

Econ 154b
Yale University
Spring 2005
Prof. Tony Smith

HOMEWORK #7

This homework assignment is due at the beginning of lecture on Monday, April 4.

1. Do numerical problem #3 on p. 425 in Chapter 11 of the textbook. When working this problem, remember that $Y = C^d + I^d + G$, $i = r + \pi^e$, and that, in equilibrium, real money demand L equals real money supply M/P . In addition, before working the problem, you may find it helpful to read carefully Box 11.2 on pp. 419 and 420 in Chapter 11 of the textbook.
2. Do analytical problem #1 on p. 426 in Chapter 11 of the textbook. To determine your answers, use the Keynesian model with a rigid real wage and sticky prices. For each case, determine how the economy responds both in the short run (before prices adjust) and in the long run (after prices adjust). In addition, answer each question using both an *IS-LM* diagram and an *AD-AS* diagram.
3. (a) Suppose that a reduction in aggregate demand shifts the *AD* curve back (or to the left), sending the economy into a recession, as predicted by the Keynesian model with a rigid real wage and sticky prices. What monetary policy action can the Fed take in order to bring the economy out of this recession without waiting for prices to adjust? Explain using an *AD-AS* diagram.
(b) Suppose now that it takes time for monetary policy to affect aggregate demand, and that this amount of time (say, six months) is roughly the same amount of time that it takes for firms to adjust their prices. Show that if the Fed undertakes the monetary policy action in part (a) without considering the delays in the effectiveness of its actions, then the economy will “overshoot” full employment. In other words, show that monetary policy, by increasing rather than decreasing the volatility of output in response to shocks, can be destabilizing.
(c) Do you think monetary policy will be destabilizing if the Fed has the ability to forecast future recessions accurately? If price adjustment takes a year rather than six months? Explain carefully.
4. The “misperceptions” version of the classical model predicts that unanticipated *increases* in money growth lead to increases in output (and hence, by Okun’s Law, to decreases in the unemployment rate), whereas unanticipated *decreases* in money growth

lead to decreases in output and increases in the unemployment rate. In this problem, you will test this prediction using data for the United States. You can find monthly data for one measure of the aggregate money stock (M2, as defined on p. 249 of the textbook) at <http://research.stlouisfed.org/fred2/series/M2SL/24>. Proceed in steps:

- (i) Construct expected quarterly money growth at the end of each of the years 1970 to 1985. One way of doing this is to calculate the average quarterly growth rate of money during each of these years: for example, for 1970, compute the growth rates of money between 1969:12 and 1970:3, 1970:3 and 1970:6, 1970:6 and 1970:9, and 1970:9 and 1970:12, and then compute the average of these four quarterly growth rates. Repeat these calculations for 1971 to 1985.
- (ii) Now compute unanticipated money growth for the first quarter of each of the years 1971 to 1986: for example, for 1971, subtract the expected quarterly money growth rate at the end of 1970, as computed in part (i), from the actual quarterly growth rate between 1970:12 and 1971:3.
- (iii) Using the unemployment data that you analyzed in the first problem of Homework #5, determine whether the unemployment rate rose or fell during the first quarter of each of the years 1971 to 1986 (use the difference between the unemployment rate at the end of the first quarter and the unemployment rate at the end of the previous quarter).
- (iv) Use your data (which consists of 16 observations on unanticipated money growth and the change in the unemployment rate) to determine whether unemployment tends to fall in periods in which unanticipated money growth is positive and tends to rise in periods in which unanticipated money growth is negative. Does this data support the misperceptions theory?