ECONOMICS 8346, Fall 2013
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Homework 3. Tuesday, September 16. Due Wednesday, September 23.

Calculate and plot (the first 2-3 periods, if you do it by hand) the impulse response functions for the model

$$\begin{pmatrix} x_{1t} \\ x_{2t} \end{pmatrix} = \begin{pmatrix} u_{1t} \\ u_{2t} \end{pmatrix} + \begin{pmatrix} 1 & .5 \\ .3 & .2 \end{pmatrix} \begin{pmatrix} u_{1t-1} \\ u_{2t-1} \end{pmatrix} + \begin{pmatrix} 1 & 2 \\ 0 & .5 \end{pmatrix} \begin{pmatrix} u_{1t-2} \\ u_{2t-2} \end{pmatrix}$$

where the error terms are independent. If the variance of u_1 is 1 and the variance of u_2 is 2, and u_1 and u_2 are independent calculate the variance decomposition for x_1.

b) Also, plot the impulse response functions for

$$\begin{pmatrix} x_{1t} \\ x_{2t} \end{pmatrix} = \begin{pmatrix} .5 & 0 \\ .3 & .2 \end{pmatrix} \begin{pmatrix} x_{1t-1} \\ x_{2t-1} \end{pmatrix} + \begin{pmatrix} u_{1t} \\ u_{2t} \end{pmatrix}$$

c. And calculate the variance decomposition (at different frequencies) for x_1 when

$$\begin{pmatrix} x_{1t} \\ x_{2t} \end{pmatrix} = \begin{pmatrix} 1 & 0 \\ 1 & 2 \end{pmatrix} \begin{pmatrix} u_{1t} \\ u_{2t} \end{pmatrix} + \begin{pmatrix} 1 & .5 \\ .3 & .2 \end{pmatrix} \begin{pmatrix} u_{1t-1} \\ u_{2t-1} \end{pmatrix} + \begin{pmatrix} 1 & 2 \\ 0 & .5 \end{pmatrix} \begin{pmatrix} u_{1t-2} \\ u_{2t-2} \end{pmatrix}$$

where u_1 and u_2 now are independent with variance 1.

2. Install the Stata program reghdfe and test whether it correctly estimates fixed effects it you absorb both firm ("id") and sector (NACE2) dummies in the dataset

`all_data_final_tfp_2015jul15_rndm_sample.dta`

—if you absorb id and explicity includes dummies for NACE2, you get the correct result, so the question to explore is if the answer is the same if you absorb the dummies instead. (I don't know the answer at this stage.)