OPTIONAL PROBLEM SET

Chapter 15: The Labor Market (Petya)

Short Problem

Consider the standard WS-PS model from the text. So far, we have assumed that the price setting equation depends only on the competitiveness of the product market. This problem demonstrates that the competitiveness of the labor market matters as well. Assume that the production function is Y(N)=N^a.

The PS-equation in the standard model is derived from the equation: P=(1 + nu)*MC, where MC is the marginal cost of producing a unit of output. If the labor market is competitive, MC=W => P = (1 + nu)*W => W/P = 1/(1 + nu).

Now suppose that the labor market is not competitive. Use the fact that MC = = W / (dY/dN) (don't worry about knowing this result from micro!!!) to derive the new PS-curve. What does it look like? Could we have a negative markup? [Hint: Could we have too many workers employed? Does union power matter?]

Combine the new PS-curve with the standard WS-equation from the text. What happens if unions become less important in the economy? Consider both the price-setting and the wage-setting equations.

Chapter 16: General Equilibrium (John)

Short Problem

In a horrific accident in the cryrogenics lab you are accidently frozen by a spill of liquid nitrogen. It's not untill the year 2198 that the scientists are able to thaw you out. By that time, all the economists have gotten lazy and have taken consulting jobs, and have forgotten how things really work. Fortunately, the economy is booming. As the sole economist, people ask you to determine the cause of the boom.

--Using the AS-AD IS-LM framework how would you determine if the boom was a result of technology increases, monetary policy, or fiscal policy.

--The economy then goes into a recession, and you are asked to find the effects of policies to recover. Trace the efects of monetary and fiscal policy on i, p, y assuming that there are no increases in technology.

Chapter 17: The Phillips Curve (Adam)

T/F: Because the Phillips Curve is the same as an upward-sloping short-run Aggregate
      Supply curve, the breakdown in the relationship between the unemployment rate

and inflation in the 1970s now indicates that the short-run Aggregate Supply is now vertical.

T/F: If all wages were fully indexed to inflation then the unemployment rate would always be equal to the natural rate of unemployment.

Chapter 18: Disinflation (Adam)

T/F: In the long-run, inflation is always and everywhere a monetary phenomenon.

T/F: A central bank with credibility can reduce inflation without any increase in unemployment in the short-run.

T/F: The proper policy rule for a central bank engineering a disinflation of 10 percent over five years is to simply reduce nominal money growth by 2 percent each year.

Short Problem

Recall the equation for the Aggregate Supply curve,

$$P = P^e(1+\mu)F(u,z)$$

This equation is adjusted using natural logs and a first-order Taylor series expansion for F(u,z) in order to derive the following,

$$\pi = \pi^e + \mu + z - \alpha u$$

Note that the parameter α has the interpretation as the marginal effect of the unemployment rate on the natural log of nominal wage demands by workers. In other words, a one-point increase in the unemployment rate implies that nominal wage demands by workers fall by α percent. Recall this effect is driven by a hypothesis that a high unemployment rate reduces worker bargaining power. This implies that α captures the sensitivity of nominal wage demands to the unemployment rate.

Assume that the proportion of long-term unemployed (those unemployed more than one year) increases among the unemployed, and that these workers are not important for wage bargaining. What is the appropriate change in α required to capture this effect?

More importantly, what happens to the sacrifice ratio in this economy as the proportion of long-term unemployed increase? What does this imply about the cost of disinflation? In addition, what does this imply about the modified Phillips curve (and the short-run behavior of the economy in general)?

Chapter 19 – Inflation, Interest Rates, and Exchange Rates (Jacob)

T/F   In the long run the rate of inflation is determined only by the rate of money growth.

Long Question

Consider 2 countries Home *(H)* and Foreign *(F)*. There are 2 goods: *T* and *N*. The prices of these goods are determined through the following equations:

$$P_T = a_T w \qquad P_N = a_N w$$
$$P_T^* = a_T^* w^* \qquad P_N^* = a_N^* w^*$$

Where P_T is the price of *T* , P_N is the price of *N*. *w* is the nominal wage rate. Variables without asterisks refer to country *H* and asterisks denote country *F*.

The price indexes are given by : $P = P_T^\alpha P_N^{1-\alpha}$; $P^* = \left(P_T^*\right)^\alpha \left(P_N^*\right)^{1-\alpha}$

E is the nominal exchange rate of country *H*. P_T^* (and P_N^*) are fixed (not affected by anything the Home country does). Assume that the following equation *always* holds: $EP_T^* = P_T$ (Note: this does *not* hold for good N). Home has a fixed exchange rate regime. The following questions refer to the Home country.

a.   Find the real exchange rate.
b.   Find the real exchange rate in terms of the relative wages of the two countries. What happens to Home's real exchange rate when its wage goes up?
c.   Suppose *H* does a nominal devaluation, but wages are not allowed to change in the short run. What happens to the real exchange rate? Now assume wages adjust. What's the effect on P_N? How is the real exchange rate affected? What are the implications for the short run and long run effects of a nominal devaluation?
d.   Suppose there is a fiscal expansion in H. What happens to P_T? To P_N? To wages? What is the effect on the real exchange rate? On the current account?
e.   Suppose a_T is the number of workers required to produce one unit of good *T*. Then $1/a_T$ is a measure of productivity. Suppose *H* becomes more productive in producing *T*. What happens to wages in *H*? What about P_N? What's the effect on the real exchange rate? What's the conclusion about the relation between a country's growth and its real exchange rate?

Chapter 20 – Unemployment (Pablo)

T/F: Hysteresis is only bad news; it means that unemployment in Europe is bound to stay permanently high.

T/F: The European governments that face high unemployment simply don't get it: it would be just a matter to reduce unemployment benefits and the problem would go away.

T/F: More long-term unemployment implies a steeper Aggregate Supply curve in the short-run.

Chapter 21 – Inflation (Jacob)

T/F   Inflation tax is always equal to seignorage.
T/F   The government can increase its seignorage by lowering the rate of money growth.
T/F   Inflation means higher prices so people want to hold more money.

Chapters 22-24 – Economic Growth (Alejandro)

If a country increases its saving rate, it will consume less today but more in the long run. Growth can only be achieved by increasing the factors of production. I.e. capital and/ or labor force.

One of the main differences between developing and developed countries is that the former ones grow at a slower rate.

Assume that the production function of a country is such that f(K/L) is convex for small values of K/L and then concave for higher values. The idea behind this shape is that there is a first stage of Industrialization in which every additional unit of capital is more productive than the preceding ones. But once the country has enough capital, it starts a second stage of consolidation.

With the help of a graph, show that this scenario can present 3 equilibria., Explain the dynamics of the model.   This model is said to give a 'poverty trap', explain. How can a country escape a poverty trap?