Elementary Trade Theory
Economic History of Globalization, September 8, 2005

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Science helps us to explain when common sense is wrong!

Economics is no exception!

Trade Theory

- Increasing trade is one of the cornerstones of globalization.
- Trade theory is relevant to economic history and the economic debates of today.
- Key concept: Comparative advantage (based on opportunity costs).
- Gives the intellectual justification for free trade.
- Paul Samuelson: the best example of an economic principle that is undeniably true yet not obvious to intelligent people.

18th Century Mercantilism

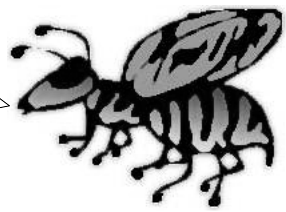
- Nations compete for wealth (gold and silver).
- So nations should “hoard” wealth.
- This can be done by exporting more than importing.
- Trade surpluses “good”, trade deficits “bad”.
- Justification for protectionism.
- But not all nations can have a trade surplus!
- Justification for war and colonialism.
- Product of its time, when nations needed money to fund military expenditures.
- Now rejected by economists (although not all politicians!).
- A gradual process of enlightenment.

The Fable of the Bee (1705)

... The Root of evil, Avarice,
That damn'd ill-natur'd baneful Vice,
Was Slave to Prodigality,
That Noble Sin; whilst Luxury
Employ'd a Million of the Poor,
And odious Pride a Million more."
Envy it self, and Vanity
Were Ministers of Industry ...

Bernard de Mandeville

What he’s trying to say is, that I can help others by selfishly helping myself! (So market outcomes are not necessarily bad.)



Henry Martyn and the ”18th century rule”

18th century rule:

”it pays to import commodities from abroad whenever they can be obtained in exchange for exports at a smaller real cost than their production at home would entail” (Viner 1937, p. 440).

Martyn's *Considerations Upon the East-India Trade* (1701):

”To employ to make manufactures here, more hands than are necessary to produce the like things from the East Indies, is not only to employ so many to no profit, it is to lose the labour of so many hands which might be employed elsewhere to the benefit of the Kingdom.”

= OPPORTUNITY COST!

Opportunity costs

- The cost of something in terms of an opportunity foregone.
- I have to decide whether to work or go out drinking. Two costs of going out drinking:
  1. Direct cost: Buying beer.
  2. Indirect (opportunity) cost: I don't earn money from working.
- The Parable of the Broken Glass (Bastiat, 1850): If a little boy breaks the shopkeeper's window, is he a menace, or a public benefactor?!
  - He provides work to the glazier, who uses the money to buy bread from the baker etc.
  - But the shopkeeper has to use money to mend the window, which he might have used to buy bread etc.
  - So town is actually poorer by one window!

18th century rule – ”Absolute Advantage”

3 labourers

= 1 bottle of wine

18th century rule for England:

Import wine from France, and employ the labourers more profitably elsewhere.

1 labourer

= 1 bottle of wine

- Nations should specialize in the products they can produce cheapest, i.e. most efficiently.
- **N.B.:** This is because of the *opportunity cost* of employing labour in inefficient industries. It isn’t just that the English labourers are bad at producing wine, it is also the case that in doing so their labour is lost to more productive industries!

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Implications of the opportunity cost argument

If the basis for trade is absolute advantage the implications are:

- Oppose subsidies: If subsidies are necessary, then the industry is non-competitive. Resources are best used elsewhere.
- Oppose tariffs: Tariffs support inefficient home production, diverting resources from efficient sectors.

But what happens if one nation is inefficient at producing everything?! Actually, this is not a problem!

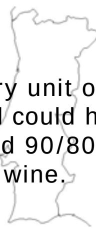
Ricardo (1817) and comparative advantage

Example:

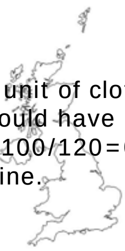
Two countries:	Portugal and England
Two goods:	Cloth and wine (consumed by both).
One input:	Labour (can be used for production of cloth or wine).
	Both countries have 1000 labourers each.
Portugal:	Requires 90 labourers to produce 1 cloth
	Requires 80 labourers to produce 1 wine
England:	Requires 100 labourers to produce 1 cloth
	Requires 120 labourers to produce 1 wine

N.B. Portugal has *absolute* advantage in producing both!

Opportunity costs of producing cloth



For every unit of cloth, Portugal could have produced 90/80=1.13 units of wine.



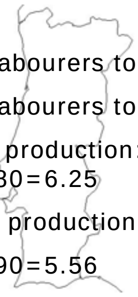
For every unit of cloth, England could have produced 100/120=0.83 units of wine.

Portugal's opportunity cost of producing cloth is greater than that of England.

England has a *comparative advantage* in cloth. (Even though she has an absolute *dis*advantage!)

Portugal has a *comparative advantage* in wine production.

Autarky – both countries produce both goods



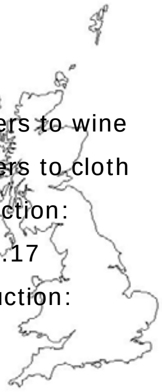
500 labourers to wine

500 labourers to cloth

Wine production:
500/80=6.25

Cloth production:

500/90=5.56



500 labourers to wine

500 labourers to cloth

Wine production:

500/120=4.17

Cloth production:

500/100=5

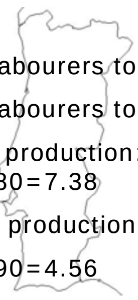
World Production (=consumption!):

Wine: 6.25 + 4.17 = 10.42

Cloth: 5.56 + 5 = 10.56

Trade part 1

Portugal reduces cloth production by 1 unit, England reduces wine production by 1 unit



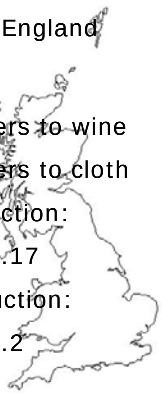
590 labourers to wine

410 labourers to cloth

Wine production:
590/80=7.38

Cloth production:

410/90=4.56



380 labourers to wine

620 labourers to cloth

Wine production:

380/120=3.17

Cloth production:

620/100=6.2

World Production (=consumption!):

Wine: 7.38 + 3.17 = 10.56

Cloth: 4.56 + 6.2 = 10.76

Trade part 2

Portugal reduces cloth production by 1 unit, England reduces wine production by 1 unit

680 labourers to wine

320 labourers to cloth

Wine production: 680/80=8.5

Cloth production:

320/90=3.56

260 labourers to wine

740 labourers to cloth

Wine production:

260/120=2.17

Cloth production:

740/100=7.4

World Production (=consumption!):

Wine: 8.5 + 2.17 = 10.67

Cloth: 3.56 + 7.4 = 10.96

Trade part 3

Portugal reduces cloth production by 2 units, England reduces wine production by 2 units

860 labourers to wine

140 labourers to cloth

Wine production: 860/80=10.75

Cloth production:

140/90=1.56

20 labourers to wine

980 labourers to cloth

Wine production:

20/120=0.17

Cloth production:

980/100=9.8

World Production (=consumption!):

Wine: 10.75 + 0.17 = 10.92

Cloth: 1.56 + 9.8 = 11.36

Lessons from comparative advantage

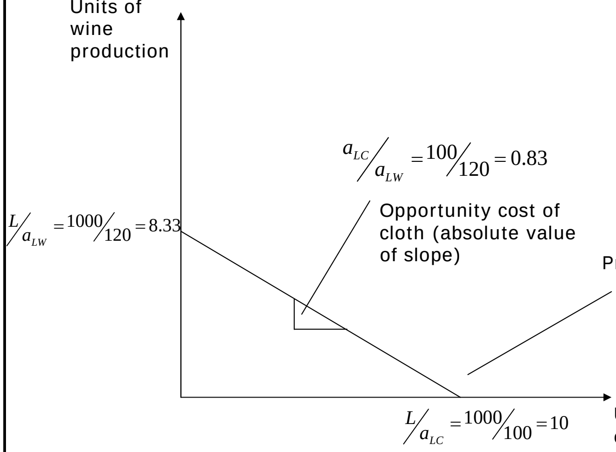
- World production increases when countries specialize in what they are good at, i.e. the good in which they have the lowest opportunity cost of producing.
- Because world production has increased it is possible to increase welfare in both countries by distributing the goods in such a way that both countries have more than in autarky.
- This will happen if each country exports the goods in which it has a comparative advantage.

But will this happen?

Time for a break!

More formal Ricardian model

ENGLAND



$L = 1000$

$a_{LC} = 100$

$a_{LW} = 120$

Q_c, Q_W production of cloth/wine

Production Possibility Frontier (PPF)

$a_{LC}Q_C + a_{LW}Q_W = L$

Labour used in cloth/wine production

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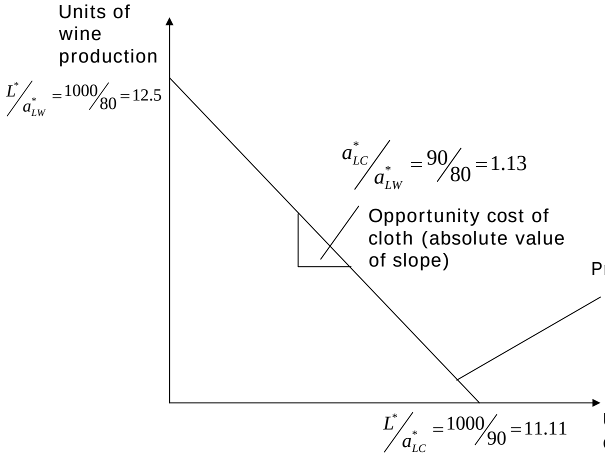
More formal Ricardian model

PORTUGAL



$L^* = 1000$

$a^*_{LC} = 90$

$a^*_{LW} = 80$

Q^*_C, Q^*_W production of cloth/wine

Production Possibility Frontier (PPF)

$a^*_{LC}Q^*_C + a^*_{LW}Q^*_W = L^*$

Labour used in cloth/wine production

Relative prices and supply

P_C, P_W

P_C^*, P_W^* Prices of cloth and wine

Perfect competition => no profits => wages = value of what a worker can produce

$\dfrac{P_C Q_C}{a_{LC} Q_C} = \dfrac{P_C}{a_{LC}}$ wage in cloth sector

$\dfrac{P_W}{a_{LW}}$ wage in wine sector

All workers want to work in the industry which gives the highest wage, so in autarky, where both goods must be produced, relative prices equal opportunity costs.

$$\frac{P_C}{a_{LC}} = \frac{P_W}{a_{LW}} \Leftrightarrow \frac{a_{LC}}{a_{LW}} = \frac{P_C}{P_W}$$

Impact of trade on prices

We have assumed that England has a comparative advantage in cloth.

In autarky, the relative price of cloth is higher in Portugal than in England, so (with trade) it is profitable to ship cloth from England to Portugal, and wine from Portugal to England.

$$\frac{a_{LC}}{a_{LW}} < \frac{a_{LC}^*}{a_{LW}^*} \Rightarrow \frac{P_C}{P_W} < \frac{P_C^*}{P_W^*}$$

This will lower the relative price of cloth in Portugal and increase the relative price of cloth in England until relative prices are equal.

$$\frac{a_{LC}}{a_{LW}} < \frac{P_C}{P_W}$$

$$\frac{a_{LC}^*}{a_{LW}^*} > \frac{P_C^*}{P_W^*}$$

Wages adjust accordingly, so Portugal will specialize in wine, and England will specialize in cloth!

Gains from trade

Assume that in world equilibrium $P_C/P_W = 1$

England can "produce" wine more efficiently by making cloth and trading it for wine than by direct production.

One unit of labour produces 1/120 units of wine

OR one unit of labour produces 1/100 units of cloth. This can be traded for 1 unit of wine!

Portugal can "produce" cloth more efficiently by making wine and trading it for cloth than by direct production.

One unit of labour produces 1/90 units of cloth

OR 1/80 units of wine which can be traded for 1 unit of cloth!

N.B. Both countries have gained from trade, because they have more of both goods. E.g. Portugal gives up one unit of cloth to produce 1.13 units of wine of which 1 unit is traded for cloth.

Relative wages

Suppose that cloth and wine both sell for £1200.

Then wages are

$$P_C/a_{LC} = 1200/100 = 12$$

$$P_W/a^*_{LW} = 1200/80 = 15$$

This explains why England has a cost advantage in cloth, even though it has a lower productivity – England has lower wages.

Likewise, Portugal has a cost advantage in wine, despite higher wages, because of greater productivity.

(See K&O for a more formal and precise exposition!)

Lessons from comparative advantage

Myth 1: Free trade is beneficial only if your country is strong enough to stand up to foreign competition.

Wrong. England gained from trade even though it had an absolute disadvantage in the production of both goods.

Myth 2: Foreign competition is unfair and hurts other countries when it is based on low wages.

Wrong. Lower wage rate is irrelevant for gains from trade argument: England gained because it was cheaper to produce cloth and trade for wine than to produce wine itself.

Myth 3: Trade exploits a country and makes it worse off if its workers receive lower wages than workers in other nations.

Wrong, since the alternative is worse. If a country is denied trade, real wages would actually be lower.

Common sense?

Defies common sense, because England exports a good which it is worse at producing, and gains from trade, despite being at an absolute disadvantage in the production of both goods!

Problems with Ricardian model:

- Only one factor of production
- Not clear what determines comparative advantage (technology?)

But illustrates an important point.

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Hecksher-Ohlin (1933)

Basis for comparative advantage is relative cost differences dependent on factor endowments (labour, capital, land).

H-O theorem: Countries will export goods which use intensively the factors that are relatively abundant.

Based on the world at the end of the 19th century:

- The US was abundant in land relative to labour, so she had a comparative advantage in goods that used a lot of land, e.g. grain.
- The UK was abundant in labour relative to land, so she had a comparative advantage in goods that used a lot of labour.

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Stolper-Samuelson theorem (1941)

Owners of scarce (abundant) factors lose (win) when an economy opens up for trade and specializes.

Intuition: Goods which use the scarce factor intensively will be relatively expensive in autarky. With free trade, their price will fall. This results in a lower return for the scarce factor.

Example:

In the 19th century, land abundant America started exporting grain to land scarce Europe. This led to a fall in grain prices in Europe, and therefore a fall in the return to land.

So landowners in 19th century Europe should have opposed free trade with America, while landowners in the US should have been in favour. This was the case!

Empirical evidence on H-O

- The H-O theory is good at explaining the period it was based on (end of 19th century)
- But not so good at explaining trade since the Second World War.
- This may be to do with the assumption of identical technologies in every country.
- But H-O is good for analyzing the distributional impact of trade.

So why do people oppose free trade?

- Free trade hurts some groups while helping others.
- There are overall gains from trade, so the winners could compensate the losers, whilst still leaving themselves better off than before free trade.

Problems:

- How do you enforce compensation?
- Is it always possible to compensate people for the loss of their jobs? (i.e. is financial compensation enough?)

Historical examples of trade conflicts I

Corn Laws (Early 19th century Britain)

- Limited import of grain when price fell below a certain level.
- Winners: Landowners (British aristocracy).
- Losers: Everyone else!
- Opposition: Anti-Corn Law League, *The Economist* (1843).
- Debate split political parties, led to formation of modern Conservative and Liberal Parties.
- Impact of Irish Potato Famine (1845-1849).
- Repealed in 1846: started movement to free trade in Europe and the beginning of "globalization". (Coming lectures.)

Consequence of protectionism? Irish Potato Famine

Historical example of trade conflicts II

American grain invasion of Europe at end of 19th century.

- Increasing US exports of grain led to a fall in prices across Europe.
- Different countries reacted differently:
  - UK: Free trade, agriculture shrank dramatically.
  - Denmark: Free trade, diversified to meat and dairy production.
  - Most others (France, Germany, Sweden etc.): Imposed tariffs.
- Gunnar will discuss this later this month (See e.g. Kevin O'Rourke, *The European Grain Invasion, 1870-1913*.)

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Contemporary Trade Debates

European Union "Bra Wars".

- January 1, 2005: System of world textile quotas abolished.
- Large orders of cheap clothes from China made by European retailers.
- EU enacts emergency quotas on clothes from China.
- Mountains of clothes build up on EU's borders.
- Countries with large domestic textile industries want quotas (e.g. France and Italy).
- Countries without against (Northern Europe).
- September 5: Agreement reached to allow clothes into EU as part of new quotas. (But must be lifted by 2008 under WTO rules.)
- Similar story in US.

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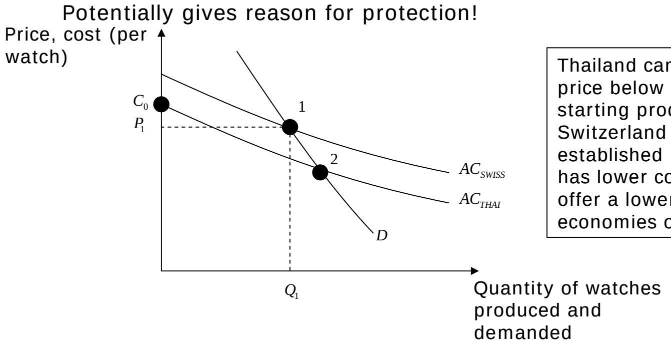
One last thing: Modern trade theory

If there are economies of scale and/or imperfect competition, then trade patterns become less predictable. For example, Switzerland might have a comparative advantage in watches, even though new producers could potentially have lower costs.
So history might be important for explaining trade patterns!
Potentially gives reason for protection!



Thailand cannot offer a price below C_0 when starting production. Switzerland is the established producer, so has lower costs and can offer a lower price due to economies of scale.

References

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