Solutions to exercises in MATLAB Handout # 4

Note: the empirical results reported in the text were obtained with an earlier version of MATLAB that used a different algorithm, and so if you experiment with these examples you may obtain different sensitivities to the convergence criteria. However, the final estimation results match. As on the handout, MATLAB commands are in bold type.

1. In this case, the convergence criterion makes no difference to three decimal places.

2. Set maxiter=10 in control790.m. Convergence takes four steps. Note that there is little difference between the two-step and iterated estimator in this case.

3. If MaxFunEval equals two then a different estimate is obtained, but if it is twenty or two hundred then it does not constrain the estimation in this case.

4. The algorithm converges to the same solution although takes more steps to do so.

5. You need to make the following changes to the program: (i) in gmmest790, the three invocations of fminunc must now be: theta=fminunc({@gmmobj790},theta,options,V,W);
   (ii) in control790.m, set LargeScale='off' and set GradObj='off'. As can be seen, the estimation results are the almost the same as those obtained using analytical derivatives in the minimization with the difference being in \( \hat{\theta}_2 \) at the third decimal place.

6. In control790.m, set WM_ind=100000. The results match those reported in Table 3.2 (p.63) and Table 3.7 (p.92) of the text. Note that with iteration the dependence on the first step weighting matrix disappears in this example.

7. You need to alter the load commands in both crradat_790 and crrainst_790. The results match those presented in Table 3.1 (p.62) and Table 3.7 (p.92) in the text. Note that the results are again sensitive to the weighting matrix but again this dependence disappears with iteration.