Seminar in macroeconomics –Aggregate supply and Phillips curve, 12th week

1. ! Use the sticky-price model to explain how the ability of monetary and fiscal policy to influence output depends on the ratio of firms with flexible prices in the economy.

2. ! In the sticky-price model, describe the aggregate supply curve in the following special cases:

a) The desired price does not depend on aggregate output ($a = 0$).
b) All firms have flexible prices ($s = 0$).

3. ! Suppose the following equation of the short-run aggregate supply: $Y = \overline{Y} + \alpha(P - P^e)$

a) Suppose that $\alpha = 0.5$. Draw the aggregate supply curve.
b) How does a rise in α affect the aggregate supply curve.
c) How does a rise in the expected price level P^e influence the aggregate supply curve?

4. ! Suppose that an economy has the Phillips curve:

$$\pi = \pi_{-1} - 0.5(u - 0.06)$$

a) What is the natural rate of unemployment?
b) Graph the short-run and long-run relationshps between inflation and unemployment.
c) How much cyclical unemployment will be created if the inflation rate is to be reduced by 5 percentage points?
d) Would you advise an immediate one-off reduction in inflation or smaller reductions distributed in several years?

5. ☺ According to the rational-expectations approach, if everyone believes that policymakers are committed to reducing inflation, the cost of reducing inflation—the sacrifice ratio—will be lower than if the public is skeptical about the policymakers' intentions. Why might this be true? How might credibility be achieved?

6. ! Suppose that the economy is initially at a long-run equilibrium. Then the Fed increases the money supply. Draw the short-run and long-run impact of monetary expansion in IS LM, AS AD, and PC graphs, if the monetary expansion is:

a) unexpected
b) expected

7. ☺ Suppose that people have rational expectations and that the economy is described by the sticky-price model. Explain why each of the following propositions is true:

a) Only unanticipated changes in the money supply affect real GDP. Changes in the money supply that were anticipated when prices were set do not have any real effects.
b) If Fed sets the money supply well after people have set prices, so that the Fed has collected more information about the state of the economy, then monetary policy can be used systematically to stabilize output.

8. ☺ Empirical studies show that the real wage is pro-cyclical.

a) Explain why this empirical finding is in conflict with the model of rigid wages, if the economic cycle is caused primarily by changes in aggregate demand.
b) Explain why this finding is not inconsistent with the model of rigid wages, if the economic cycle is caused primarily by supply shocks.

9. ☺ What is the impact of a strong recession on the aggregate supply curve if unemployment exhibits hysteresis?

10. ☺ Suppose that an economy has the Phillips curve $\pi = \pi_{-1} - 0.5(u - u^n)$, where u^n is the natural rate of unemployment, that is given by an average of the past two years' unemployment: $u^n = 0.5(u_{-1} + u_{-2})$.

a) Why might the natural rate of unemployment depend on recent unemployment (as is assumed in the preceding equation)?
b) Suppose that the Fed follows a policy to reduce permanently the inflation rate by 1 percentage point. What effect will that policy have on the unemployment rate over time?
c) What is the sacrifice ratio in this economy? Explain.
d) What do these equations imply about the short-run and long-run tradeoffs between inflation and unemployment?

11. ☺ Suppose that we have an aggregate production function $Y = 2(K^{1/2}L^{1/2})$. We further assume that $K = 100$.

a) Derive the demand for labor.
b) Derive a function in which product depends on real wage.
c) Let us assume that nominal wage is originally \$4, and the actual and expected price levels are equal to \$1 and the targeted real wage is \$4. Calculate the original product and the potential product.
d) In accordance with the sticky-wage model, suppose that the wage is fixed at the level of \$4. Derive the aggregate supply curve.
e) Draw the aggregate supply curve for P^e = \$1 and W = \$4.

12. ☺ Some economists believe that taxes have an important effect on the labor supply. They argue that higher taxes cause people to want to work less and that lower taxes cause them to want to work more. Consider how this effect alters the macroeconomic analysis of tax changes.

a) If this view is correct, how does a tax cut affect the natural level of output?
b) How does a tax cut affect the aggregate demand curve, the long-run aggregate supply curve, and the short-run aggregate supply curve?
c) What is the impact of a tax cut on output and the price level in the short run and in the long run?

13. ☺ Compare the inflation calculated based on two indices:

Inflation based on / Year	2004	2005	2006	2007	2008
CPI (all items)	3.8	2.8	3.2	3.4	2.7
CPI (all iteems except for energy and food)	2.3	2.3	2.5	2.2	1.8

What is the difference between the measures of inflation? Which of them is more volatile? What does this difference say about changes in aggregate supply curve (short-term Phillips curve)?