ECONOMETRICS II, FALL 2025

Homework 5. Due Monday September 29nd.

1. Adapt the posted GMM program to try Simulated GMM. You will have to add a subroutine. You can do any model you want but it can the following simple one

$$y_t = a + by_{t-1} + u_t \,,$$

and

$$x_t = c + by_{t-1} + v_t \,.$$

Use some values for a, b, c (any will do as long as you make sure the autoregressive parameters are numerically smaller than unity) and just let the error terms be standard normals. T=100.

Suggest some statistics (best to try some different ones) and then calculate the same staticstics from say 10,000 Monte Carlo simulations and use the average simulated values as the theoretical ones in the GMM code that you do not otherwise need to modify.

2. Going back to the previous homework, try different bandwidths and kernels for the variance estimation. You will likely find that only the bandwidth matters for the t-stats and possibly for the estimates.