NANYANG TECHNOLOGICAL UNIVERSITY
SCHOOL OF SOCIAL SCIENCES
SEMESTER 1 AY22-23

HE1002 MACROECONOMICS I

PROBLEM SET 10

Question 1

An economy has two workers, Bella and Edward. Per day of work, Bella can pick 100 apples or 25 bananas, and Edward can pick 50 apples or 50 bananas. Bella and Edward each work 200 days per year.

(a) Which worker has an absolute advantage in apples? Which has a comparative advantage? Calculate each worker's opportunity cost of picking an additional apple.

(b) Find the maximum number of each type of fruit that can be picked annually in this economy, assuming that none of the other type of fruit is picked. What is the most of each type that can be picked if each worker fully specializes according to his or her comparative advantage?

(c) Draw the PPC for annual production in this economy. Show numerical values for the vertical intercept, the horizontal intercept, and the slopes of each segment of the PPC.

Question 2

Suppose that Costa Rican worker Carlos can produce either 100 pounds of coffee or 1 computer per week, and a second worker, Maria, can produce either 150 pounds of coffee or 1 computer per week. Both Carlos and Maria work 50 weeks per year.

(a) Find the PPC for Costa Rica. Give numerical values for the graph's intercepts and slopes. How much of each good is produced if each worker fully specializes according to comparative advantage?

(b) World prices are such that 1 computer trades for 125 pounds of coffee on international markets. If Costa Rica is open to trade, show Costa Rica's consumption possibilities graphically. What is the most of each good that Costa Ricans can consume when the economy is open? Compare to the situation when the economy is closed.

(c) Repeat part (b) under the assumption that 1 computer trades for 80 pounds of coffee on world markets.

Question 3

Suppose that Costa Rican worker Carlos can produce either 100 pounds of coffee or 1 computer per week, and a second worker, Maria, can produce either 150 pounds of coffee or 1 computer per week. A third worker, Pedro, joins the Costa Rican economy. Pedro can produce either 140 pounds of coffee or 1 computer per week. All three workers work 50 weeks per year.

(a) Find the PPC for Costa Rica. Give numerical values of the PPC's intercepts and slopes.

(b) Find Costa Rica's consumption possibilities if the country is open and 1 computer trades for 125 pounds of coffee on world markets. What is the most of each good that Costa Ricans can consume when the economy is open? Compare to the situation when the economy is closed.

(c) Repeat part (b) assuming that 1 computer trades for 200 pounds of coffee on world markets.

Question 4

Suppose that a U.S. worker can produce 1,000 pairs of shoes or 10 industrial robots per year. For simplicity, assume there are no costs other than labor costs and firms earn zero profits. Initially, the U.S. economy is closed. The domestic price of shoes is $30 a pair, so that a U.S. worker can earn $30,000 annually by working in the shoe industry. The domestic price of a robot is $3,000, so that a U.S. worker can also earn $30,000 annually working in the robot industry.

Now suppose that the U.S. opens trade with the rest of the world. Foreign workers can produce 500 pairs of shoes or 1 robot per year. The world price of shoes after the U.S. opens its markets is $10 a pair, and the world price of robots is $5,000.

(a) What do foreign workers earn annually, in dollars?

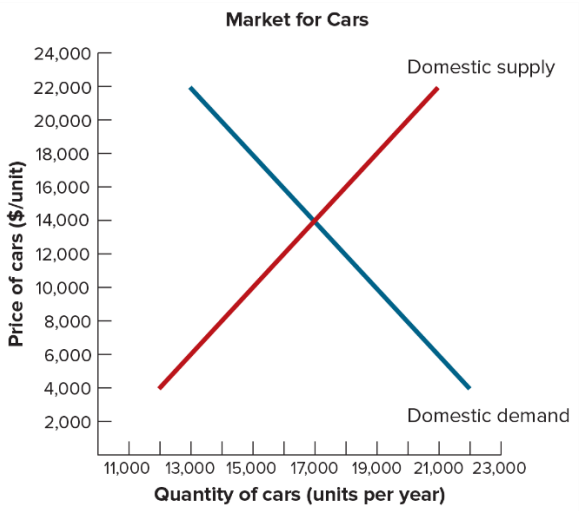
(b) When it opens to trade, which good will the United States import and which will it export?

(c) Find the real income of U.S. workers after the opening to trade, measured in (1) the number of pairs of shoes annual worker income will buy and (2) the number of robots annual worker income will buy. Compare to the situation before the opening of trade. Does trading in goods produced by "cheap foreign labor" hurt U.S. workers?

(d) How might your conclusion in part (c) be modified in the short term, if it is costly for workers to change industries? What policy response might help with this problem?

Question 5

The demand and supply for automobiles in a certain country is given in the following graph.



(a) Assuming that the economy is closed, find the equilibrium price and production of automobiles.

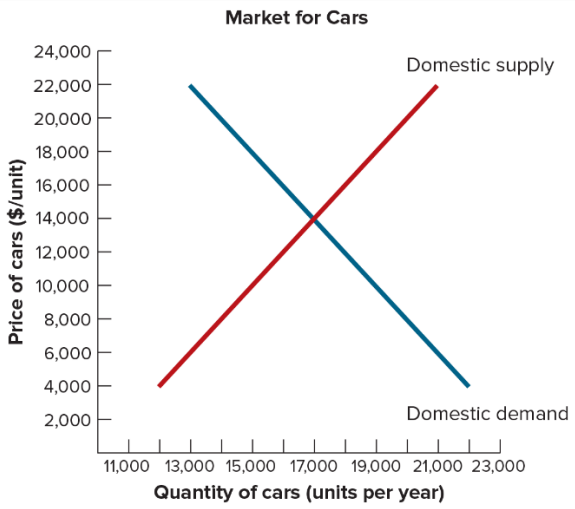
(b) The economy opens to trade. The world price of automobiles is $8,000. Find the domestic quantities demanded and supplied and the quantity of imports or exports. Who will favor the opening of the automobile market to trade, and who will oppose it?

(c) The government imposes a tariff of $2,000 per car. Find the effects on domestic quantities demanded and supplied.

(d) As a result of the tariff, what will happen to the quantity of imports or exports, and what is the revenue raised by the tariff? Who will favor the imposition of the tariff, and who will oppose it?

Question 6

The demand and supply for automobiles in a certain country is given in the following graph.



(a) The economy opens to trade. The world price of automobiles is$ 10.000. Find the domestic quantities demanded and supplied and the quantity of imports or exports.

(b) Now assume that the government imposes a quota on automobile imports of 2,000 cars. What will happen to the quantity of imports or exports?

(c) Who will favor the imposition of the quota, and who will oppose it?

Question 7

The demand for automobiles in a certain country is given by

$$D = 12{,}000 - 200P,$$

where P is the price of a car. Supply by domestic automobile producers is

$$S = 7{,}000 + 50P.$$

(a) Assuming that the economy is closed, find the equilibrium price and production of automobiles.

(b) The economy opens to trade. The world price of automobiles is 18. Find the domestic quantities demanded and supplied and the quantity of imports or exports. Who will favor the opening of the automobile market to trade, and who will oppose it?

(c) The government imposes a tariff of 1 unit per car. Find the effects on domestic quantities demanded and supplied and on the quantity of imports or exports. Also find the revenue raised by the tariff. Who will favor the imposition of the tariff, and who will oppose it?

(d) Can the government obtain the same results as you found in part (c) by imposing a quota on automobile imports? Explain.