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%%%%%%%%%%%%%%%%%%  MATLAB Brush Up Course: Session 5  %%%%%%%%%%%%%%%%%%%%
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% PRACTICAL EXERCISE: Replicating a Paper
% "Caught in a Trap: Simulating the Economic Consequences of Internal Armed
% Conflict"

% The session includes the modelling and simulation of a Markov Process
% which contains different states of peace and war. We will simualate the
% evolution of GDP in a MonteCarlo fashion to estimate the distribution of
% the effects of Conflict on GDP per capita.




                        %% 0. STRATEGY %%

% Previously, I have estimated several coefficients that work as
% inputs of this code:

% 1. Transition Probs
%      STATE 1 = PERMANENT PEACE (Absorbing State)
%      STATE 2 = WAR
%      STATE j= j-2 YEARS PEACE AFTER CONFLICT (UNSTABLE PEACE)

% 2. Estimated coefficients from regressing GDP Growth and Life Expectancy
%    on a dummy representing each STATE

% Note that regressions were performed using dummies, so the effect of
% each STATE is measured relative to the control one (S1=PERMANENT PEACE).
%
% Therefore,we have to define the evolution of the variables in
% PERMANENT PEACE (as benchmark), and add the STATE-contingent change
% using the estimated coefficients.




%% 1. Preparing Matrices

clc; clear
TM = load('TM_7AS7.csv');
GVec = load('GVec_7AS7.csv');


% 1 - Make Stable Peace Abosrbing

% 2 - Given transition is 2 ways: war or +1 year of peace.
% We need just one the probability of war. Create a Vector
% called TR War with this probabilities.

% 3 - Place ABS PEACE probability and growth at the end of each vector

% 4 - What is the probability that a country that starts in CONFLICT
% will reach STABLE PEACE without falling back to CONFLICT?
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%% 2. Simulation


% 1- Given what we know, simulate GDP of a country that starts in war.
%    Take GDP0=100, and sumlate the markov process for 30 years

% 2 - Plot evolution of GDP


% 3 - Do the same for 1000 countries




%% 3. Analysis

% 1 - Calculate the ratio of countries that recover

% 2 - Calculate the mean, Q75, Q90 of GDP at every period

% 3 - Express them in terms of LOSS (100 - GDP)

% 4 - Plot the evolution of this statistics
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