# Problem Set 1 Solutions

ECON 355 International Trade, 2014-2015 Winter Term 1

September 19, 2014

## 1 Data Exercise

1. Chinas place in the world

   (a) China accounts for 11.3% of world merchandise exports. Its rank in the world is 1.

   (b) China accounts for 9.77% of world merchandise exports. Its rank in the world is 2.

2. China's imports and exports

   (a) Agricultural products accounts for 3.2% of China's exports and Fuels and mining products accounts for 2.7%. Thus, they together accounts for 5.9% of China exports.

   (b) Agricultural products accounts for 8.6% of China's imports and Fuels and mining products accounts for 29.4%. Thus, they together accounts for 38% of China imports.

   (c) China's total exports of sectors based on natural resources is $5.9\% \times 2048714 = 120874$ million US$, and the corresponding number for imports is $38\% \times 1818405 = 690993$ million US$. Therefore, China is a net importer in sectors based on natural resources

3. Chinas trading partners

   (a) Top 5 export destination countries for China: US, EU, Hong Kong, Japan, Korea

   (b) Top 5 import origins for China: EU, Japan, Korea, Hong Kong, US

   (c) The countries listed in part (a) and (b) are China's main trading partners because they are close to China and/or big in economic size.

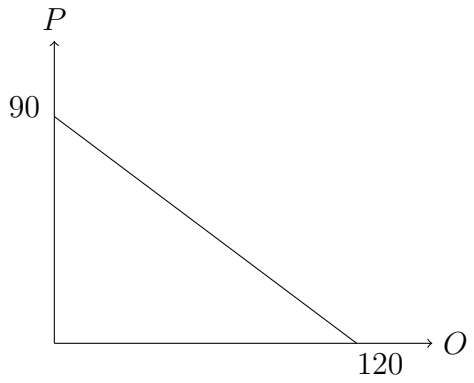
## 2 True/False

1. False. In 2012, 34% of world trade was between developed countries, 28% between developing countries and 37% between developed and developing countries.

2. True. If $\frac{MPL_W}{MPL_W^*} > 1$ and $\frac{MPL_C}{MPL_C^*} < 1$, then $\frac{MPL_W}{MPL_C} > \frac{MPL_W^*}{MPL_C} > \frac{MPL_W^*}{MPL_C^*}$ so Home has a comparative advantage in wheat. Similarly, Foreign has comparative advantage in cloth. Therefore, Home exports wheat and foreign exports cloth.

# 3 Ricardian Model - Home Autarky

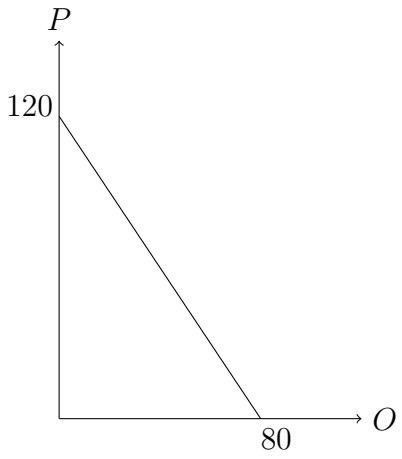
1. If the country does not produce any potatoes, it can produce $60 \times 2 = 120$ oranges.
2. If the country does not produce any oranges, it can produce $60 \times 1.5 = 90$ potatoes.
3. The opportunity cost of producing an Orange in terms of Potatoes is $\frac{MPL_P}{MPL_O} = \frac{3}{4}$. The opportunity cost of producing an Potato in terms of Oranges is $\frac{MPL_O}{MPL_P} = \frac{4}{3}$.
4. The PPF in Home country




5. The relations between wage and prices are: $W = P_O \times MPL_O = P_P \times MPL_P$.
6. From part (5), we know the relative price of Oranges is $\frac{P_O}{P_P} = \frac{MPL_P}{MPL_O} = \frac{3}{4}$. In the Home country's market, 4 Oranges can be sold for $4 \times \frac{P_O}{P_P} = 3$ Potatoes.

# 4 Ricardian Model - Foreign Autarky

1. If the country does not produce any potatoes, it can produce $40 \times 2 = 80$ oranges.
2. If the country does not produce any oranges, it can produce $40 \times 3 = 120$ potatoes.
3. The opportunity cost of producing an Orange in terms of Potatoes is $\frac{MPL_P}{MPL_O} = \frac{3}{2}$. The opportunity cost of producing an Potato in terms of Oranges is $\frac{MPL_O}{MPL_P} = \frac{2}{3}$.
4. The PPF in Foreign country




5. The relations between wage and prices are: $W = P_O \times MPL_O = P_P \times MPL_P$.

6. From part (5), we know the relative price of Oranges is $\frac{P_O}{P_P} = \frac{MPL_P}{MPL_O} = \frac{3}{2}$. In the Foreign country's market, 4 Oranges can be sold for $4 \times \frac{P_O}{P_P} = 6$ Potatoes.

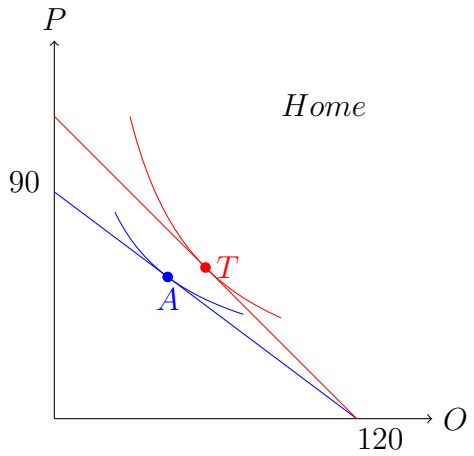
# 5 Ricardian Model - International Trade

1. As $MPL_O = MPL_O^*$, no country has absolute advantage in the production of Oranges. As $MPL_P < MPL_P^*$, Foreign country has absolute advantage in the production of Potatoes.

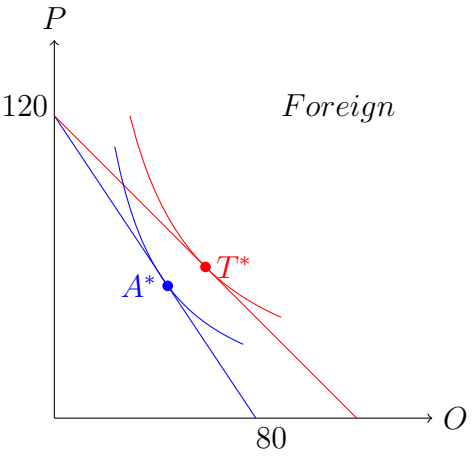
2. As $\frac{MPL_P}{MPL_O} < \frac{MPL_P^*}{MPL_O^*}$ (Home has lower opportunity cost of producing Oranges), Home has comparative advantage in the production of Oranges. As $\frac{MPL_O^*}{MPL_P^*} < \frac{MPL_O}{MPL_P}$ (Foreign has lower opportunity cost of producing Potatoes), Foreign has comparative advantage in the production of Potatoes.

3. The range of relative price of oranges is $\frac{3}{4} \leq \frac{P_O}{P_P} \leq \frac{3}{2}$.

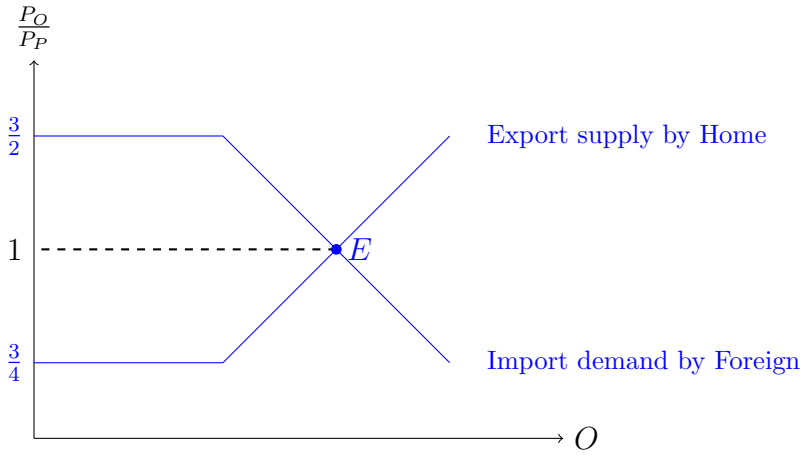
4. Home only produce Oranges and the output is 120; Foreign only produce Potatoes and the output is 120. For Home country, the consumption points in Autarky and Trade are point A and T in the following figure. Note that without more detailed knowledge of the shape of indifference curves we cannot determine the exact numerical values for consumption at those points. But we know for certain that the consumption point under trade is on a higher indifference curve than the consumption point under autarky.




For Foreign country, the consumption points in Autarky and Trade are point A* and T* in the following figure. The consumption point under trade is on a higher indifference curve than the consumption point under autarky.



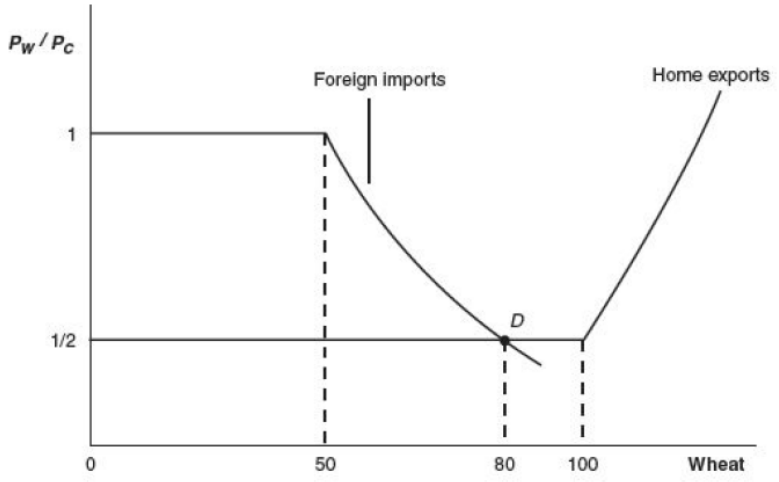

5. The trade equilibrium relative price of Oranges is the relative price that equates the import demand for Oranges by Foreign and export supply of Oranges by Home. The equilibrium point is point E in the following figure.



# 6 Problems from the Textbook (Ch2-Q11)

(a) The intersection of the foreign imports and home exports, shown in Figure 1, gives the new international equilibrium relative price of wheat, which is 1/2.

Figure 1: International Price




(b) The international price of 1/2 is the same as Home's no-trade relative price of wheat. As shown in Figure 2, Home would consume at point A and produce at point 80. The difference between these two points gives Home exports of wheat of 80 units. (Notice that workers earn equal wages in the two industries, so production can occur anywhere along the PPF.) Because the international price of 1/2 is lower than Foreign's no-trade relative price of wheat, Foreign is able to consume at point D*, which gives higher gains from trade than at point C*.

(c) The foreign country gains a lot from trade, but the home country neither gains nor loses: its consumption point A is exactly the same as what it would be in the absence of trade. This shows that in the Ricardian model, a small country can gain the most from trade, whereas a large country may not gain (although it will not lose) because the world relative price might equal its own no-trade relative price. This special result will not arise in other models that we study, but illustrates how being small can help a country on world markets!

Figure 2: Gains from Trade