

Lecture XXI: Labor Markets – Immigration and Minimum Wage

Charles B. Moss

August 5, 2014

Readings

The Household Problem

Readings

- ▶ Friedman & Friedman Introduction & Chapter 10

The Household Problem

- ▶ Consider a slight reformulation of the consumption problem – the problem of the household

$$\begin{aligned} \max_{q_1, q_2, q_3, l} \quad & U(q_1, q_2, q_3, L - l) \\ \text{s.t.} \quad & p_1 q_1 + p_2 q_2 + p_3 q_3 \leq Y^* + w_l l \end{aligned} \tag{1}$$

- ▶ In this formulation the decision maker can increase his income by selling labor.
 - ▶ Where L is the total quantity of labor available to the household.
 - ▶ l is the quantity of labor sold – earning a wage.
 - ▶ Typically we restrict $l \leq L$.

- ▶ However, the individual values leisure – time available to the consumer not spent working for wages.
- ▶ Consider the Lagrangian form of this simple model.

$$\begin{aligned}
 L &= U(q_1, q_2, q_3, L - l) + \mu(Y^* + w_l l - p_1 q_1 - p_2 q_2 - p_3 q_3) \\
 \frac{\partial L}{\partial q_1} &= \frac{\partial U(.)}{\partial q_1} - \mu p_1 = 0 \\
 \frac{\partial L}{\partial q_2} &= \frac{\partial U(.)}{\partial q_2} - \mu p_2 = 0 \\
 \frac{\partial L}{\partial q_3} &= \frac{\partial U(.)}{\partial q_3} - \mu p_3 = 0 \\
 \frac{\partial L}{\partial l} &= -\frac{\partial U(.)}{\partial L} + \mu w_l = 0 \\
 \frac{\partial L}{\partial \mu} &= Y^* + w_l l - p_1 q_1 - p_2 q_2 - p_3 q_3 = 0
 \end{aligned} \quad . \quad (2)$$

- ▶ The interesting point of the modification is that the marginal utility of leisure

$$\mu = \frac{\frac{\partial U(.)}{\partial L}}{w_l}. \quad (3)$$

What do I assume about the marginal utility of labor? Labor is a superior good – as income rises I want more of it.

- As a starting point, consider the scenario where the consumer has relatively little income ($Y^* \rightarrow 0$)

$$\mu = \frac{\frac{\partial U(.)}{\partial q_1}}{p_1} = \frac{\frac{\partial U(.)}{\partial q_2}}{p_2} = \frac{\frac{\partial U(.)}{\partial q_3}}{p_3} = \frac{\frac{\partial U(.)}{\partial L}}{w_l}. \quad (4)$$

- If we let q_1 be food and assume that income is low, the equilibrium between leisure and food would demand that the individual sacrifice labor to get more food

$$\mu = \frac{\frac{\partial U(.)}{\partial q_1}}{p_1} \gg \frac{\frac{\partial U(.)}{\partial L}}{w_l} \Big|_{l > l^*} \quad (5)$$

or for choices of wage earning such that there is more labor.

- ▶ However, as I increase the fixed income (Y^*) or the wage rate (w_l), the marginal value of income spend on food declines – implying relatively more leisure is consumed (i.e., less wage labor is sold).
- ▶ It is natural to think of the quantity of labor supplied to the market as reaching a limit to the left of total labor use because of the rise in the leisure value of labor as depicted in Figure 1.

Labor Supply Curve

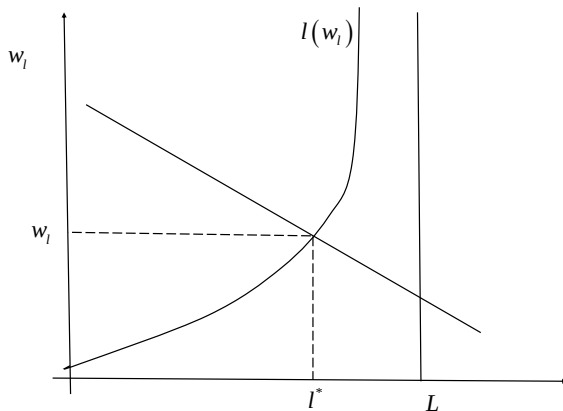


Figure : Labor Supply Curve

Backward Bending Labor Supply Curve

- In fact, if the utility of labor is high enough the supply curve for labor may be backward bending as depicted in Figure 2. In the backward bending scenario, increases in wages may actually lead to labor shortages as households choose to consume more leisure.

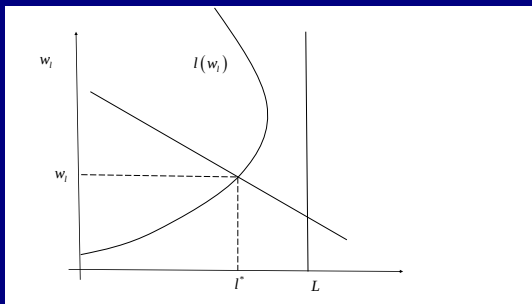


Figure : Backward Bending Labor Supply Curve

- ▶ This formulation raises several issues relevant for the current economic equilibrium.
- ▶ For example, I should rewrite the labor supply relationship as $l^*(p_1, p_2, p_3, w_l, Y^*)$ – the quantity of labor offered to the market is a function of the fixed level of income Y^* as well as the price of consumption goods.
- ▶ Recalling our discussion of the Federal Reserve of St. Louis's results – unemployment payments reduce the rate of individuals find new jobs. Basically, fixed payments for unemployment insurance increases Y^* reducing the supply of labor.

- Further, consider our current discussion about unemployment and the minimum wage. Figure 3 presents the scenario where immigrants and domestic laborers compete for unskilled labor

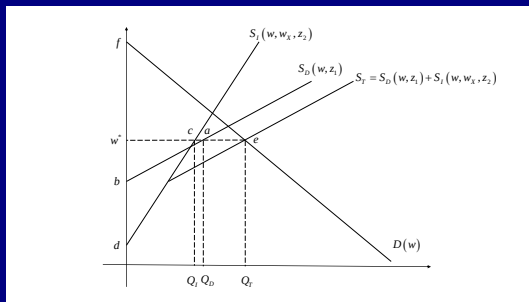


Figure : Labor Market Equilibrium

Minimum Wage

- Next, we introduce a minimum wage rate in Figure 4.

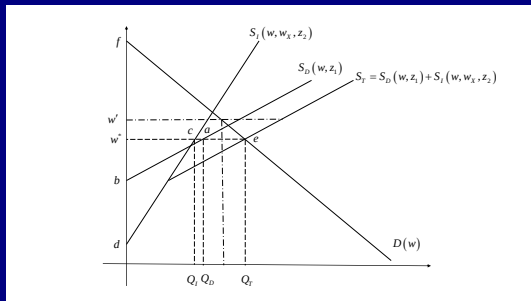


Figure : Minimum Wage