Answer key Midterm Exam (425)

Country H

(Utility Max

Max $X^{\beta} Y^{1-\beta}$

$X \; P^{H} Y \leq wL$

$\rightarrow$ P^{H} $\frac{\beta}{\beta}$ $\frac{X}{Y}$ ①

Profit Max)

Industry X $\max_{X^H}$ L_X a_X w^H ②

$+ X \; a_X L_X$

Industry Y $\max_{Y}$ Y $P a_Y^H$ H ③

$^{H} a_Y L$

from ① ② $P_a^H = \frac{a_X^H}{a_Y^H}$

$\leftarrow$ larly fo Country F

$P_a^F = \frac{a_X^F}{a_Y^F}$

$$a^H_x / a^H_y < a^F_x / a^F_y \quad p^F$$

This means that

country H has an comparative advantage
in the production of
country F has an comparative advantage
the product of X

Country H specializes

(Profit max) $a_x \quad L_x$

L^H

$\Rightarrow a_x \quad w \quad L_x > 0$

$\Rightarrow X_p > 0$

max $a L^H \quad w L^H$
L

$p a_y^H = w^H$ & $\gamma_p \quad a_y^H L^H$

(Profit max) $X_c \quad w L^H$

$Y_c \quad L$

Y country specializes in X

(Profit Max) $p a_x^F = w^F$ & $X_p^F \quad a_x^F L^F$

$p \gamma < w^F \quad L_y^F > 0 \quad Y_p^F > 0$

(Market) $X_c^F \quad \beta w^F L^F$

$Y^F \quad \beta w^F L^F$

X Goods Market

Excess Demand for X^H $\beta w^H L^H$

Excess supply fo X X_p^F X_c^F $= (1-\beta) L^F$

$\beta w^H L$ a $\beta w L^F$

$w^H a_x^H$ $w a^F$

$\beta a^H L$ $(1-\beta) a_x^F L$

$\Rightarrow$ p $\frac{1-\beta}{\beta} \frac{a_x}{a} \frac{L}{L}$ $\frac{1-\beta}{\beta} \frac{a^F}{a_x^H}$

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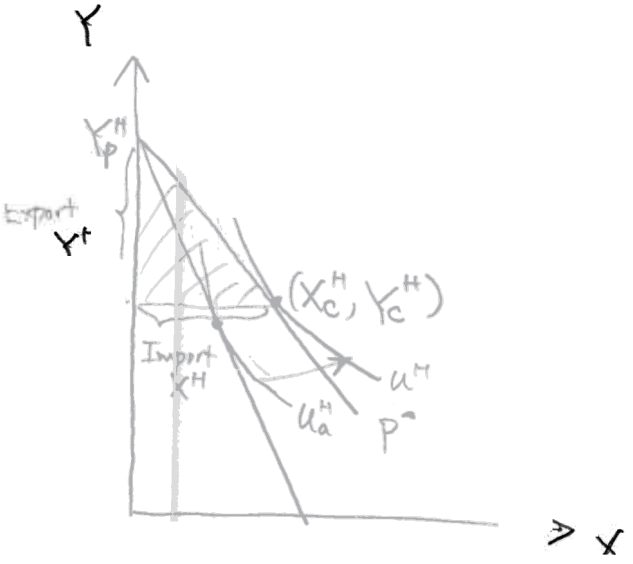
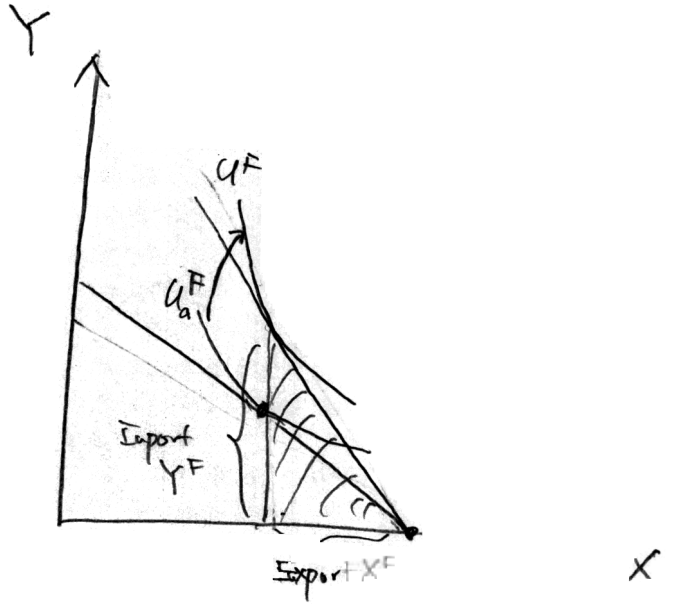
Home country



Foreign country



Both countries utility levels increase through trade as shown in the above figure

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The new free trade equilibrium price ratio is the same as before since

$$\frac{1-\beta}{\beta}\frac{a_x^F 2\bar{L}^F}{a_y^H 2\bar{L}^H} = \frac{1-\beta}{\beta}\frac{a_x^F}{a_y^H}$$

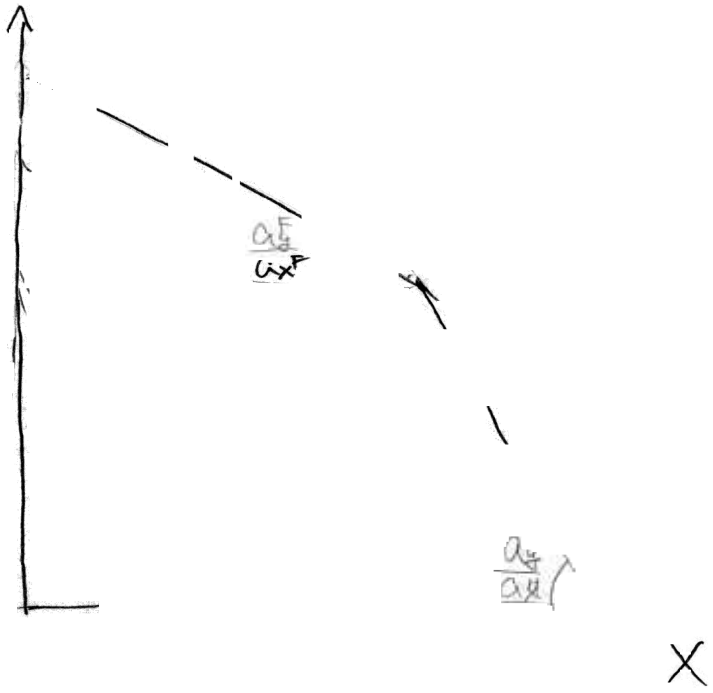
This is because of ⓐ homogeneous of degree one utility function and ⓑ constant returns to scale technologies

ⓐ ⇒ an increase in income does not affect relative demand (associated with an increase in L)

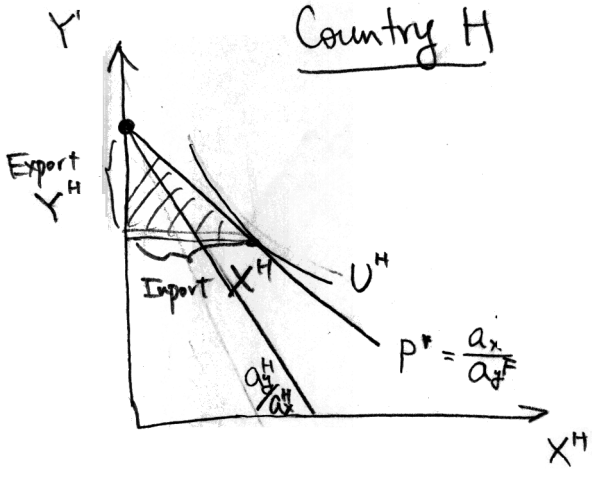
X over Y

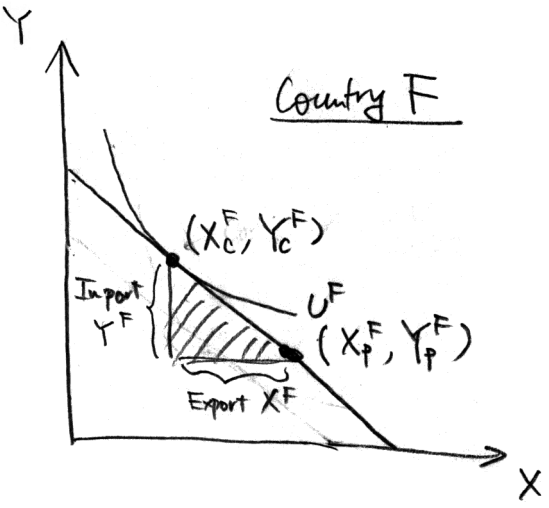
ⓑ ⇒ an increase in factor endowment by the same proportion in both countries leads to an increase in the supplies of both goods by the same proportion.

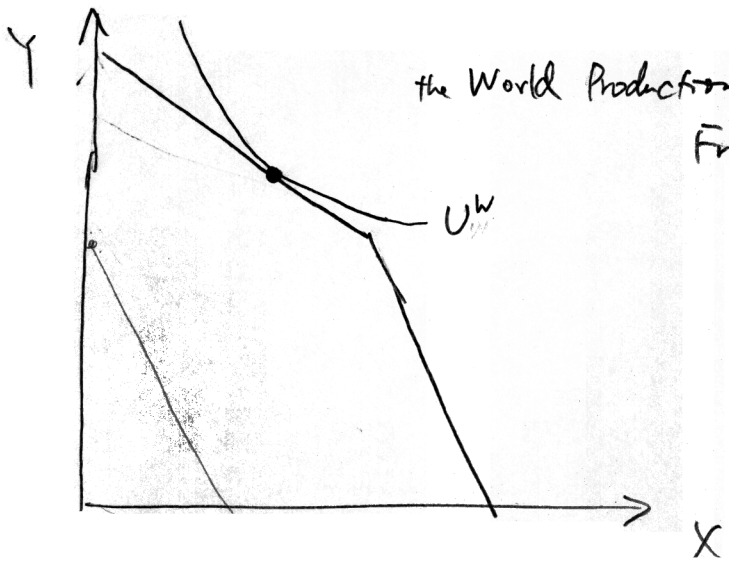
Therefore increases in L by the same proportion in both countries do not affect relative demand & supply of these goods and thus the equilibrium relative prices remain the same



Case)

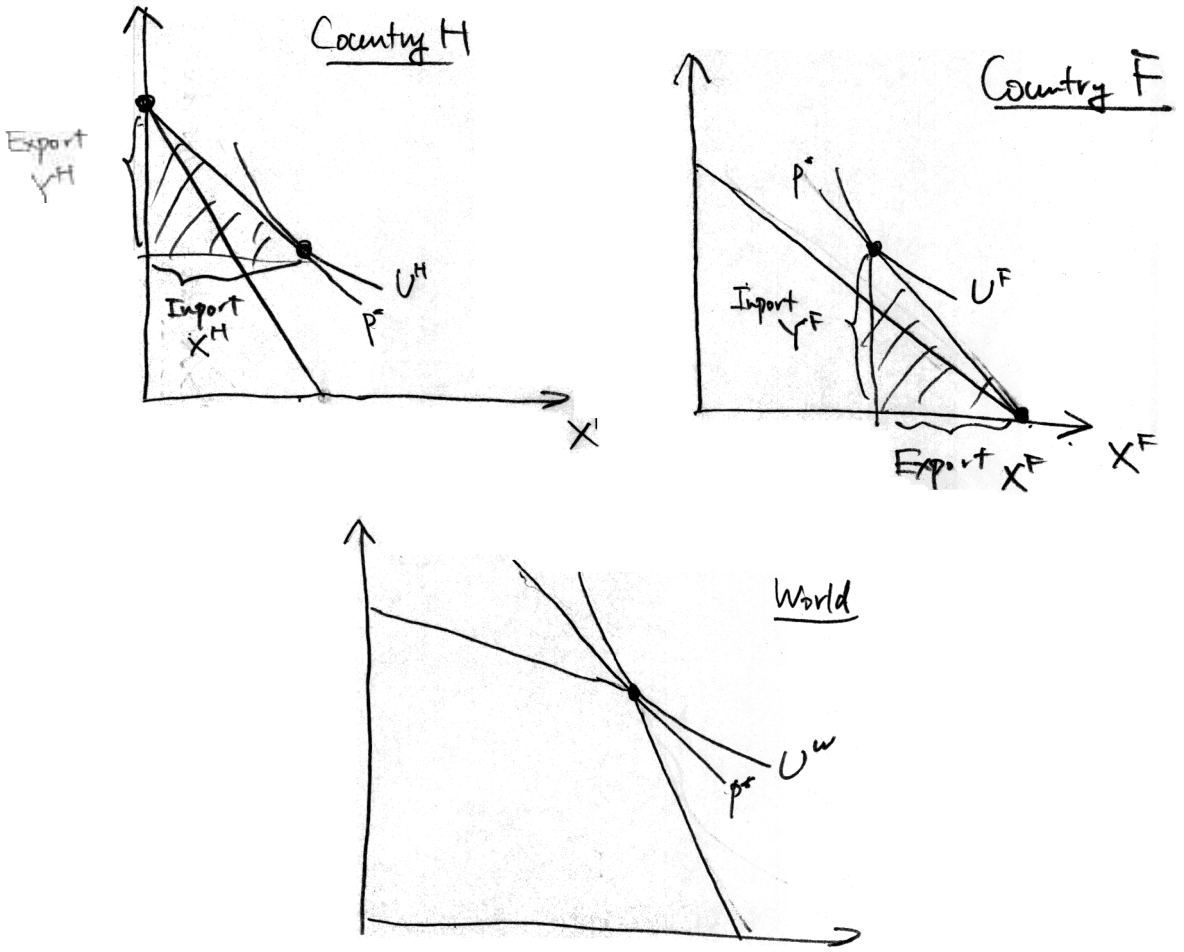




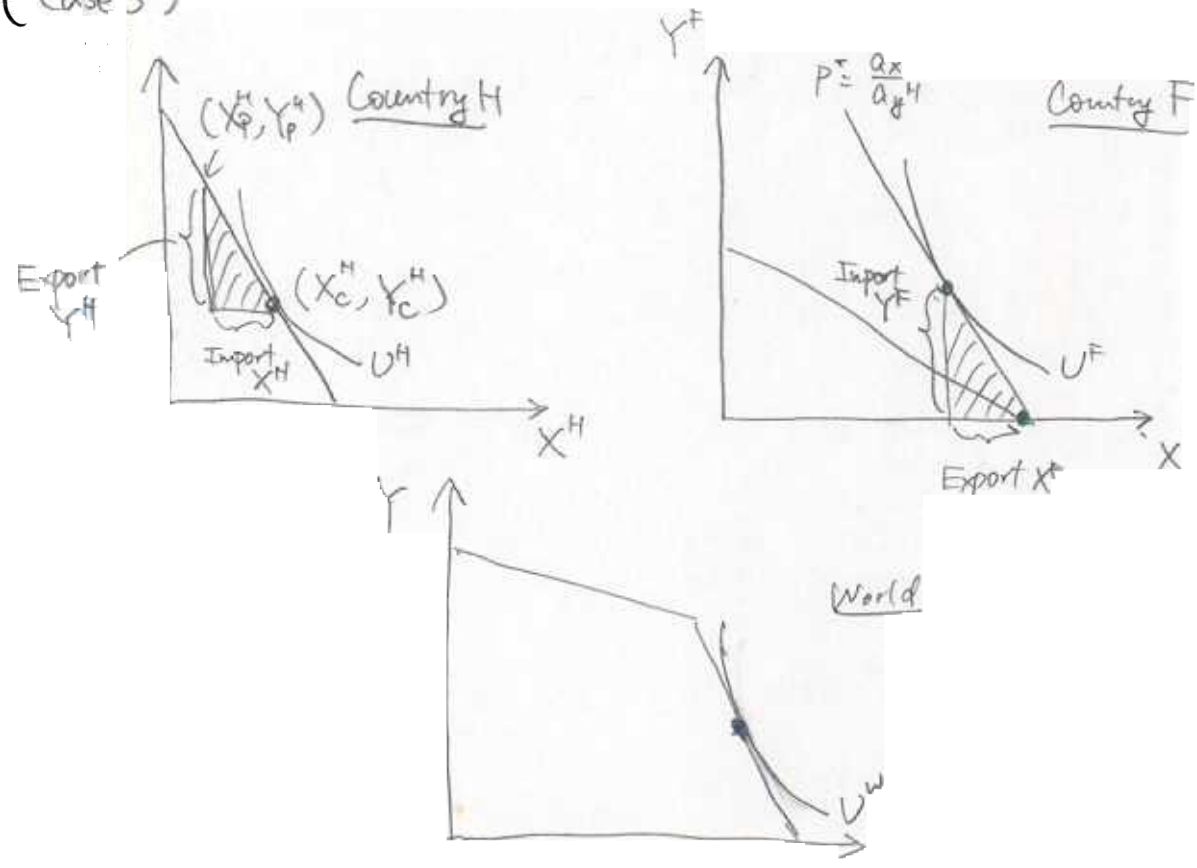


the World Production Possibility Frontier

Case 2)


Country H
Export Y^H
Import X^H
U^H
P^*
X^1
Country F
P^*
U^F
Import Y^F
Export X^F
X^F
World
P^*
U^W

(Case 3)


(X_p^H, Y_p^H) Country H
Export Y^H
(X_c^H, Y_c^H)
Import X^H
U^H
X^H
Y^F
$P^* = \frac{a_x}{a_y^H}$
Country F
Import Y^F
U^F
Export X^F
X
Y
World
U^W

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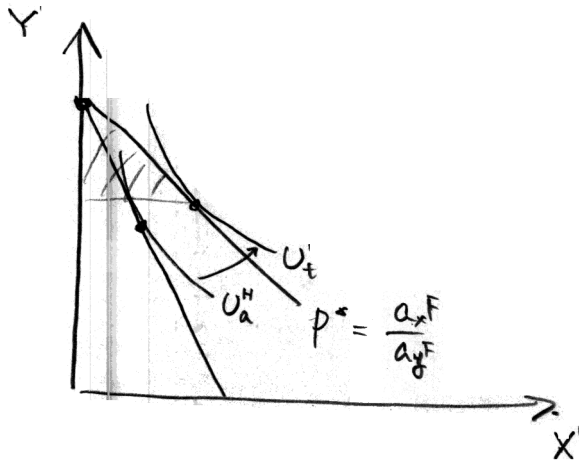
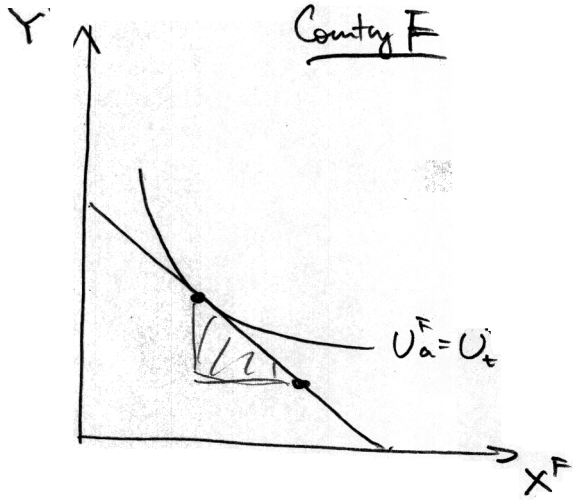
$$\frac{a_x}{a_F} < \frac{1-\beta}{\beta} \quad \frac{a_x^F}{a_y^F}$$

Country H



Country F



There gains fr trade for Country H

but not for Country

O Ye s poss ble f the following condition holds

$$\frac{1-\beta}{\beta} \frac{a_x^F}{a_y} < \frac{a_x^F}{a_y^F} < \frac{1-\beta}{\beta} \frac{a_x^F}{a_y}$$

↑ Country F specializes if L 2L

↑ initially Country F produces both good

II) No As long as Country F produces both goods the relative prices do t change (at $\frac{a_x}{a_y}$) and the consumption point f Country F does not change Hen there no welfare increase