Instructions: If you do not use a word processor (e.g. Word or TeX), please write as neatly and legibly as possible. You are free to discuss these problems with classmates, but what you turn in must reflect independent work.

1. Consider an exogenous increase in government spending fully financed by an increase in lump sum taxes (i.e., \( dg = dT \)). Compute and determine the sign of the reduced form multipliers of output and the nominal interest rate for this fiscal policy experiment using the following models developed in class: a) the “sticky-wage” model and b) the “sticky-price” model. For each model, use the following expression for aggregate demand: 
\[
y = c(y - T, r) + i(r) + g.
\]
For each case, briefly explain and interpret these multipliers in terms of the implied economic behavior.

2. Assume the macro economy is described by the following equations,
\[
\frac{w}{p} = f_n(N) \\
N = N\left(\frac{w}{p^e}\right) + z \\
y = f(N) \\
y = y(r - \pi, g), \quad y_1 < 0, y_2 > 0 \\
\frac{M}{p} = m(r, y) \\
p^e = h(p), \quad 0 \leq h'(p) \leq 1.
\]
The variables and equations are as defined in class. The endogenous variables are \( w, p, N, y, r, \) and \( p^e \). \( z \) is an exogenous variable that increases the supply of labor, ceteris paribus. To make life simpler, assume that in initial equilibrium \( p = h(p) = w = M = 1 \).

a. The aggregate supply curve is defined as the relationship between output \( (y) \) and the price level \( (p) \) such that the labor market is in equilibrium and firms are producing output according to the production function. Derive the aggregate supply curve for this model after linearizing the system by taking total differentials. (Hint: appropriately combine the first three and last equations.) Explain the economic behavior underlying this supply curve.

b. Compute the reduced form effects of a change in \( g \) (government spending) on the equilibrium values of \( y, r, p \) (Hint: if you have done (a) correctly, you should have a three equation system in these variables). Are these multipliers positive, negative, or zero? Explain the underlying economic behavior.

c. Compute the multiplier \( \frac{\partial r}{\partial g} \) for the flexible price (full employment) model (by appropriately restricting \( h'(p) \)). Show that this multiplier is larger in part (c) than in part (b). Explain why.

d. Compute the reduced form multipliers \( \frac{\partial y}{\partial z} \) and \( \frac{\partial r}{\partial z} \) for the general case. Explain.