Problems for Week 11

Problem 16.3. The growth rates of labor productivity and participation rates are important elements in determining the modified natural rate of growth ($\hat{Y}^*$). How they change over time will to determine how $\hat{Y}^*$ changes. The mid-1970s seems to mark a point at which participation rates and labor productivity behavior seemed to depart from past experience. Based on your understanding of these data, how do you conjecture that $\hat{Y}^*$ is likely to have changed from before to after the mid-1970s. To check this, estimate Okun’s Law, following the example of Figure 16.4, by making a scatterplot for $\Delta U$ versus $\hat{Y}$ for the period before and after 1948-1973 and 1974-2008, fitting a regression line to each scatterplot, and calculating the implied $\hat{Y}^*$. Do your estimates change in the way you anticipated?

Problem 16.4. Calculate the average growth rates for the labor productivity, participation rates and working-age population and use them to calculate $\hat{Y}^*$ for each of the periods in Problem 16.3. How close do these estimates come to estimates based on the regression of changes in unemployment on growth rates?

Problem 16.6. Reestimate Okun’s law for each of the subperiods identified in Problem 16.3 using the change in scaled output in the place of the change in unemployment. Put each equation into standard form. Compare your estimates to those in Problem 16.3. In particular, how do your estimates of the modified natural rate of growth differ from the earlier estimates?

Problem 16.8. Assume that equation (16.5) is the true Okun’s law for the U.S. economy today. Locate the most recent GDP and unemployment data (bea.gov for GDP and bls.gov for unemployment). Based on the growth rate of GDP for the most recent quarter over the same quarter a year before, what does Okun’s law predict for the change in unemployment over the same period. What has in fact happened? Discuss any disparity.

Problem 16.10. Estimate Phillips curves for the United States like that in Figure 16.7 for the periods 1948-1970, 1971-1986, and 1987-present. Write the equation for each in standard form. Create a graph similar to Figure 16.8, plotting the Congressional Budget Office’s (CBO’s) estimate of NAIRU and your own estimate as a horizontal line at your estimated value for each period. Compare your estimates of NAIRU to those of the CBO in Figure 16.8. How well do they agree?

Problem 16.11. Reestimate the Phillips curve using scaled output instead of unemployment for each of the subperiods identified in equation Problem 16.10. Write each equation in standard form. What are your estimates of the nonaccelerating inflation rates of scaled output?

Problem 16.18. In the U.S. recession of 2001, GDP never actually fell. Using actual unemployment and inflation data, taking 1999 as your starting point. Use the estimates of the Okun’s law given in equation (16.5) and the Phillips curve in equation (16.11) compute the implied unemployment rates and inflation rates. Explain your calculations. Compare these to the actual unemployment and inflation rates. How good were your estimates? What light do they shed on the phenomenon of the growth recession.