A

Beta Distributions in the Universe of Effect Sizes

The beta distribution was chosen in the Monte Carlo study as the distribution of effect sizes ρ in the universe in $\mathfrak{S}_3$. The following Tables A.1 and A.2 list all values for the parameters p and q of the standard beta distribution as used in the simulation study. For further details on the beta distribution the interested reader is referred to Johnson, Kotz, and Balakrishnan (1995) and Section 4.5. In addition to the parameters of the beta distribution, the expected values for the Fisher-z transformed universe parameters along with the variances are given. Note that the expected values μ_ζ are in z-space and have to be transformed by the inverse Fisher transformation to result in values in r-space. These values ($\mu_{\rho z}$) are given in the last column of Tables A.1 and A.2.

Moreover, a series of figures is presented that depict the resulting beta distributions for the given parameter values. Figures A.1 to A.5 illustrate how the distributions of the universe parameters in the Monte Carlo study look like. It can be seen in Figures A.2 to A.5 that large variances in combination with large values of μ_ρ tend to produce J-shaped distributions. These distribution forms can also easily be identified by consulting Tables A.1 and A.2. All beta distributions for which one of the parameters p or q is less than 1 show this type of distribution form (Johnson, Kotz, & Balakrishnan, 1995). Because the present study focuses on one half of the interval $[-1, 1]$ as far as the μ_ρ are concerned, values less than one only occur for q.

Table A.1 Parameter Values of the Beta-Distribution for μ_ρ From 0 to .40 and Different Variances σ_ρ^2 As Well As Corresponding Expected Values μ_ζ (and $\mu_{\rho z}$) and Variances σ_ζ^2

μ_ρ	σ_ρ^2	p	q	μ_ζ	σ_ζ^2	$\mu_{\rho z}$
.00	.0025	199.5	199.5	.00	.00251256	.00
.00	.01	49.5	49.5	.00	.01020370	.00
.00	.0225	21.7222	21.7222	.00	.02355590	.00
.00	.04	12.0	12.0	.00	.04345090	.00
.00	.0625	7.5	7.5	.00	.07130790	.00
.10	.0025	217.25	177.75	.100592	.00256383	.100254
.10	.01	53.9	44.1	.101373	.01041520	.101027
.10	.0225	23.65	19.35	.102721	.02405700	.102361
.10	.04	13.0625	10.6875	.104709	.04441030	.104328
.10	.0625	8.162	6.678	.107450	.07296110	.107038
.20	.0025	229.8	153.2	.203277	.00272746	.200523
.20	.01	57.0	38.0	.204942	.01109090	.202120
.20	.0225	25.0	16.6667	.207815	.02566160	.204874
.20	.04	13.8	9.2	.212064	.04749230	.208941
.20	.0625	8.616	5.774	.215095	.07802670	.211838
.30	.0025	235.95	127.05	.310430	.00303729	.300828
.30	.01	58.5	31.5	.313212	.01237410	.303356
.30	.0225	25.6389	13.8056	.318031	.02872370	.307725
.30	.04	14.1375	7.6125	.325186	.05341550	.314189
.30	.0625	8.814	4.746	.335138	.08864550	.323130
.40	.0025	234.5	100.5	.425074	.00356835	.401196
.40	.01	58.1	24.9	.429441	.01458460	.404854
.40	.0225	25.4333	10.9	.437040	.03404540	.411188
.40	.04	14.0	6.0	.448400	.06384080	.420583
.40	.0625	8.708	3.732	.464350	.10717400	.433623

Note. The parameters p and q of the beta distribution were computed as described in Section 4.5.

Table A.2 Parameter Values of the Beta-Distribution for μ_ρ From .50 to .90 and Different Variances σ_ρ^2 As Well As Corresponding Expected Values μ_ζ (and $\mu_{\rho z}$) and Variances σ_ζ^2

μ_ρ	σ_ρ^2	p	q	μ_ζ	σ_ζ^2	$\mu_{\rho z}$
.50	.0025	224.25	74.75	.551542	.00448427	.501675
.50	.01	55.5	18.5	.558423	.01843060	.506806
.50	.0225	24.25	8.0833	.570493	.04344450	.515721
.50	.04	13.3125	4.4375	.588735	.08266040	.528985
.50	.0625	8.25	2.75	.614742	.14160600	.547456
.60	.0025	204.0	51.0	.696839	.00617883	.602358
.60	.01	50.4	12.6	.708274	.02565930	.609593
.60	.0225	21.9556	5.4889	.728599	.06159560	.622207
.60	.04	12.0	3.0	.759939	.12045900	.641041
.60	.0625	7.392	1.848	.805730	.21436900	.667228
.70	.0025	172.55	30.45	.874105	.00979953	.703458
.70	.01	42.5	7.5	.895468	.04160610	.714084
.70	.0225	18.4167	3.25	.934436	.10389900	.732655
.70	.04	9.9875	1.7625	.996729	.21561100	.760217
.70	.0625	6.086	1.074	1.091630	.41545400	.797472
.80	.0025	128.7	14.3	1.114350	.02005810	.805595
.80	.01	31.5	3.5	1.165440	.09065330	.822805
.80	.0225	13.5	1.5	1.264350	.25292200	.852259
.80	.04	7.2	0.8	1.434020	.61211300	.892487
.80	.0625	4.284	0.476	1.710340	1.40785000	.936689
.90	.0025	71.25	3.75	1.538310	.07986850	.911836
.90	.01	17.1	0.9	1.782240	.49569100	.944936
.90	.0225	7.0722	0.3722	2.330410	2.10599000	.981260
.90	.04	3.5625	0.1875	3.380960	7.51357000	.997689
.90	.0625	1.938	0.102	5.303410	24.55440000	.999951

Note. The parameters p and q of the beta distribution were computed as described in Section 4.5.

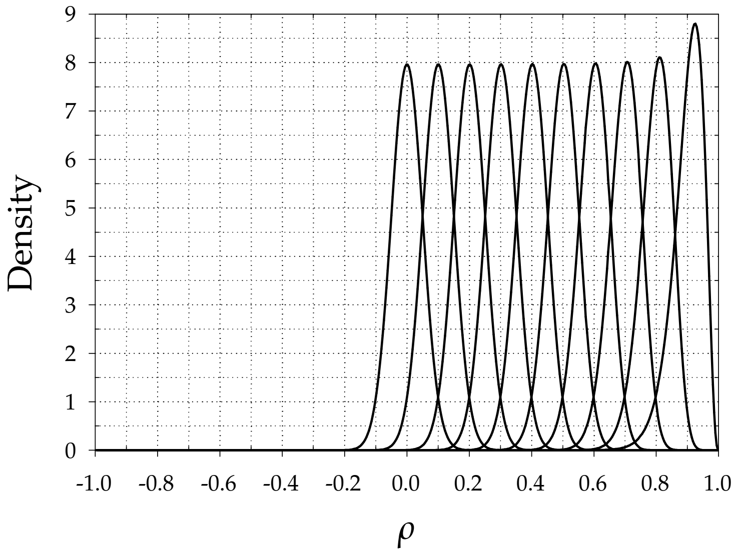

Figure A.1 Beta distributions with parameters chosen to correspond to $\mu_\rho = 0$ to $\mu_\rho = .90$ in increments of .01 and with constant $\sigma_\rho^2 = .0025$.

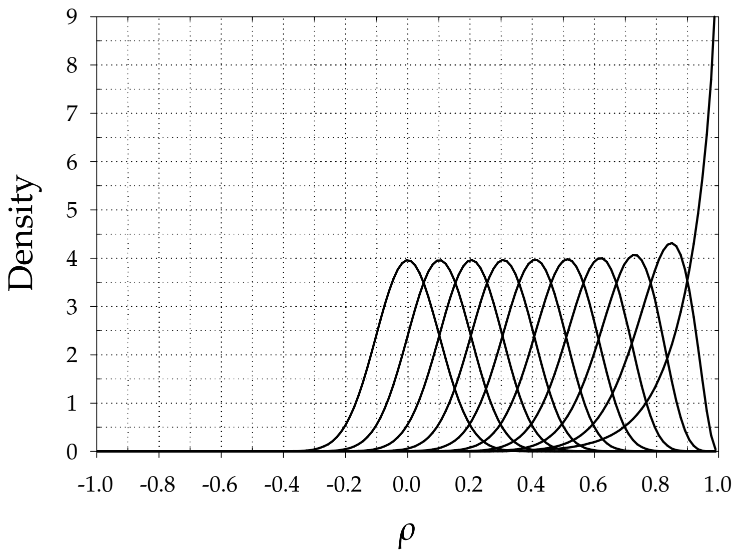

Figure A.2 Beta distributions with parameters chosen to correspond to $\mu_\rho = 0$ to $\mu_\rho = .90$ in increments of .01 and with constant $\sigma_\rho^2 = .01$.

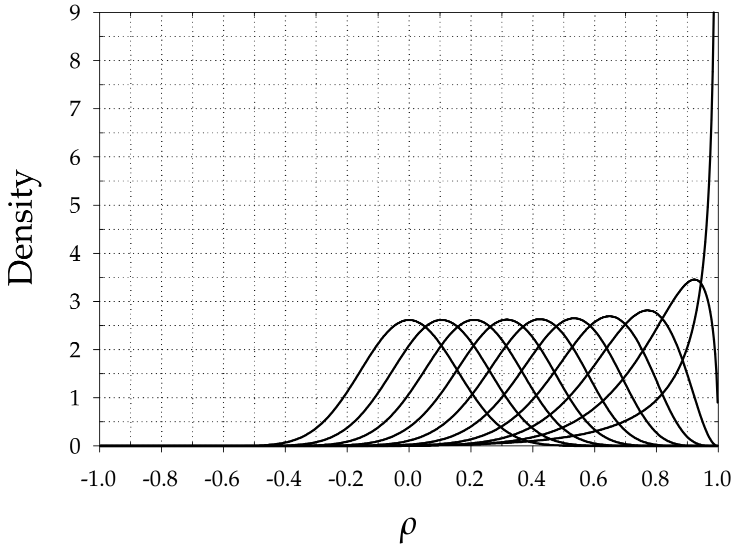

Figure A.3 Beta distributions with parameters chosen to correspond to $\mu_\rho = 0$ to $\mu_\rho = .90$ in increments of .01 and with constant $\sigma_\rho^2 = .0225$.

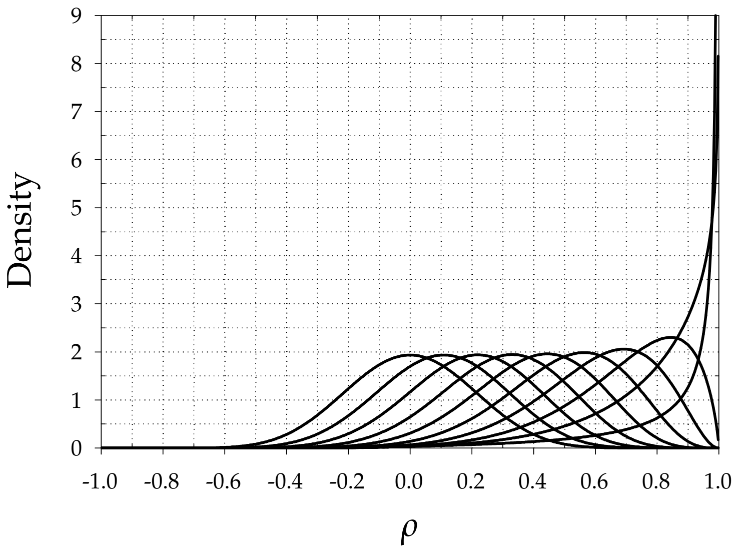

Figure A.4 Beta distributions with parameters chosen to correspond to $\mu_\rho = 0$ to $\mu_\rho = .90$ in increments of .01 and with constant $\sigma_\rho^2 = .04$.

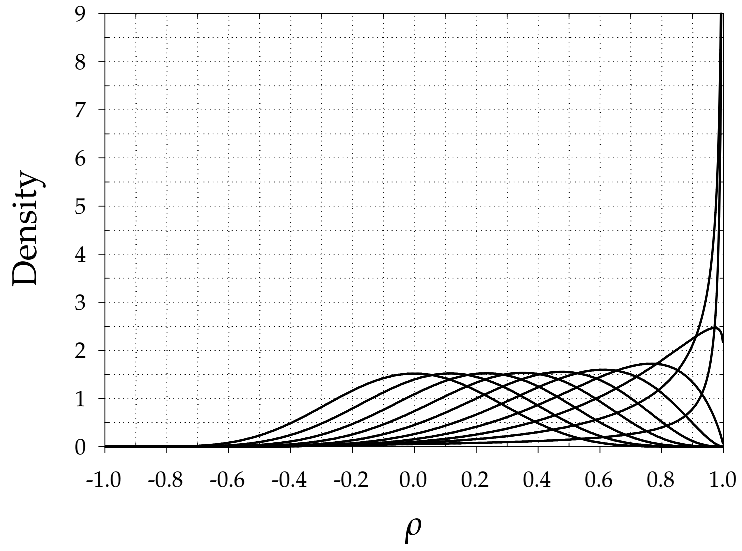

Figure A.5 Beta distributions with parameters chosen to correspond to $\mu_\rho = 0$ to $\mu_\rho = .90$ in increments of .01 and with constant $\sigma_\rho^2 = .0625$.