01	0.1	1	10	100
0.001	0.000996	0.001	0.00109	0.00198	0.0104	0.071
0.01	0.00955	0.00963	0.0104	0.0183	0.0756	0.289
0.1	0.0705	0.071	0.0756	0.115	0.301	0.689
1	0.287	0.289	0.301	0.396	0.704	0.946
10	0.687	0.689	0.704	0.797	0.95	0.994
100	0.945	0.946	0.95	0.971	0.995	0.999
$c = 0.01$ , values of $d$						
$K$	0.001	0.01	0.1	1	10	100
0.001	0.00109	0.00195	0.00973	0.0442	0.0522	0.0928
0.01	0.00973	0.0161	0.0457	0.0521	0.0928	0.338
0.1	0.0457	0.0539	0.0516	0.0934	0.338	0.725
1	0.0516	0.0499	0.0984	0.339	0.725	0.954
10	0.0984	0.143	0.352	0.726	0.954	0.995
100	0.352	0.449	0.74	0.954	0.995	0.999