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Key to Exercise 03
Extensions of the Classical Model of Trade

1. The following table shows the hours of labor required to produce one unit of each commodity in each country:

	Cloth (yards)	Wine (gallons)	Shoes (pairs)
England	**2 hrs**	**3 hrs**	**2 hrs**
Portugal	**1 hr**	**3 hrs**	**5 hrs**

Suppose that wage rates are £1 and €0.5 in England and Portugal, respectively. Suppose also that exchange rate is £1=€1.

a. Is there a basis for trade? **Show**.

We may construct the following table:

	Wage rate	Cloth	Wine	Shoes
England	**£1**	**2→£2=€2**	**3→£3=€3**	**2→£2=€2**
Portugal	**€0.5**	**1→€0.5**	**3→€1.5**	**5→€2.5**

As is seen clearly, there is a basis for trade because England is competitive in Shoe production and Portugal is competitive in Cloth and Wine production.

b. Suppose that the wage rate in England increased to £2. How is the pattern-of-trade affected from this change (is there a basis for trade anymore)?

We may monetize the information as follows:

	Wage rate	Cloth	Wine	Shoes
England	**£2**	**2→£2=€4**	**3→£3=€6**	**2→£2=€4**
Portugal	**€0.5**	**1→€0.5**	**3→€1.5**	**5→€2.5**

As is seen clearly, there is NO basis for trade because England has lost its competitiveness when wages rose to £2.

c. Suppose that the exchange rate becomes to £1=€0.5 in (**a**). How is the pattern-of-trade affected from this change?

We may re-monetize the data:

	Wage rate	Cloth	Wine	Shoes
England	**£1**	**2→£2=€1**	**3→£3=€1.5**	**2→£2=€1**
Portugal	**€0.5**	**1→€0.5**	**3→€1.5**	**5→€2.5**

There is a basis for trade. England is competitive in Shoe production and Portugal is competitive in Cloth production. Wine industry becomes equally competitive in both countries.

d. Suppose now that **transportation cost**, equivalent to **1 labor hour**, is charged (added to the selling price) by the exporter, and paid by the importer. How would that change the pattern-of-trade in (**a**)?

We may construct the following table:

	Wage rate	Cloth	Wine	Shoes
England	**£1**	**2→£2=€2**	**3→£3=€3**	**2→£2=€2**
Portugal	**€0.5**	**1→€0.5**	**3→€1.5**	**5→€2.5**

Note that $W_2/(W_1*e) = 0.5$. From 1a, we know that England would specialize in Shoe production. However, when we consider transportation costs,

relative labor requirement becomes: (2+1)/5=0.6>0.5. Hence, England is not competitive anymore when transportation costs are considered. Obviously, there is NO need to check whether Portugal gains competitiveness over England in Shoe production after transportation as an uncompetitive industry cannot be competitive when extra costs are added. Hence, trade stops.
Let us check how competitiveness of Portugal changes for matter of completeness. First, checking Wine industry, we see that 3/(1+1)=1.5>0.5, that is, Portugal is still competitive. Second, checking Cloth industry, we find that 2/(1+1)=1>0.5, showing that Portugal holds its competitiveness.

2. The following table shows the hours of labor required to produce one unit of each commodity in each country:

	Cloth (hours/yard)	**Wine (hours/Gallon)**
England	**2**	**2**
Portugal	**1**	**5**

Suppose that wage rates are £1 and €0.5 in England and in Portugal, respectively. Suppose also that exchange rate is £1=€1.

a. Find the wage rate limits of England and Portugal.

We need to use the export condition ($a_{1j}\cdot W_1\cdot e<a_{2j}\cdot W_2$) to answer this question.
Wage rate limits for England are found as follows:
(i) Upper limit: $2\cdot W_1\cdot(1)=1\cdot(0.5)\rightarrow W_1=£0.25$
(i) Lower limit: $2\cdot W_1\cdot(1)=5\cdot(0.5)\rightarrow W_1=£1.25$

Analogously, wage rate limits for Portugal are found as follows:
(i) Lower limit: $2\cdot1\cdot(1)=1\cdot W_2\rightarrow W_2=€2$
(i) Upper limit: $2\cdot1\cdot(1)=5\cdot W_2\rightarrow W_2=€0.4$

b. Determine the exchange rate limits.

We need to use the export condition ($a_{1j} \cdot W_1 \cdot e < a_{2j} \cdot W_2$) to answer this question.

(i) Lower limit: $2 \cdot 1 \cdot (e) = 1 \cdot (0.5) \rightarrow e = £0.25/€$
(i) Upper limit: $2 \cdot 1 \cdot (e) = 5 \cdot (0.5) \rightarrow e = £1.25/€$