Exercise 1.2

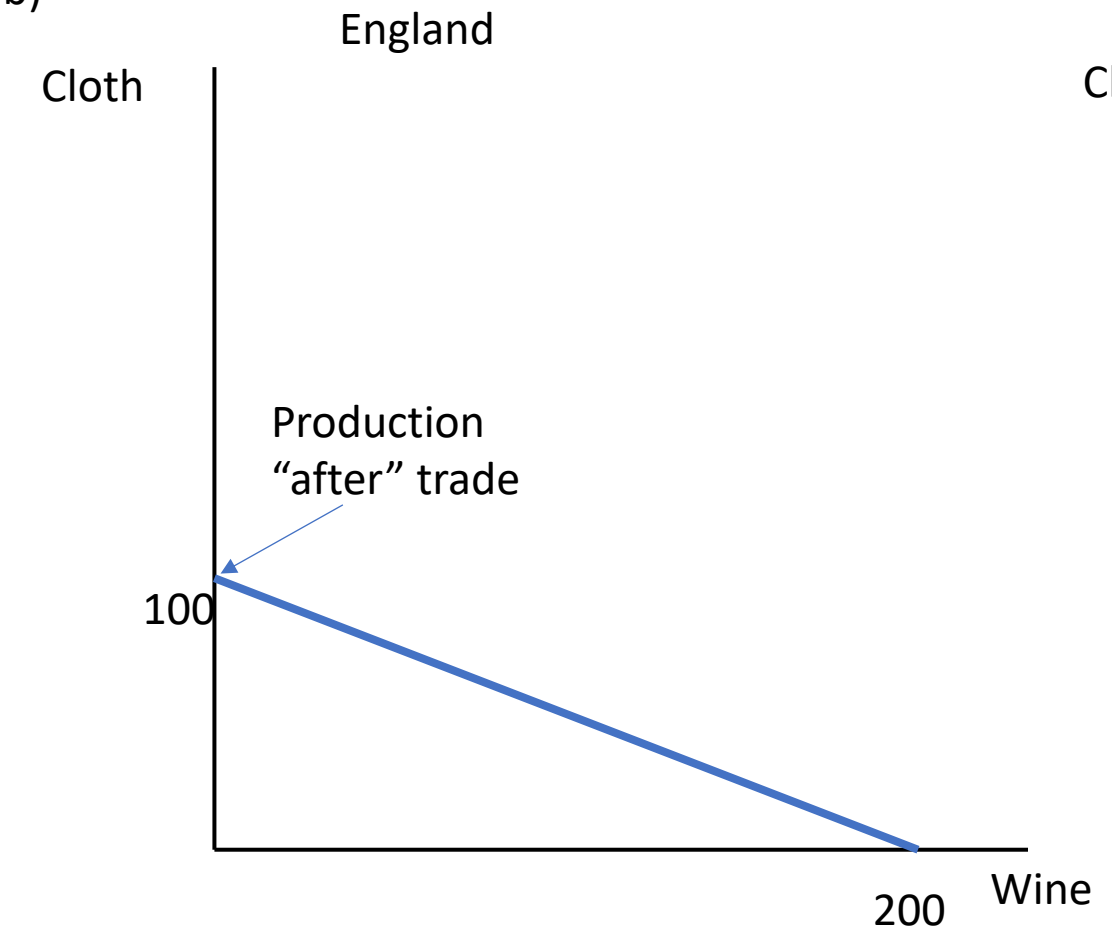
- Let us assume the following: 10 units of labor are needed to produce one bushel of wine and 20 units of labor to produce one unit of cloth, in England. In Portugal, 1 hour of labor is needed to produce one bushel of wine and 4 units of labor for one unit of cloth. Each country possesses 2000 units of labor.
  a) Which country has the relative advantage in the production of wine?
  b) How much is production of each good before and after trade?
  c) What would be the structure of trade if 200 hours of labor immigrated from Portugal to England?
  d) What would be the structure of trade if a technological change in England lowered the hours of labor needed to produce one bushel of wine to 4?
  e) Draw the excess demand and supply curves for each country.
  f) Draw the production possibility curve for the “world” composed of these two countries.
  g) If one barrel of wine is consumed for one unit of cloth for any relative prices in England, find the quantities initially consumed as well as the quantities exported and imported in England and Portugal if the relative price of cloth prevailing after trade is equal to 3.

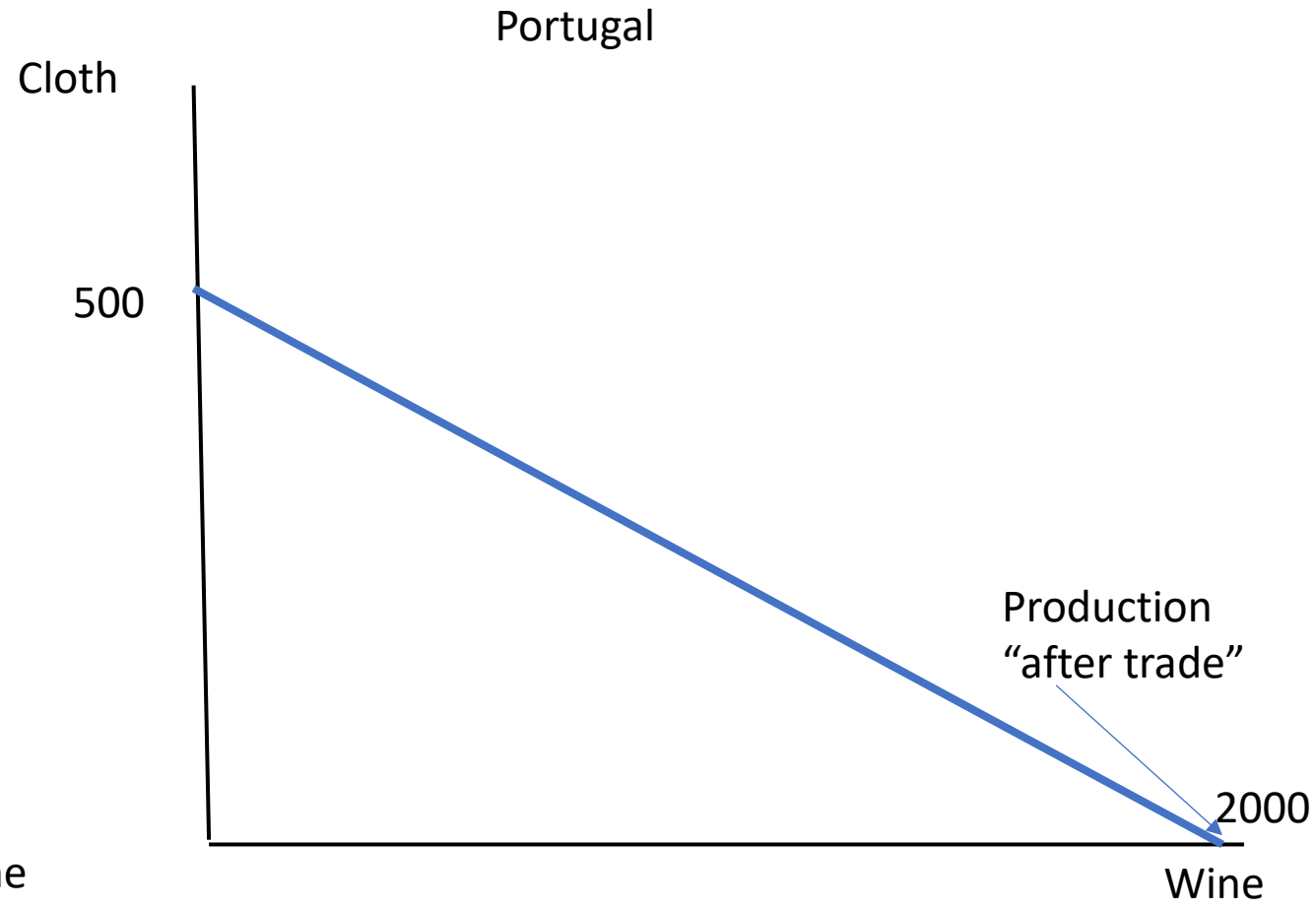
a) Which country has the relative advantage in the production of wine?

	L Hours of labour	Wine: Unit labour cost	Cloth: Unit labour cost	αLW/αLC	αLY/αLK
		αLW	αLC	PW/PC	PC/PW
England	2000	10	20	10/20=0.5	20/10 = 2
Portugal	2000	1	4	1/4= 0.25	4/1=4

England: Comparative advantage in the Cloth industry
Portugal: Comparative advantage in the Wine industry

b)


England
Cloth
Production
“after” trade
100
200
Wine


Portugal
Cloth
500
Production
“after trade”
2000
Wine

c) What would be the structure of trade if 200 hours of labor immigrated from Portugal to England?

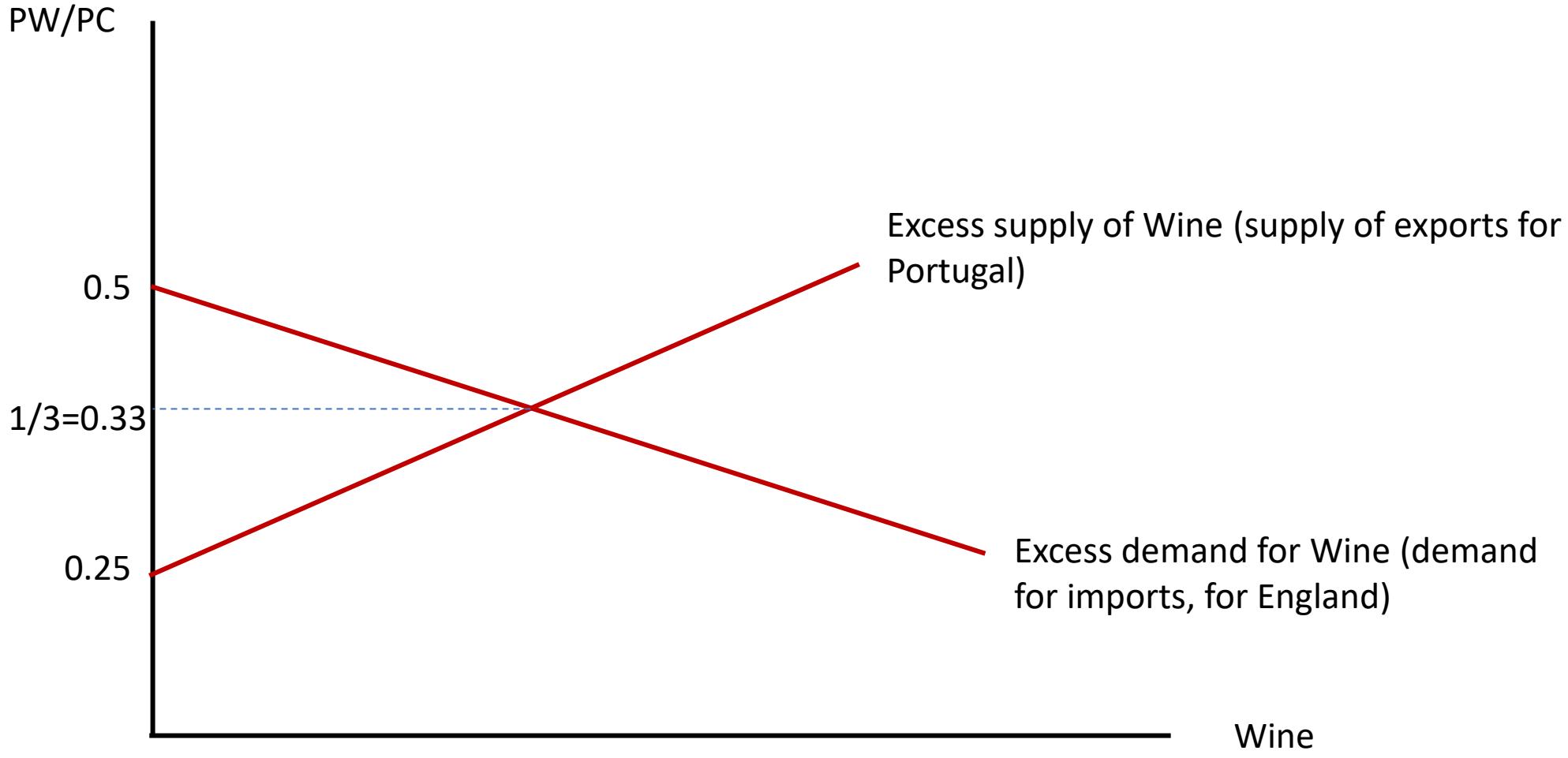
Nothing changes as the opportunity cost remains constant.

d) What would be the structure of trade if a technological change in England lowered the hours of labor needed to produce one bushel of wine to 4?

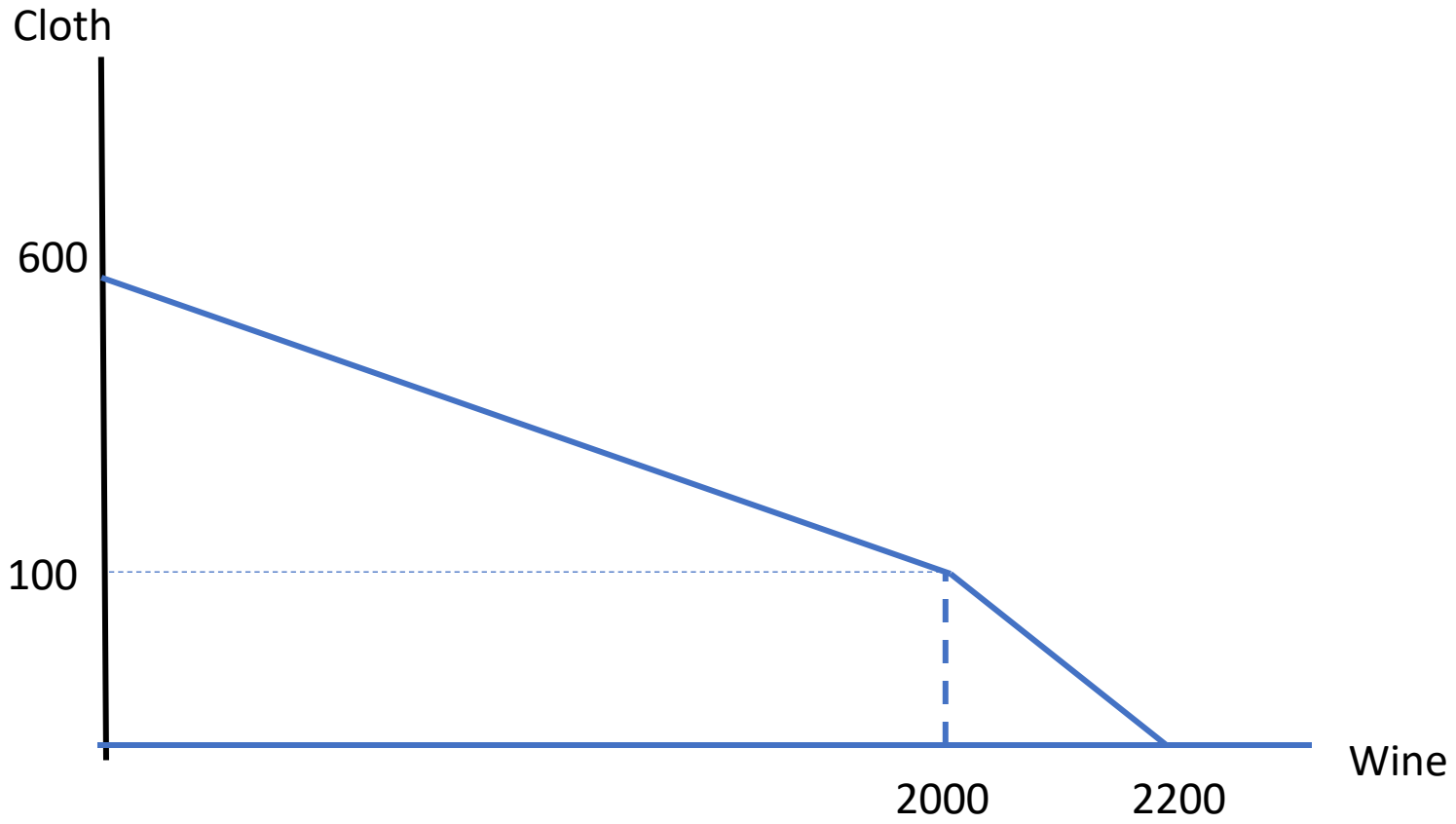
	L	Wine	Cloth	αLW/αLC	αLC/αLW
		αLW	αLC	PW/PC	PC/PW
England	2000	**4**	20	4/20= 0.2	20/4=5
Portugal	2000	1	4	1/4=0.25	4/1= 4

England: Comparative advantage in the **Wine** industry
Portugal: Comparative advantage in the **Cloth** industry

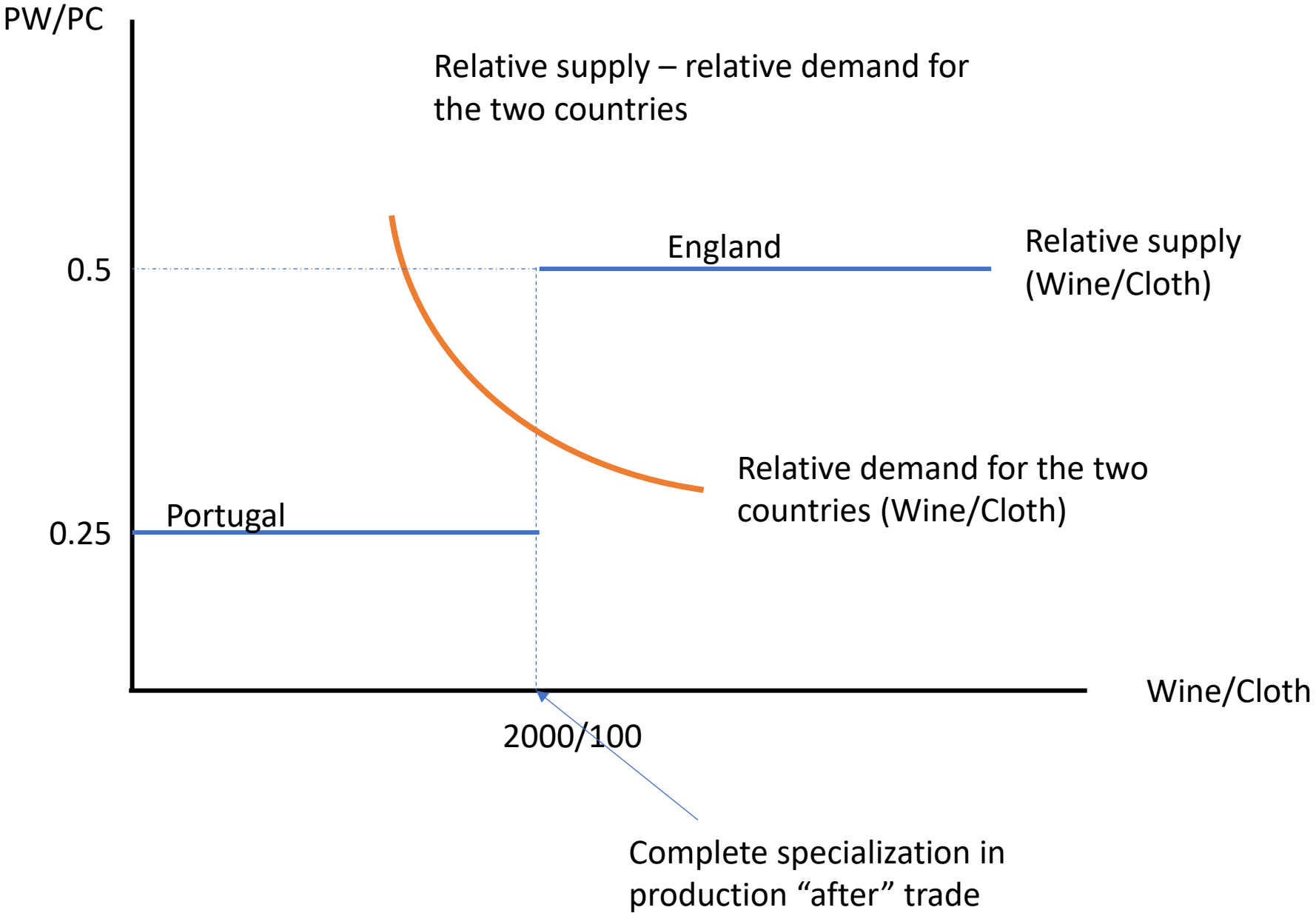
e)


PW/PC
0.5
1/3=0.33
0.25
Excess supply of Wine (supply of exports for Portugal)
Excess demand for Wine (demand for imports, for England)
Wine

f) «World» production possibility line

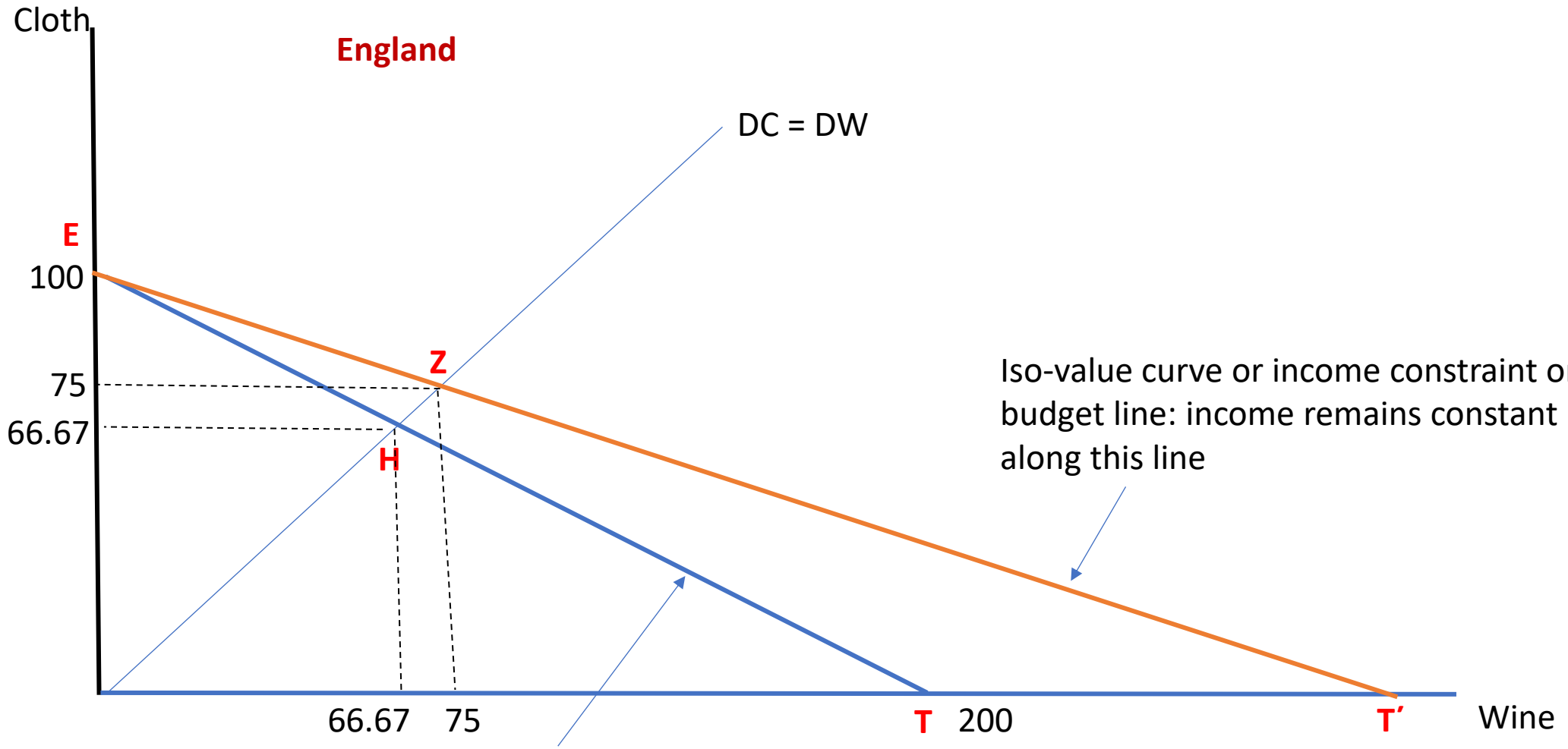


g) Draw the relative supply and demand for the two countries taken together as a whole.



h)

It is given to us that
DC=DW (consumption of one unit of cloth corresponds to consumption of one unit of wine)
PC/PW =3 (international relative price of cloth is equal to 3. Because this is greater than 2, the relative price f cloth in England “before” trade, we infer that England exports cloth…and imports wine from Portugal)



In state of autarky: this is the budget line or income curve for the country. It coincides with the production possibility curve

In order to estimate demand for W and C (that is DW and DC) in England, under conditions of closed economy (in state of autarky):

At point **E** and at point **H,** on the previous diagram, the value of income (and production) is identical :

$$100 \cdot PC = DC \cdot PC + DW \cdot PW$$

I divide both sides of this equation with PC, and given that DC=DW and that PW/PC = 0,5 (this is the relative price of wine in England, in case of autarky ("before" trade))

$$\Rightarrow 100 = DC + DC \cdot 0.5 \quad \Rightarrow \quad 100 = 1.5 \cdot DC \quad \Rightarrow \quad DC = DW = 66.67$$

DC=DW=66.67 (consumption in England, in case of autarky)

In order to estimate demand for C and W in England, after trade has started between the two countries:

At point **E** and at point **Z**, the value of income is identical:

$$100 \cdot PC = DC \cdot PC + DW \cdot PW$$

I divide both sides of the equation with PC, and given that DC=DW and that PC/PW =3 (this is the relative price of cloth, after international trade has started-it is given to us)

I solve the equation and finally find that:
DC=DW=75 (this is consumption in England, after trade)

	Before Trade		After Trade	
England:	Cloth	Wine	Cloth	Wine
Production				
Consumption				
Exports				
Imports				
Portugal:				
Production				
Consumption				
Exports				
Imports				

	Before Trade		After Trade	
England:	Cloth	Wine	Cloth	Wine
Production	66.67	66.67	100	-
Consumption	66.67	66.67	75	75
Exports			25	-
Imports			-	75
Portugal:				
Production			-	2000
Consumption			25	1925
Exports			-	75
Imports			25	-