

## ECO135 Quiz 1: Questions and Answers (Oct. 21.2008)

There are two countries, named Fiji and Guam. Both produce fruits and timber. Each island has a labor force of 1,200.

Q.1. Complete the table below.

	Fiji		Guam	
	Fruits	Timber	Fruits	Timber
Productivity of one worker for one month	10	5	30	10
time per unit of product (1 month = 30 days)	= 30/10 = 3 days	= 30/5 = 6 days	= 30/30 = 1 day	= 30/10 = 3 days
opportunity cost of producing one unit of F or T in terms of other product.	= 5/10 = 1/2 (Timber)	= 10/5 = 2 (Fruit)	= 10/30 = 1/3 (Timber)	= 30/10 = 3 (Fruit)

Q.2. By using the values computed in the table, discuss who has an absolute advantage in fruits production? How about for timber production? Explain.

\* When we discuss about Absolute Advantage, we look at the time per unit of product (2<sup>nd</sup> raw in the table). Whoever can produce 1 unit of product with less resources (time, in our case) has the absolute advantage.

=> Guam has A.A. for Fruits production since Guam can produce 1 unit of fruit by spending just 1 day while it takes Fiji 3 days to produce 1 unit of fruit.

=> Guam has A.A. for Timber production since Guam can produce 1 unit of timber by spending just 3 days while it takes Fiji 6 days to produce 1 unit of timber.

Q.3. By using the values computed in the table, discuss who has a comparative advantage in fruits production? How about for timber production? Explain.

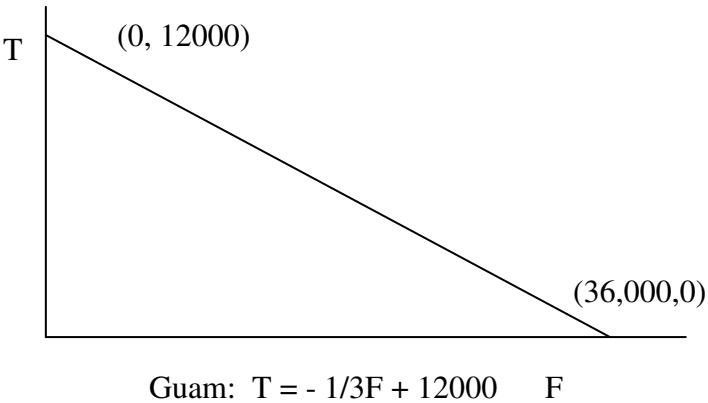
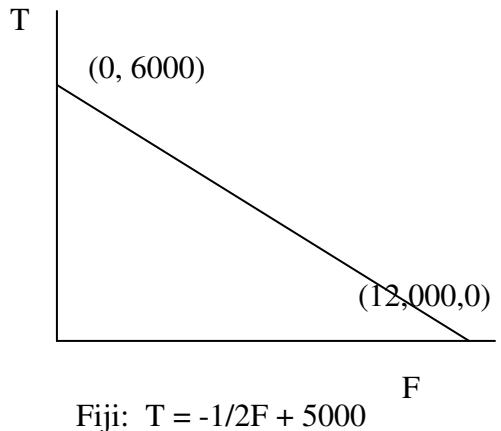
\* When we discuss about Comparative Advantage, we look at the opportunity cost of producing one unit of one good in terms of the other. Whoever can produce one unit of product with less opportunity cost has the comparative advantage.

=> Guam has Comparative Advantage for Fruits production since the opportunity cost of producing one unit of Fruit is 1/3 Timber while it is 1/2 Timber for Fiji.

=> Fiji has Comparative Advantage for Timber production since the opportunity cost of producing one unit of Timber is 2 Fruits while it is 3 Fruits for Guam.

Q.4. Sketch the production possibility frontier for each country separately.

[Hint: T = y-axis, F = x-axis, 1200 labor]



- y-intercept for Fiji is computed as  $1200*5 = 6000$  (A case where everyone in Fiji is engaged in Timber)
- x-intercept for Fiji is computed as  $1200*10 = 12000$
- y-intercept for Guam is computed as  $1200*10 = 12000$
- x-intercept for Guam is computed as  $1200*30 = 36,000$
- Given the both intercepts, you can compute the functional form of PPF for both counties.

Q5. Suppose each country allocate their labor as follows:

$$L_F^F = 400, \quad L_G^F = 300$$

$$L_F^T = 800, \quad L_G^T = 900$$

Derive the production of each product in each country

$$F^F = 400*10 = 4000 \quad F^G = 300*30 = 9000$$

$$T^F = 800*5 = 4000 \quad T^G = 900*10 = 9000$$

Derive total production of F and T.

$$F^{TOTAL} = F_F + F_G = 13000 \quad T^{TOTAL} = T_F + T_G = 13000$$

\*Consider this as the baseline case without specialization or trade.

Q6. Suppose now that

$$L_F^F = 0, \quad L_G^F = 450$$

$$L_F^T = 1200, \quad L_G^T = 750$$

and assume that the exchange rate is 4200 F to 1800 T.

### 6.1. Show numerically the gains from trade

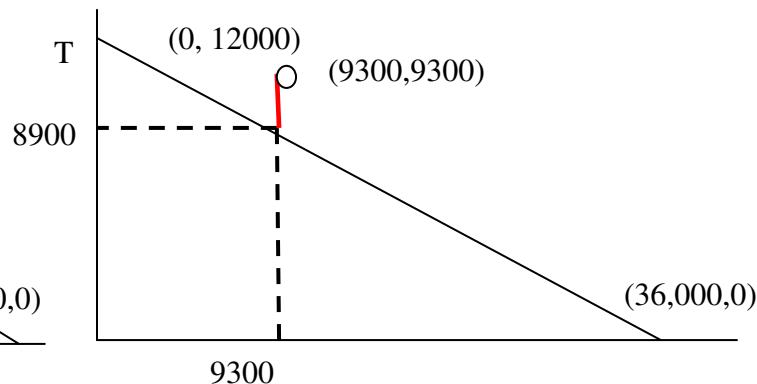
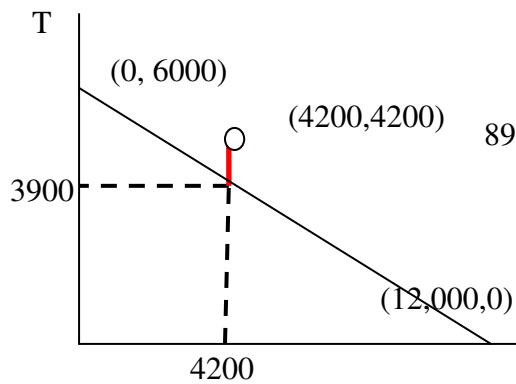
	Fiji		Guam	
	Fruits	Timber	Fruits	Timber
Labor	0	1200	450	750
Production	0	= $1200*5$ =6000	= $450*30$ =13500	= $750*10$ =7500
Exchange	+4200	-1800	-4200	+1800
Products available after trade	4200	= $6000-1800$ =4200	= $13500-4200$ =9300	= $7500+1800$ =9300

**Gains from Trade:** Before trade: FF = 4000, FT = 4000, After trade: FF = 4200, FT = 4200.

Gains from Trade = 200 F and 200 T for Fiji.

Before trade: FG = 9000, TG = 9000, after trade: FG = 9300, TG = 9300. Gains from Trade = 300 F and 300 T for Guam.

### 6.2. Show the gains from trade on the graph drawn for Q4.



Without any trade, if  $F = 4200$ ,  $T$  had to be 3900 for Fiji. For Guam, given  $F = 9300$ ,  $T$  had to be 8900. (Plug  $F=4200$  (Fiji) and  $F=9300$  (Guam) into PPF functions).

However, we found that due to “grains from trade”,  $F = 4200$  and  $T = 4200$  are available in Fiji, and  $F = 9300$  and  $T = 9300$  are available in Guam.

Comment:

I will ask a very similar question in Midterm 1 (I will change numbers, so do not memorize numbers here.). Therefore, make sure you understand each question very very well. If you have any problem following the steps in this answer key, ask questions to the instructor during office hour or practice session. I hope all of you will get full-score from this type of question!