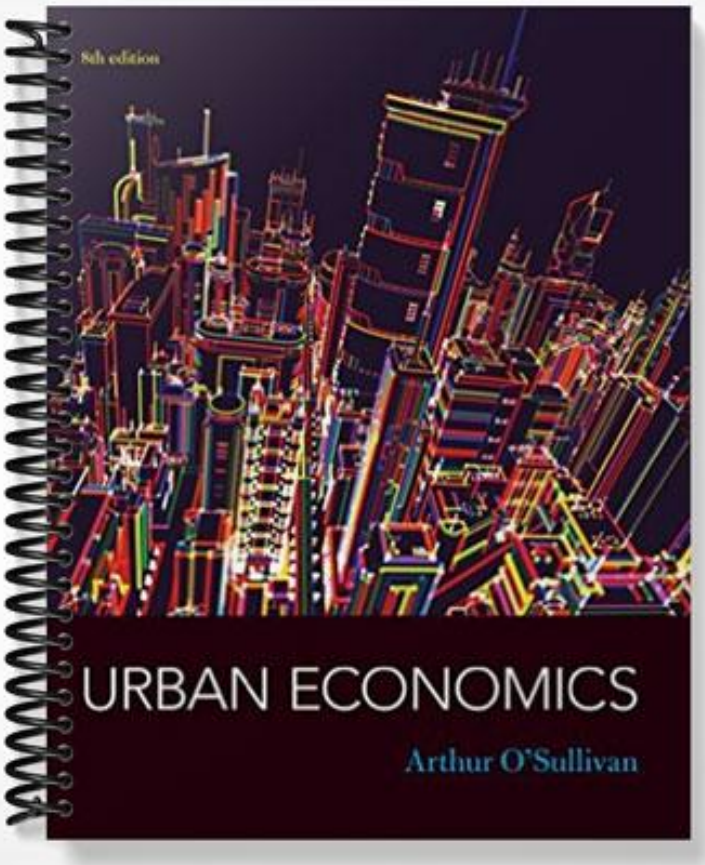
SOLUTIONS MANUAL



Applying the Concepts Chapter 2

1. Innovation and Trading Cities: Numbers

a. The gains from trade are +1 shirts for North and +1 shirts for South.
b. A trading city [will/**won't**] develop because the opportunity cost of exchange for North is 2 shirts, which exceeds the gross gain of 1 shirt.
c. Suppose an innovation in transportation decreases the transaction time. A trading city will develop if the transaction time is less than 15 minutes because the opportunity cost of exchange is 1 shirt for the North (equal to the gross gain) and 1/4 shirt for South (less than the gross gain of 1 shirt).

2. Matter Transmitter & Trading City

a. The labor used in transporting products from production sites to trading firms will [increase, **decrease**, not change] because the transmitter, with zero marginal cost, replaces the wagons.
b. The volume of trade in the region will [**increase**, decrease, not change] because the transmitter decreases the unit transport cost to zero, allowing the full exploitation of differences in comparative advantages that generate comparative advantage and trade.
c. The labor used in processing transactions (banking, accounting, insuring) will [**increase**, decrease, not change] because the volume of trade increases.
d. The trading city will grow if the gains in the labor used in processing transactions exceeds the losses in labor used in transportation.
e. Suppose the transmitter technology changes, and it becomes economical for an individual household. The trading city will [grow, shrink, **disappear**] because the absence of scale economies in exchange means that individual households will engage in direct trade.

3. Drilling for Cities

1. There are differences in productivities that generate comparative advantages.
2. The cost of transportation is small relative to the gross gains from trade.
3. There are scale economies in exchange.

4. Spring Loaded Sneakers

a. The slope of the net-price curve changes to 1/8 loaf and the market area changes from 16 miles (8 on each side) to 24 miles (12 on each side).
b. Using Figure 2–2 as a starting point, the spring-loaded sneakers change the number of factories in the 48-mile region from 3 to 2, each with a market area 24 miles wide.

5. Innovation and Market Areas

a. An innovation in production that doubles labor productivity in factories will [**shorten**, lengthen, not change] the stem of the martini glass from 4/12 loaves to 2/12 loaves because cost per shirt equals the labor cost per hour (2 loaves) divided by the output per hour (12 loaves).
b. The width of the market area increases from 16 miles (8 miles on each side) to 20 miles (10 on each side) because 2/12 + 10/12 = 12/12.

c. An innovations in transportation that doubles consumer travel speeds will [**decrease**, increase, not change] the slope of the martini glass from 1/12 loaf per mile to 1/24 loaf per mile.
d. The width of the market area increases from 20 miles (10 on each side) to 40 miles (20 on each side) because 2/12 + 20/24 = 1.

6. Matter Transmitter in a Factory City
The marginal cost of transportation is zero, so the slope of the net-price curve is zero, and instead of a martini glass, we have a goblet with vertical sides 24 miles apart.

7. Singing and the Internet
a. The equilibrium price for choral music-- the price paid by each person who listens-- is 1/4 loaves because 1/4 times 80 listeners covers the opportunity cost of 20 loaves for the singers.
b. The stem of the martini glass is 1/4 loaf and the slope is 1/8 loaf per mile, so the market area is 6 miles on each side because 1/4 + 6/8 = 1.
c. The horizontal cost of home production is now at 1/2 loaf instead of 1 loaf. The market area is 2 miles on each side because 1/4 + 2/8 = 1/2.

8. Catapult in Retireland
a. The stem of the martini glass is $2 and the slope is $0.04 per meter, and the horizontal curve showing the cost of catapult meals is at $6. The market area is 100 meters on each side because $2 + $0.04 per meter • 100 meters = $6.
b. As the distance to the nearest vending machine decreases, the price of land increases and population density decreases.

9. Performance City
a. Net utility equals the utility of the performance minus travel cost. Instead of a martini glass, we have a sort of cocktail umbrella or tent, with a peak at the performance site and a negatively sloped net utility curve as distance increases. The market area is the area over which the net utility is higher than the utility from a recording.
b. An increase in income increases the utility of a live performance, shifting the umbrellas upward and increasing the market area. If the opportunity cost of travel time increases with income, the slope of the umbrella increases, decreasing the market area.

10. Cheap Beet Hauling
a. The slope of the net-price curve increases from $0.25 per mile to $0.50 per mile.
b. If the number of processing plants remains at three, the net price received by the farm that is most distant from its closest processing changes from $30 per ton to $20 per ton.
c. We would expect the number of processing plants to [**increase**, decrease, not change] because a new plant located at the midpoint between two old plants could offer a net price of $40, compared to $20 from the nearest old plant.

11. Beer and Wine
Consider the locations of breweries and wineries.
a. Most breweries locate close to their customers (far from their primary input sources)

because beer production is a weight-gaining activity because breweries add local water (a ubiquitous input) to other ingredients. Brewing is a market-oriented industry, so it locates close to its consumers to economize on transport cost.
b. Most wineries locate close to their input sources (far from their consumers) because. Wine production is a weight-losing activity (the skins are not used) and the grapes are costly to transport because of spoilage. Firms in the materials-oriented industry locate close to input suppliers to economize on transport cost.
c. There are two evenly spaced wineries and two evenly spaced breweries. The wineries will locate at mile 15 and mile 45, splitting the western region. The breweries will locate at mile 30 and mile 90, splitting the nation.

12. Innovation City
a. No. The payoff from innovation in a city is $2 + 1 - 0.10 = 2.90$, which is less than the self-sufficient wage = 4.
b. Yes. The payoff from innovation in a city is $2 + 3 - 0.90 = 4.10$, which exceeds the self-sufficient wage = 4.
c. The stable equilibrium number of workers is about $n^* = 50$. In this case, the payoff from innovation in a city is $2 + 50^{1/2} - 5$, or about 4, which is equal to the self-sufficient wage = 4.