

Problem Set 1

August 25, 2009

1. Use repeated substitution to solve for the equilibrium values of w , x , and y in each system of equations.

(a)

$$y = 10 - 24w \quad (1)$$

$$x = 6 - 8w \quad (2)$$

$$y = x \quad (3)$$

(b)

$$y = 2w + 8 \quad (4)$$

$$x = 4w - 6 \quad (5)$$

$$y = \frac{1}{2}x \quad (6)$$

2. The following system of equations illustrates the general form of a partial market equilibrium market, which is a model of price determination in a one-good market:

$$Q_d = Q_s \quad (7)$$

$$Q_d = a - bP(a, b > 0) \quad (8)$$

$$Q_s = c + dP(c, d > 0) \quad (9)$$

$$(10)$$

Using substitution, solve for the equilibrium value of P expressed in terms of the parameters a, b, c , and d . Then solve for the equilibrium value of Q . Graph your results.

3. The simplest Keynesian-style macroeconomic model is the Keynesian cross. The equations for a typical Keynesian-cross model include the definition for aggregate demand

$$AD = C + I \quad (11)$$

where AD is aggregate demand, C is consumption, and I is investment. Consumption is determined by a behavioral equation, which in this problem takes the form

$$C = 3000 + \frac{2}{3}Y \quad (12)$$

where Y is national income. Investment is exogenous, and initially, we assume $I = 1000$. The equilibrium condition requires that aggregate demand equals national income, that is, $AD = Y$.

- (a) Determine the equilibrium level of national income and consumption
- (b) Determine the equilibrium level of national income and consumption if $I = 500$.