EXCHANGE MODEL CONTINUED

RELATIVE SUPPLY AND DEMAND

Assume identical homothetic indifference curves

Optimum consumer choice when MRS = P_X / P_Y . MRS depends only on X / Y

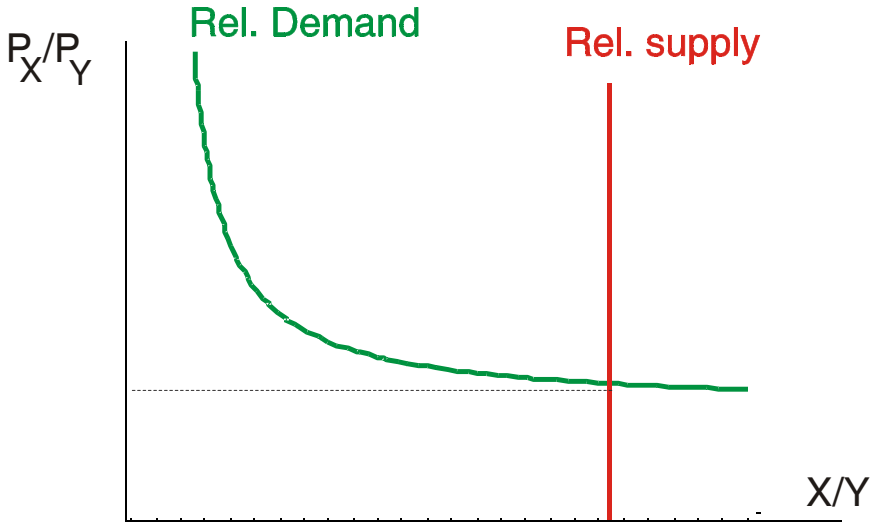
Solve: downward-sloping relative (or ratio) demand function X / Y = f(P_X / P_Y)

Same for whole economy as for each individual

Pure exchange: Relative supply is just the ratio of the two endowments (zero price-elasticity, vertical line)

Autarky: no international trade
complete isolation from rest of world

Equilibrium where
relative supply and demand meet



Why?

$X^d / Y^d = X^s / Y^s$ implies $X^d / X^s = Y^d / Y^s$. Let each = k

So $X^d = k X^s$, $Y^d = k Y^s$

Therefore $P_X X^d + P_Y Y^d = k (P_X X^s + P_Y Y^s)$

But people's (and therefore the whole economy's) incomes are just the values of their endowments, which equal the supplies.

Therefore the budget constraint is $P_X X^d + P_Y Y^d = P_X X^s + P_Y Y^s$

This gives k = 1, and therefore $X^d = X^s$, $Y^d = Y^s$

When relative demand equals relative supply,
demand also equals supply in each of the two markets,
we have full general equilibrium.

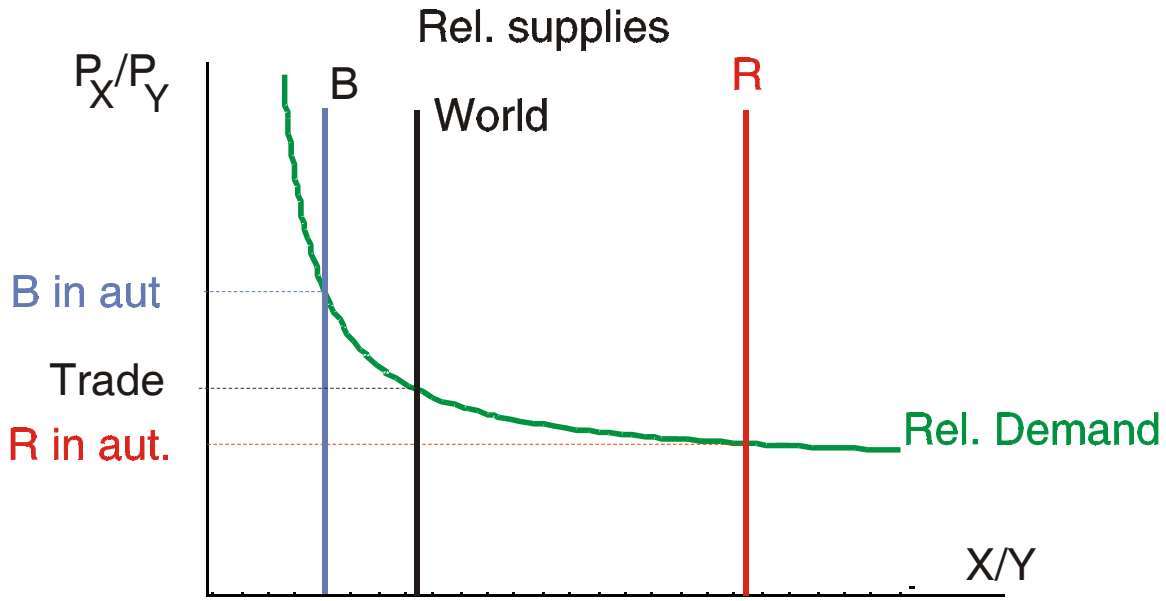
In a microeconomic equilibrium,
Walras' Law implies impossibility of excess demand in all markets,
(also impossibility of excess supply in all markets)

Macroeconomics can be different
(depending on which “school” of macro you subscribe to)

Now consider international trade with two countries, R and B
Continue to assume perfectly competitive (price-taking) behavior
Both countries can't be small. At least one or both may have monopoly power
But there are many individuals in each country, and they are price-takers
Country's monopoly power must be exercised via policy; will take this up later
Relative supplies: R has X^{Rs} / Y^{Rs} > X^{Bs} / Y^{Bs} in B
Trading world: (X^{Rs} + X^{Bs}) / (Y^{Rs} + Y^{Bs}) . This is < X^{Rs} / Y^{Rs} but > X^{Bs} / Y^{Bs}
Why? The world's X^s/Y^s ratio is an average of the ratios in the two countries.

Now we can show the two countries' autarky equilibria and their free trade equilibrium in the same picture:

Trading equilibrium relative price is between the two autarkic prices.



Inferences (also relate this to the Edgeworth box diagram from previous class):

[1] In trading equilibrium, both countries' consumption ratio
equals the world's supply ratio
So consumption ratio X/Y falls for R, rises for B. R exports X, B exports Y.
Intuition: under autarky,
X was relatively more plentiful and therefore relatively cheaper in R
relatively more scarce and therefore relatively more expensive in B
Other way round for Y
When trade opens up,
R can satisfy some of B's desire for X more cheaply
B can satisfy some of R's desire for Y more cheaply
So R exports X, B exports Y

[2] Useful concept: TERMS OF TRADE (TOT) = price of exports relative to imports
Tells you how much you can buy with each unit you sell
R exports X, its TOT = P_X / P_Y , higher with trade than under autarky
B exports Y, its TOT = P_Y / P_X , higher with trade than under autarky
Trade improves both countries TOT; that is how both gain from trade
Trade is NOT a zero-sum game

[3] COMPARATIVE ADVANTAGE:

Here R has a comparative advantage (lower relative autarky price) in X because it has a larger relative endowment of X

When we consider production, the factor endowments or technology to produce X relatively more cheaply will be important source of comp.adv.

Demand side differences also generate comparative advantage in one good

Can't have comparative advantage in both goods – no such thing

[4] If one country, say R, is very much larger than the other the world relative supply will be close to R's autarkic relative supply

Then the trading price be close to R's autarkic price

$$\frac{X^{Rs}+X^{Bs}}{Y^{Rs}+Y^{Bs}}=\frac{Y^{Rs}}{Y^{Rs}+Y^{Bs}}\frac{X^{Rs}}{Y^{Rs}}+\frac{Y^{Bs}}{Y^{Rs}+Y^{Bs}}\frac{X^{Bs}}{Y^{Bs}}$$

If $Y^{Rs} >> Y^{Bs}$, then the weight given to R's ratio in the average is close to 1 and that given to B's ratio is close to 0.

On the whole, smaller countries stand to gain more from trade

GAINERS AND LOSERS

If within a country the endowments of all its citizens are in the same proportion of X/Y, they will partake equiproportionately in the country's gains from trade.
But more generally, gains may be unequal, and some may even lose.

Extreme case: in R, some people have endowment only of X, some only of Y.
Figure shows the budget lines for the two, and their choices

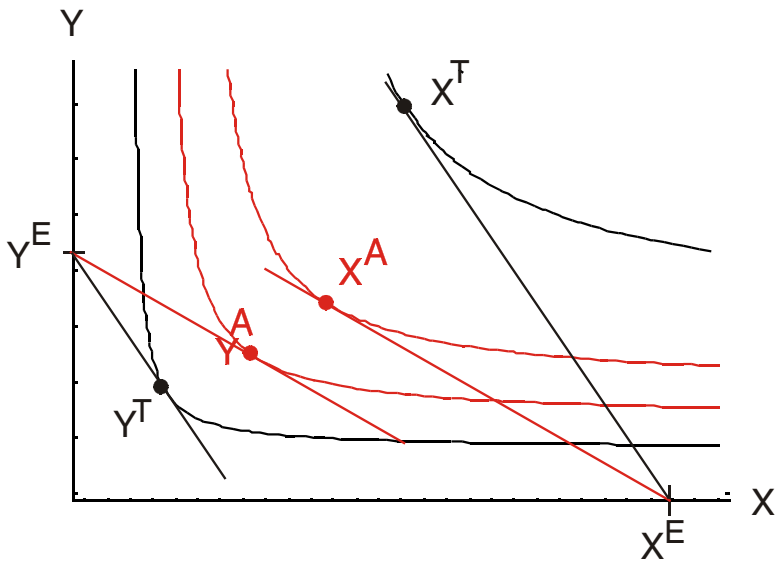
Flatter lines in autarky (lower P_X / P_Y)

Steeper under trade (P_X / P_Y rises)

X-owners gain from trade,
Y-owners lose

Why? Intuition:

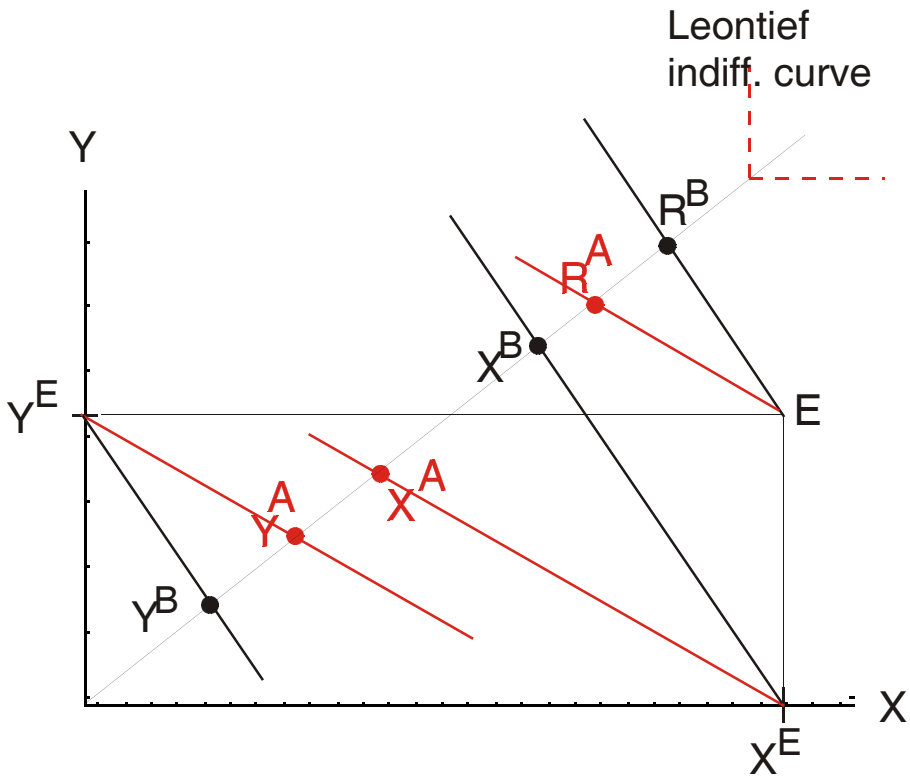
The rest of the world (ROW) values X-good more than does R, so its owners benefit by being able to sell this good for higher price



The Y-owners face stiffer competition from the ROW's relatively cheaper supplies of the Y-good, so their endowment can buy them less of the X-good

COMPENSATION

Country as a whole gains from trade
Are gains of the X-owners enough
to compensate losses of Y-owners?
Yes.
Show this in a special example,
with Leontief indifference curves.
Labels: X and Y for X, Y owners
R for aggregate country
E for endowment
Compare A, B (A not nec. autarky)
Country is exporting X;
B has better terms of trade.



Length $X^A X^B = Y^B Y^A + R^A R^B$
(Can you prove this?)
Subtract more than $Y^B Y^A$ from X-owners' trade consumption. Still leaves them better off in B than in A. Give that to Y-owners and make them better off also.
Can make rigorous and much more general argument (including production, limited transfer instruments etc.): Dixit and Norman, J. Int. Econ. August 1986.

INTERPRETATION – INTERTEMPORAL TRADE

X = present goods, Y = future goods. $P_Y / P_X = 1/(1 + \text{Interest rate})$.
Export of present goods = trade surplus, Import of present goods = trade deficit

If demand conditions are same in both countries,
the country with the higher endowment ratio Y/X should import X
(borrow to spend now, repaying with higher future output)
More generally, countries with higher marginal product of capital
should borrow to invest: capital should flow from rich / mature countries
to emerging economies with low K/L and therefore high MPK

But the US runs large trade deficit. Why? One reason:
Demand conditions are not similar:
US consumers, government
are very impatient

US has higher X/Y, but also
higher <u>autarkic</u> $P_X / P_Y = 1+r$
so comp. disadvantage in X