

Empirical Methods in Economics

Assignment V

Orville D. Mondal
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1. Values for questions 1 and 2 are -1257.0744, and -1259.5315, respectively.
2. These are the values for when $u_i=0$, for all i . Starting value is a tuple of $(\gamma, \beta, \sigma_\beta)$

Starting Value	Argmax	Max. Value
(1,1,1)	(-0.5060,2.4937,1.3738)	536.7241
(1,1,1)	(-0.4626,1.4363,1.8121)	555.1852

3. These are the values when one allows u_i to vary, while maintaining that $\mu = [\beta, 0]'$, i.e. u_i is mean 0. Starting value tuple is $(\gamma, \beta, \sigma_u, \sigma_\beta, \sigma_{u\beta})$

Starting Value	Argmax	Max. Value
(1,1,1,1,0.5)	(-0.3923,0.9590,1.2837,1.2506,0.7741)	530.2781

Note: In the calculations for question 3, when using Gaussian quadrature, one uses 100 draws from a normal distribution, while when using Monte Carlo methods, one uses 500 pseudo-random draws from a normal distribution.

For question 4, integration is based on a 10,000 point grid of (β, u_i) , drawn from a $N(\mu, \Sigma)$, where $\mu = [\beta, 0]$, and Σ is a general, symmetric, positive semi-definite matrix.