

MA 691: Statistical Simulation and Data
Analysis
Results

Vibhanshu

Data Analysis : “Statistical Inference for a New Class of Multivariate Pareto Distributions” by Alexandru et al.

1

1.1 For parameter :

$N = 500$, $\alpha_0 = 1.0$, $\alpha_1 = 0.3$, $\alpha_2 = 1.4$, $\mu_1 = 0.0$, $\mu_2 = 0.0$, $\sigma_1 = 1.0$, $\sigma_2 = 0.5$

No. of iterations (AI) = 900.7

1.2 For parameter :

$N = 500$, $\alpha_0 = 2.0$, $\alpha_1 = 1.2$, $\alpha_2 = 1.4$, $\mu_1 = 1.0$, $\mu_2 = 2.0$, $\sigma_1 = 0.4$, $\sigma_2 = 0.5$

No. of iterations (AI) = 1703.96

1.3 For parameter :

$N = 500$, $\alpha_0 = 1.0$, $\alpha_1 = 1.0$, $\alpha_2 = 1.4$, $\mu_1 = 0.0$, $\mu_2 = 0.0$, $\sigma_1 = 1.4$, $\sigma_2 = 0.5$

No. of iterations (AI) = 561.8

1.4 For parameter :

$N = 500$, $\alpha_0 = 2.0$, $\alpha_1 = 0.4$, $\alpha_2 = 0.5$, $\mu_1 = 0.0$, $\mu_2 = 0.0$, $\sigma_1 = 1.4$, $\sigma_2 = 0.5$

No. of iterations (AI) = 1817.6

**2 Parameters : $\alpha_0 = 1.0$, $\alpha_1 = 0.3$, $\alpha_2 = 1.4$,
 $\mu_1 = 0.0$, $\mu_2 = 0.0$, $\sigma_1 = 1.0$, $\sigma_2 = 0.5$**

2.1 N = 450

Value	α_0	α_1	α_2	μ_1	μ_2	σ_1	σ_2
AE	0.91200	0.38099	1.43253	0.00122	0.00047	0.98716	0.47251
MSE	0.01923	0.02455	0.09275	0.00000	0.00000	0.02906	0.01018

2.2 N = 350

Value	α_0	α_1	α_2	μ_1	μ_2	σ_1	σ_2
AE	0.94737	0.35374	1.60712	0.00245	0.00063	1.00813	0.54788
MSE	0.01358	0.02397	0.29346	0.00001	0.00000	0.03705	0.02848

2.3 N = 250

Value	α_0	α_1	α_2	μ_1	μ_2	σ_1	σ_2
AE	0.96341	0.37196	1.52900	0.00364	0.00098	1.02310	0.52744
MSE	0.02642	0.02182	0.20270	0.00003	0.00000	0.05023	0.02040

2.4 N = 150

Value	α_0	α_1	α_2	μ_1	μ_2	σ_1	σ_2
AE	0.97515	0.41675	2.07989	0.00521	0.00183	1.07867	0.68065
MSE	0.06218	0.09441	1.89394	0.00004	0.00001	0.12573	0.19376

2.5 N = 50

The EM algorithm is not converging for N=50