U8213 Colloquium on Policy Analysis Section 3
Spring 2001
Problem Set 2: Comparative advantage, labor markets

1. After a small accident at an insignificant nuclear missile site somewhere in the Midwest, there are only two states left in the world: New Jersey and California. The two states produce and consume only 3 goods: VCRs, cars, and watches. Everyone spends $^1/_3$ of his/her income on each good. Each person is endowed with 1 unit of labor, and each state has 10,000 people left who do nothing but work. The production technology in each state is as follows:

Units of labor per good	New Jersey	California
Watch	1	2
VCR	1	3
Car	1	5

a. Suppose the economies are initially entirely isolated, and each comes to a Walrasian equilibrium. Find the equilibrium in each state.

b. Suppose trade opens up. In the interest of preserving New Jersey's unique and inimitable culture, New Jersey allows no migration from California. In what kind of production does California have a comparative advantage?

c. Find the Walrasian equilibrium in a world with free trade but no immigration (output prices must be the same everywhere, but wages can differ). Does cheap labor from California reduce New Jerseyans to slave wages? Will imperialist New Jerseyans exploit poor Californians?

d. Compare consumption bundles before and after trade. Who gains? Who loses?

e. Compare total output before and after trade. Suppose one side loses and one side gains. Does that mean the two states should not trade?

2. In the city of New York, plumbers have the option of joining a union or working as a non-union plumber. Suppose the total short-run supply of plumbers is perfectly inelastic at 500 workers per day. Union workers can often guarantee their work in ways non-union plumbers cannot, so demand for union workers is slightly higher. Let the demand for nonunion plumbers be $W_{NU} = 30 - 0.04L$ and the demand for unionized plumbers be given by $W_U = 30 - .1L$. Wages are specified as dollars per hour of work, and L represents the number of workers per day.

a. Determine the total demand for plumbers in New York.

b. Calculate the total market wage rate of plumbers, assuming that both union and non-union plumbers get the same rate.

c. Suppose union workers get their wage raised to $20 per hour. How many union workers lose their jobs?

d. If the unemployed union plumbers become non-union plumbers, how much will non-union wages change?

3. As the owner of a small downtown deli, you estimate the number of customers served per employee per day for 0 to 6 workers (customers who aren't promptly served go elsewhere).

Customers	Employees (L)
0	0
460	1
840	2
1,140	3
1,370	4
1,500	5
1,560	6
1,560	7 or more.

You make $1.00 per customer after paying for rent, raw materials, and tickets to the police officers' annual ball, so assume a net profit per customer of $1.00 exactly.

a. Determine the marginal product of labor for one, two, three, four, five and six workers.

b. Determine the demand curve for labor (MRP).

c. If workers cost $20 per hour in wages and benefits, how many workers should you hire? (Each worker works eight hours per day and you won't hire part-timers.)

d. Suppose you look at average net profit per employee instead of MRP. How many employees will you hire? How much money are you throwing away compared to the policy derived in (c)?

4. Suppose the government gives a 10% subsidy to the fast-food industry.

a. What happens to a typical firm’s cost curves (assume U-shaped average costs)?

b. Illustrate what happens to industry supply in the short-run.

c. Does demand for labor change? Is the change larger in the short-run or the long-run?

d. Explain why the response should differ in the long-run and the short-run. Use a few specific examples to illustrate your points.