

Solutions to Problem Set 1, Part 1

Solutions to MCQs:

1. b
2. e
3. d
4. a
5. b
6. a
7. a
8. a
9. a

Problem 1: Chapter 2, Question 2

Given: Each worker can produce 3 cars and 2 TVs.

Home has 4 workers or $L = 4$ workers.

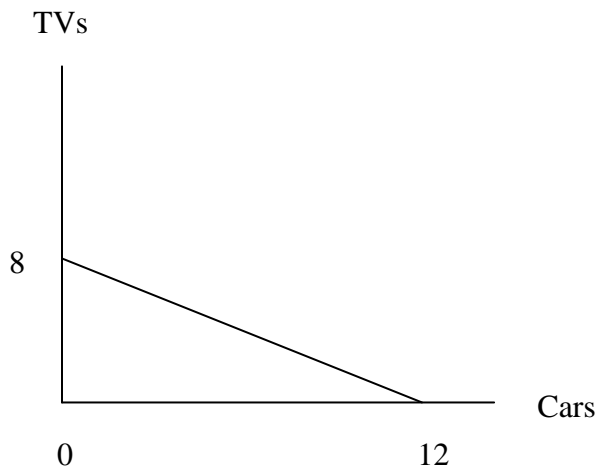
→ Marginal Product of Labor in cars = 3 → $a_{LC} = 1/3$

Marginal Product of Labor in TVs = 2 → $a_{LTV} = 1/2$

(a) PPF for Home

If car = 0 then TV input = $L/a_{LTV} = 4/(1/2) = 8$ TVs

If TV = 0 then car input = $L/a_{LC} = 4/(1/3) = 12$ cars



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(b) Home autarky price = $P_C/P_{TV} = ?$

Use perfect competition: $P = \text{Marginal Cost}$

$$P_C = W \cdot a_{LC}$$

$$P_{TV} = W \cdot a_{LTV}$$

$$\rightarrow P_C/P_{TV} = a_{LC}/a_{LTV} = (1/3) / (1/2) = 2/3$$

Problem 2: Chapter 2, Question 3

Given: Each worker can produce 2 cars and 3 TVs.

Foreign has 4 workers or $L^* = 4$ workers.

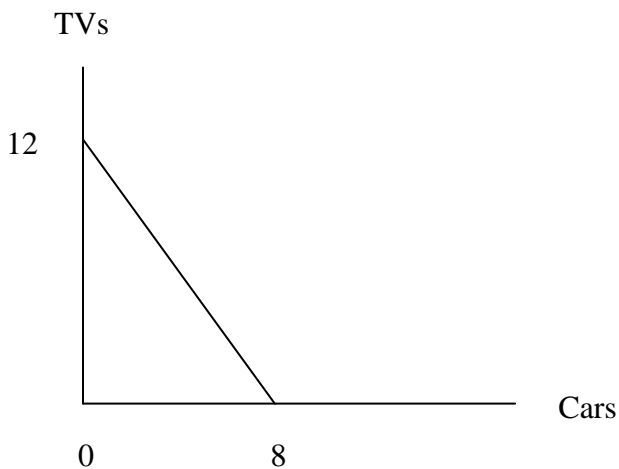
$$\rightarrow \text{Marginal Product of Labor in cars} = 2 \rightarrow b_{LC} = 1/2$$

$$\text{Marginal Product of Labor in TVs} = 3 \rightarrow b_{LTV} = 1/3$$

(a) PPF for Foreign

$$\text{If car} = 0 \text{ then TV input} = L^*/b_{LTV} = 4/(1/3) = 12 \text{ TVs}$$

$$\text{If TV} = 0 \text{ then car input} = L^*/b_{LC} = 4/(1/2) = 8 \text{ cars}$$



(b) Foreign autarky price = $P_C^*/P_{TV}^* = ?$

Use perfect competition: $P = \text{Marginal Cost}$

$$P_C^* = W \cdot b_{LC}$$

$$P_{TV}^* = W \cdot b_{LTV} \rightarrow P_C^*/P_{TV}^* = b_{LC}/b_{LTV} = (1/2) / (1/3) = 3/2$$

(c) Definition Foreign has a comparative advantage in cars

$$\text{iff (if and only if) } P_C^*/P_{TV}^* < P_C/P_{TV}$$

$$\text{But } P_C/P_{TV} = 2/3 < P_C^*/P_{TV}^* = 3/2$$

Therefore, Home has a comparative advantage in cars and Foreign has a comparative advantage in TVs.

Problem 3: Chapter 2, Question 5

$$\text{Given: } P_C^W/P_{TV}^W = 1$$

$$\text{From previous questions: Home } \rightarrow P_C/P_{TV} = 2/3$$

$$\text{Foreign } \rightarrow P_C^*/P_{TV}^* = 3/2$$

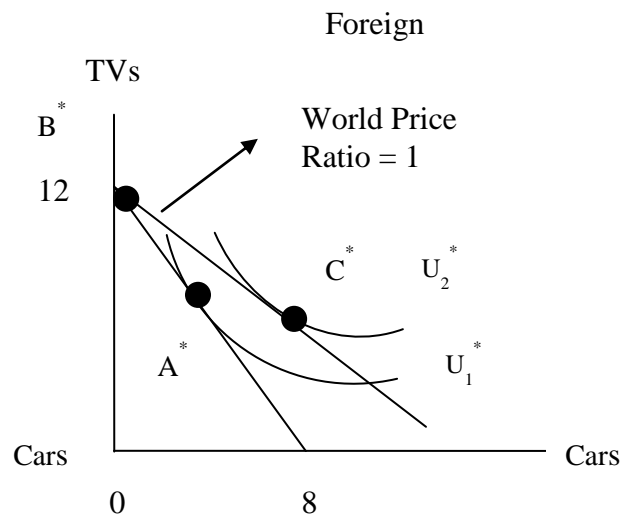
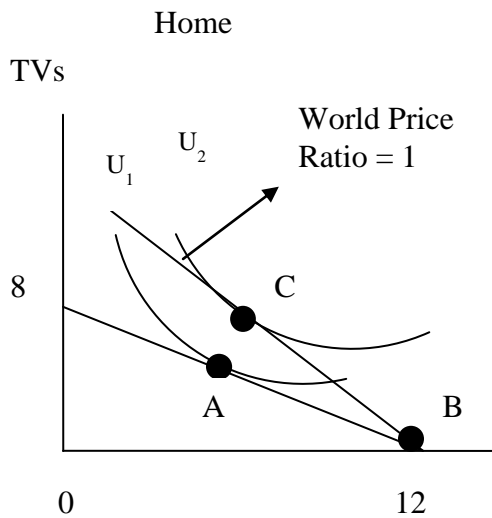
(a) Chain of Comparative Advantage

$$P_C/P_{TV} = 2/3 < P_C^W/P_{TV}^W = 1 < P_C^*/P_{TV}^* = 3/2$$

Home specializes in cars.

Foreign specializes in TVs.

(b) Free Trade Equilibrium



A: Autarky production and consumption
 B: Free trade production
 C: Free trade consumption

A* : Autarky production and consumption
 B* : Free trade production
 C* : Free trade consumption