Sticky Prices (and a bit more Monetary Policy): Questions

Short answer questions

1. Suppose that through to period $t-1$ an economy is in equilibrium with an output gap equal to zero and inflation at target. In period t information arrives indicating that the output gap will be -1 in period t, -1 in period $t+1$ and -1 in period $t+2$, before returning to equilbrium in period $t+3$. How will inflation behave according to an adaptive expectations Phillips Curve and a New Keynesian Phillips Curve? What would happen if the recession was anticipated as of period $t-1$?

2. Consider the *IS-PC-MR* model. The economy is initially in equilibrium at a 2% inflation target. At the end of period $t-1$ the policy authority announces that the inflation target will be 1% from period $t+1$ onwards. From period t onwards, describe the adjustment towards the new equilibrium in each of the following three cases:

i. a Phillips curve based on adaptive expectations;

ii. a Phillips curve based on rational expectations and flexible prices;

iii. a New Keynesian Phillips curve.

3. Consider the *IS-PC-MR* model in the CS textbook in which the Phillips curve is based on adaptive expectations. Allow for the possibility of a cost-push shock so that the the PC equation is

$$\pi_t = \pi_{t-1} + \alpha(y_t - y_e) + u_t$$

where u is a cost-push shock. Suppose there is a cost-push shock $u_t > 0$ that becomes known to the monetary authority at the start of period t before prices are set and before monetary policy is set. The following can be established:

• the monetary authority cannot reduce inflation in the period in which the cost-push shock occurs due to the 1 period lag between varying interest rates and output changing (and inflation adjusting in the Phillips curve);

• in subsequent periods inflation can be gradually reduced and this requires an output recession as the economy adjusts along the MR line;

• therefore cost-push shocks raise the variance of both output and inflation;

• the larger the β parameter in the loss function the flatter the MR line, and, for a given cost-push shock, the larger will be the variance of output and the smaller the variance of inflation.

Suppose that the the Phillips curve is instead a New Keynesian Phillips Curve, but the structure of the *IS-PC-MR* model otherwise stays the same.

i. Assuming that it is possible for the monetary authority to credibly commit to future monetary policy actions, describe an announcement regarding future interest rates that could be made in period t that would reduce inflation in the period in which the cost-push shock occurs (period t).

ii. What kind of future interest rate path would you recommend for the announcement in i in order to ensure the smallest possible variance in output as a result of the announcement?

iii. Now suppose that it is not possible for the monetary authority to commit to future monetary policy actions. How does this affect your answer to i?

iv. In the absence of commitment in monetary policy, how would the variances of output and inflation in the NKPC case compare with those from the adaptive expectations case (assuming the same initial cost-push shock in each case)?

Note: For parts ii. and iv. you do not need to derive any expressions for variances, but simply explain whether you think they will be higher or lower and provide some justification.