Macroeconomics II
Spring, 2005-05-03

Homework III (Due May 17th)

(1.) Choose one of the following (4 points):
Write a referee report on "An Empirical Characterization of the Dynamic Effects of Changes in Government Spending and Taxes on Output" by Olivier Blanchard and Robert Perotti (NBER 7269). In the first page (single spaced), summarize the paper. In the remaining 1-3 pages, make suggestions to the author on how to improve the paper.

or

Write a paper (Approximately 3 pages single spaced) discussing the merits of calibration versus estimation as empirical strategies for differentiating between competing theories. How do they differ? Are there situations where you think one technique would be preferable to another?

(2.) Answer the following two questions (4 points)
(a.)Write 2-3 pages outlining an empirical strategy (write estimation equations) for estimating the CAUSAL impact of money on unemployment. Be specific about what data you would use and what regressions you would run. (3 points)
(b.) Add one paragraph on how you would estimate the impact if you were an uncaring central bank president who only cared about finding out the impact of monetary policy on output (1 point).

(3.) Download seasonally adjusted monthly industrial production GDP data from December 1959 until January, 2005 from the Federal Reserve Bank Website: http://www.federalreserve.gov/releases/G17/ipdisk/ip.sa and http://www.federalreserve.gov/releases/G17/iphist/iphist.sa. Import the data into stata and compute monthly growth rates. Then download seasonally adjusted measures for M3 from http://www.federalreserve.gov/releases/h6/hist/h6hist1.txt and transform the data into monthly M3 growth rates. Lastly, obtain nominal monthly federal funds rates for the period encompassing January, 1960 until December, 2004 from http://www.federalreserve.gov/releases/h15/data/m/fedfund.txt. Combine these three time series into one data set (you will have to figure out whether to construct it in panel form or not). Use STATA… it will be much easier in STATA where all the commands are already programmed in to the software package. You can read about vector autoregression commands in STATA on http://www.stata.com/help.cgi?varintro. You are highly encourage to work in groups on this part of the homework. If you do work in groups, please try to incorporate the students who do not live in Gothenburg! (7 points)

a. Run a vector autoregression with three left hand side variables: industrial production, the federal fund rate and the M3 from 1959 until 2004. Run separate regressions with 2 lags for each variables, four lags for each variable, and 8 lags for each variable. Report the coefficients of industrial production on M3 and on the federal funds rate. Graph

impulse response functions for M3 and for the federal funds rate, forecasting for 1 year. How do you interpret the coefficients? The impulse response plots? What interest rate rule is the central bank implicitly following. Test whether or not Money Granger causes Industrial Production. What is your interpretation of the outcome of this test?

b. Someone now tells you that the central bank does not use output in setting the money supply. How would you alter the VAR system you estimated above? Rerun vector autoregressions with the same set of left-hand side variables and with 8 lags for each variable. . Report the coefficients of industrial production on M3 and on the federal funds rate. Graph impulse response functions for M3 and for the federal funds rate, forecasting for 1 year. How do you interpret the coefficients? The impulse response plots?
c. You now find out that, in addition, the federal reserve bank has been setting the federal funds rate using the following rule: r=.1(IP-.03) where IP is the month-to-month growth rate of industrial production. How would you alter the VAR system you estimated above? Rerun vector autoregressions with the same set of left-hand side variables and with 8 lags for each variable. . Report the coefficients of industrial production on M3 and on the federal funds rate. Graph impulse response functions for M3 and for the federal funds rate, forecasting for 1 year. How do you interpret the coefficients? The impulse response plots? Test whether or not Money Granger causes Industrial Production. What is your interpretation of the outcome of this test?

Extra Credit:

(4.) (a.) Let $\{m_t\}$ and $\{y_t\}$ be sequences of random variables. Suppose we know that m_t Granger causes y_{t+1}, do we then know if y_t also Granger causes m_{t+1}? Answer analytically if you can (using equations). Also, provide intuition. (2 points)

(b.) Let $\{m_t\}$ and $\{y_t\}$ be sequences of random variables. Suppose we know that m_t Granger causes y_{t+1}, do we then know if y_t also Granger causes m_{t+1}?.

Provide intuition for why $b_j = 0$ in the regression $y_t = \sum_{j=\infty}^{\infty} b_j m_{t-j} + \varepsilon_t$. Give an interpretation for the meaning of the condition $b_j = 0$. (1 point)