**Calibration**

First, prepare inputs for calibration using Nekarda LPD-JPJR data from 2002 to 2007, see 2002\_2007\_inputmaker.do and theta\_makers.do.

These files look at individuals who were matched over consecutive months in the CPS and record their transition across labor force statuses: Nekarda’s variable, lft (can be created using any matched CPS). For those who move from not in the labor force or employment to unemployment, they report their duration of unemployment (udur)—which is often not 0 months— which is needed for the calibration. Those who remain in the state of unemployment have their duration increased by 1 month mechanically. The thetas are the relative probability that a person reports a given duration upon entering unemployment from another state, following Kroft et al. (2014), we calculate annual averages. Again following Kroft et al. (2014), we calculate 4 psi’s (the fourth is to differentiate the short and long-term unemployed in our model) that show the relative propensity for workers to move across states: psi\_n, psi\_e, psi\_usn (for the short-term unemployed), and psi\_uln (for the long-term unemployed). In words, psi\_n is the relative probability that a worker not in the labor force transitions to unemployment versus employment; psi\_e is the relative probability that an employed worker transitions to not in the labor force versus unemployment; psi\_usn is the relative probability that a worker who was short-term unemployed transitions to not in the labor force versus employment; and psi\_uln is the relative probability that a worker who was long-term unemployed transitions to not in the labor force versus employment. We take 3-month moving averages for these variables.

(For more details see: Kroft, Lange, Notowodigdo, and Katz: “Long-term Unemployment and the Great Recession: The Role of Composition, Duration Dependence, and Non-Participation” Appendix B. <http://www.nber.org/papers/w20273.pdf> and lambda\_construct that shows our implementation.)

We use 3 month-moving averages of BLS data for vacancies, total employed, total unemployed short-term, total unemployed long-term, and total non-participants, and the inputs to run lamda\_construct in python to create population stable lambdas (these are all for 25-54 year olds). This gives us the population stable rates of transition from short-term unemployment to employment, long-term unemployment to employment, and non-participation to employment. We next run the calibration using estimate\_bootstrap in python. This gives us the matching parameters, which minimize the sum of squared errors for the model on pg. 270. This code also outputs standard errors from a bootstrap procedure.

**Simulation**

Once again, first run stata-inputs (2008forward\_maker.do, zero\_six\_sevenmonthsdur\_2008forward.do, and thetasmaker\_2008forward.do) to recover the necessary inputs to run lamda\_construct\_2008forward on 2008-2013 data to create population stable transition rates as above. Input the matching function parameters from the calibration and these recovered transition rates, (lambdauln\_output.csv, lambdausn\_output.csv, lambdaen\_output.csv lambdaeu\_output.csv lambdanu\_output.csv. Note that Jan 2008 corresponds to entry 72 in these files.) These are used to create stata\_input\_19\_20.dta. Both Figure\_19simulation.do this and Figure\_20simulation.do take as their input stata\_input\_19\_20. Figure\_21simulation.do starts with the actual unemployment duration distribution observed in Dec 2013 so for that we use dec2013start.dta.

Figure 22 is the share of long-term unemployment that is the output from Figure\_19simulation.do and Figure\_21simulation.do. Figure\_19simulation goes through December 2013, and Figure\_21 simulation goes from December 2013 forward. Figure\_22simulation keeps the share of long-term unemployed from each figure and appends to create the series.