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% Section 3: We load the data or simulate the model using params0
load([pwd, '\ModelSpecification\setupModel'], 'setupModel')
data =
dataForSMM(params0,calibrateParams,orderApp,T,selectY,setupModel,setupEPer,appMethod);

% Compute empirical moments
inclMoms = collectMoments(inclMoms_Ey,inclMoms_Eyy,inclMoms_autoEyy,autoLagsIdx);
dataInfo = momentsGMMData(data,autoLagsIdx,inclMoms);

% Transforming params0 for estimation
selectParams = fieldnames(params0);
params0Values = struc2values(params0,selectParams);

% Test of enough moments for estimation
numMom = sum(inclMoms);
numParams = size(selectParams,1);
disp(['Parameters to estimate = ', num2str(numParams) ,'. Moments for estimation = ',
num2str(sum(inclMoms))]);
if numMom < numParams
    error('We must have at least as many moments as parameters for GMM')
end

% For CMAES, the standard deviations for the search
Insigma.DELTA = 0.01;
Insigma.BETTA = 0.01;
Insigma.B = 0.1;
Insigma.ETAl = 1;
Insigma.ETAc = 1;
Insigma.ALFA = 0.05;
Insigma.RHOA = 0.05;
Insigma.RHOD = 0.05;
Insigma.STDA = 0.001;
Insigma.STDD = 0.001;

% For CMAES, the lower and upper bounds for the parameters
lowerBounds.DELTA = 0;
lowerBounds.BETTA = 0;
lowerBounds.B = 0;
lowerBounds.ETAl = 0;
lowerBounds.ETAc = 0;
lowerBounds.ALFA = 0;
lowerBounds.RHOA = 0;
lowerBounds.RHOD = 0;
lowerBounds.STDA = 0;
lowerBounds.STDD = 0;

upperBounds.DELTA = 1;
upperBounds.BETTA = 1;
upperBounds.B = 1;
upperBounds.ETAl = 10;
upperBounds.ETAc = 10;
upperBounds.ALFA = 1;
upperBounds.RHOA = 1;
upperBounds.RHOD = 1;
upperBounds.STDA = 1;
upperBounds.STDD = 1;

% Test of all variables names are either estimated or calibrated
paramsTest(allModelParams,params0,calibrateParams)

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