

Problem Set #5

MACS 40200, Dr. Evans

Bobae Kang

1. Estimating the Brock and Mirman (1972) model by GMM

The initial guess for four parameters (α , β , ρ and μ) are 0.9, 0.99, 0, and 0.5.
The optimal weight matrix is the identity matrix.

GMM criterion function value: 25.963258773257291

GMM estimate for α , $\hat{\alpha}_{GMM}$: 0.9000013224755705

GMM estimate for β , $\hat{\beta}_{GMM}$: 0.9899999951663588

GMM estimate for ρ , $\hat{\rho}_{GMM}$: 1.3188443872342209e-05

GMM estimate for μ , $\hat{\mu}_{GMM}$: 1.7032693799225846

2. Estimating the Brock and Mirman (1972) model by SMM

The initial guess for the first four parameters (α , β , ρ and μ) are drawn from the GMM estimates for the parameters. For σ , the initial guess is 0.095. The optimal weight matrix is the identity matrix. I used the percent differences between data moments and model moments for the error vector.

SMM criterion function value = 0.04974563698611713

SMM estimate for α , $\hat{\alpha}_{SMM}$: 0.9761698230852143

SMM estimate for β , $\hat{\beta}_{SMM}$: 0.5549336223330189

SMM estimate for ρ , $\hat{\rho}_{SMM}$: -0.4887548651882366

SMM estimate for μ , $\hat{\mu}_{SMM}$: 0.9997981339130693

SMM estimate for σ , $\hat{\sigma}_{SMM}$: 0.095

Difference in moments: [-1.88329262e+06 -3.90501923e+05 3.27805863e+11
1.15427992e+09 -8.87166073e-02 -6.97796236e-02]

Percent difference in moments: [-17.90057847 -3.73857414 5.8096535 0.02075448
-8.87166073 -7.11265458]