PROBLEM SET EIGHT **DUE 20 NOVEMBER**

From Chapter 16

1. Consider the general equilibrium of the following economy.

$Y^s = AN$ (production function)
$W = P^e*z*\ln(1/u)$ (wage-setting relation)

$Y^d = C + I + G$ (goods market equilibrium)
$C = c_0 + c_1*(Y^d-T)$
$I = d_0 + d_1*Y-d2*i$

$M = P*Y^d/i$ (money market equilibrium)

$L = N+U = 1$ (normalized labor force)

For simplicity assume product markets are competitive so the markup is zero.

a. Derive the Price-Setting (PS) Relation, the natural rate of output (Y_n), and the natural rate of unemployment (u_n). Also derive the actual level of output (Y) and the actual rate of unemployment (u). Finally derive the Aggregate Supply (AS) schedule and verify that its slope is positive.
b. Derive the Aggregate Demand (AD) schedule as a function of taxes (T), government spending (G), the money supply (M), and the price level (P). Verify that its slope is negative. Illustrate equilibrium in P-Y and i-Y spaces. Please do NOT attempt to solve for (P,Y,i).
c. Assume the productivity of labor (A) increases. Derive the new natural rate of unemployment and output. Assume price expectations are adaptive, so $P^e=P_{t-1}$. Graphically illustrate the change in this period's equilibrium in both P-Y and i-Y spaces. What happens in the long-run?
d. Assume that the central bank wants to keep the nominal interest rate fixed (perhaps to support a fixed exchange rate). How can the central bank maintain its peg for the nominal interest rate in face of the productivity increase this period? What happens next period? Is the nominal peg sustainable in the long-run?
e. Alternatively assume that the central bank wants to keep the price level fixed (perhaps due to a belief that price stability is always good for the economy). How can the central bank maintain the price level in the face of the productivity increase this period? What happens next period? Is the fixed price level sustainable in the long-run?
f. Finally assume that the central bank wants to keep the level of output fixed (perhaps due to a belief that overheating the economy always causes inflation). How can the central bank maintain the original level of output in the face of the productivity increase this period? What happens next period? Is the fixed level of output sustainable in the long-run?

From Chapter 17

2. "If the government wants to reduce the natural rate of unemployment, all it needs to do is increase the demand for goods and services. With greater demand, there will be more production and fewer people unemployed." Comment.

3. If the United States experienced three or four years of low (under 1%) inflation, would it return to the original Phillips curve of the 1950s and 1960s? Why or why not?