Robert Shimer
"Cyclical Behavior of Equilibrium Unemployment and Vacancies"

Description of Data and Simulation Files
December 4, 2004

Data Files

`data.xls` is a Microsoft Excel 2003 worksheet containing the raw data used to construct all the numbers in the paper, along with explanations for the data sources. There are two pages. The first has monthly data (unemployment rate, unemployment level, job openings from JOLTS, conference board help-wanted advertising index, short-term unemployment, and employment) and computes the job finding and separation rates. The second page has the quarterly data for output per worker in the non-farm business sector. All data were downloaded on December 4, 2004.

`quarterly.wf1` is an EViews 4.0 worksheet containing trends and detrended data and matching function estimates. `find` is the job finding rate, `find_l` is the log of `find`, `find_t` is the trend of `find_l`, and `find_d = find_l - find_t` is the detrended job finding rate. The definitions of the other variables are similar. `helpads` is help-wanted advertising index, `prod` is output per worker, `sep` is the separation rate, `unemploy` is the unemployment level, and `theta = helpads/unemploy` is the v-u ratio. All the correlations and standard deviations are computed from these variables. `cobbdouglas` estimates a Cobb-Douglas matching function allowing for an AR(1) residual. `CES1` and `CES2` implement a non-linear least squares estimation of a CES matching function allowing for an AR(1) residual. `CES1` estimates the matching function assuming uncorrelated residuals. I then estimate the correlation in the residuals (0.438), use `find_p` and `theta_p` to store partial differences of the dependent and independent variables (e.g. `find_p = find_d – 0.438*find_d(-1)`), and re-estimate the equation using the partial differences. The result appears in `CES2`.

Simulation Files

There are four Mathematica 5.0 files used to produce Tables 3-6.

`p.nb` solves the model with productivity shocks (Table 3). The input cells perform the following tasks:

1. Call some useful packages, reduce the memory requirements, and define a couple of formulae.
2. Fix the sample length and compute the matrix for performing H-P filters.
3. Set the parameter values r, s, μ, α, β, z, c, σ, and γ. Use these to define the remaining parameters and initialize the v-u ratio.
4. Compute the state-contingent v-u ratio.
5. Compute the ergodic distribution (can be skipped).
6. Compute statistics for the ergodic distribution (requires step 5).
7. Initialize the state of the system.
8. Compute detrended sample moments.
9. Report sample means
10. Report bootstrapped standard errors

To produce Table 3, evaluate all ten input cells in order. The parameter values can be changed and the model reevaluated.

`s.nb` solves the model with separation shocks (Table 4). The structure is identical to `p.nb`.

`p-and-s.nb` solves the model with productivity and separation shocks (Table 5). The structure is identical to `p.nb`.

`beta.nb` solves the model with bargaining power shocks (Table 6). The structure is identical to `p.nb`.