

Economics 404W review slides

Professor Tybout
April 18, 2006

Exam tonight: 6:30-7:45 PM, 151 Willard

Final writing assignment posted tomorrow, due May 1

Topics by lecture

- 14) migration and unemployment:
 - basic facts
 - HT model
 - policy implications
- 15) characteristics of industrial sector in LDCs:
 - size dist.,
 - turnover,
 - products,
 - business environment
- 16) Uncertainty in the business environment
 - causes in developing countries
 - risk-averse behavior
 - incentives to adopt flexible technologies
 - incentives to wait and see

Topics by lecture

- 17) Population and demographics
 - costs and benefits of children
 - income and substitution effects
 - links between demographics and the economy
 - Solow-Swan
 - Poverty traps (Becker, Murphy and Tamura)
- 18) Population and demographics, continued
 - case for government intervention
 - case against government intervention
 - policies that influence birth rates
 - proximate causes of fertility
- 19) Inequality and development
 - sources of persistence in income inequality
 - BMT on a regional level
 - Consumption mix effects
 - Banerjee and Newman model

Topics by lecture

- 20) Inequality and development, continued
 - Banerjee and Newman, continued
 - Piece rates and malnutrition
 - Poverty, inequality and savings
 - Inequality and growth
- 21) Trade policy overview: pros and cons of export-oriented policies
- 22) The simple case for free trade
 - General equilibrium with free trade versus with tariffs
 - Partial equilibrium with free trade versus tariffs
- 23) The case for free trade, continued
 - effects of the Uruguay round of tariff reductions
 - trade with external returns to scale

Topics by lecture

24) The case for free trade, continued

- trade with a monopolist
- productivity and trade
 - scale effects,
 - market share effects,
 - technical efficiency effects
- Immizerizing growth

Models discussed

Harris-Todaro

Uncertainty and Investment

Pop. growth in the Solow-Swan model

Family size determination (simple diagram, Becker et al)

Inequality and entrepreneurship (Banerjee and Newman)

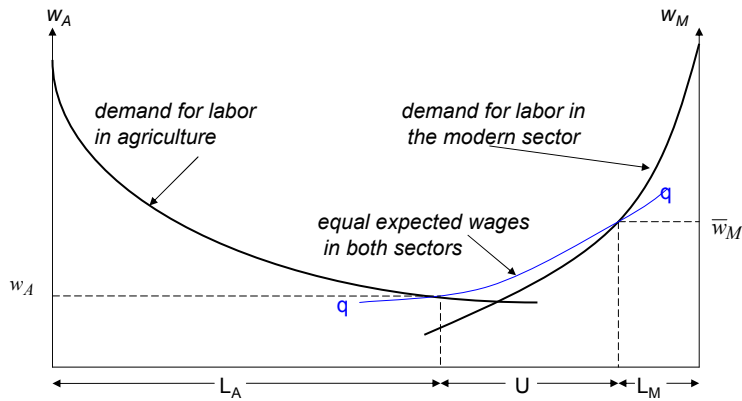
Trade and protection in competitive models (general equil., partial equil.)

Trade with positive externalities in industries

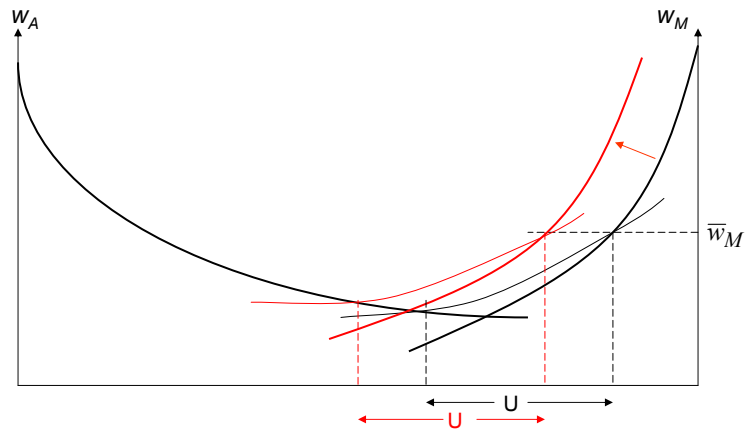
Trade with monopoly power

Immizerizing growth

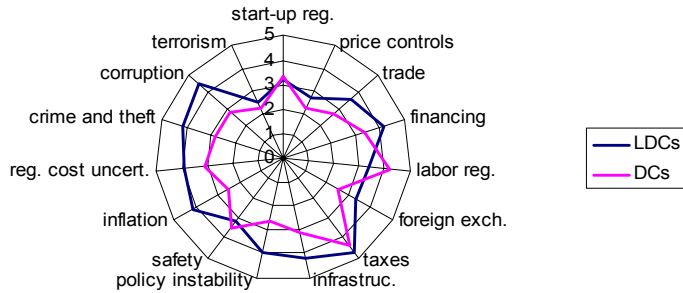
Equilibrium unemployment in the Harris-Todaro Model



Policies that increase modern sector demand may not reduce unemployment

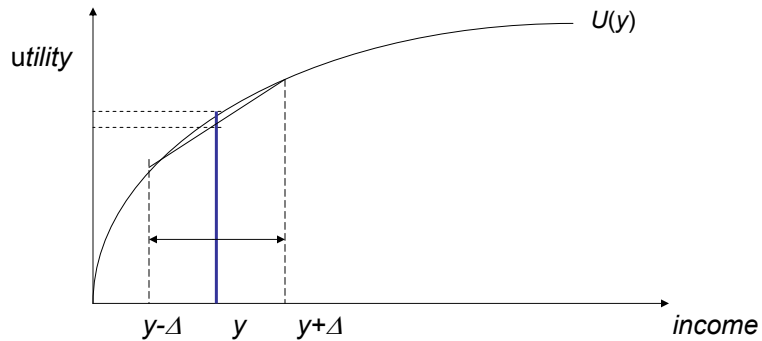


The importance of obstacles: LDCs versus DCs



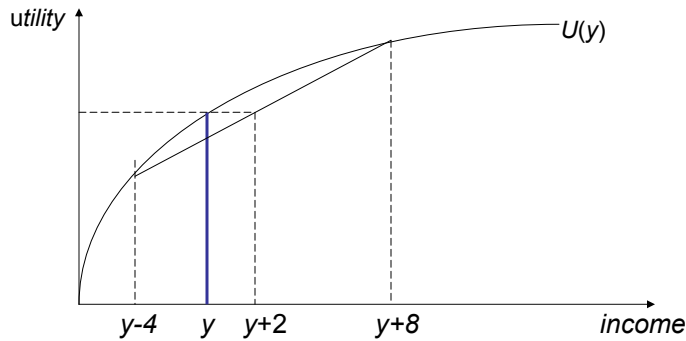
How does uncertainty affect behavior?

1. Risk-averse individuals avoid investments with uncertain outcomes.



Above, the individual forgoes an even bet that pays Δ with probability 0.5, and costs Δ with probability 0.5.

How does uncertainty affect behavior?



Above, an individual is indifferent between keeping her income of Y and making investment that yields a net expected return of 2. (The investment is equally likely to earn a net return of 8 or earn a net loss of 4.)

How does uncertainty affect behavior?

- Even with risk neutrality, uncertainty creates incentives to adopt flexible technologies.

	<i>Inflexible technologies</i>		<i>Flexible technologies</i>
<i>Policy bias:</i>	Profits with tech. 1 (especially for nontradeables)	Profits with tech. 2 (especially for tradeables)	Profits with flexible tech.
Policy favors tradeables (probability=.5)	-30	30	20
Policy favors non-tradeables (probability =.5)	30	-30	20

How does uncertainty affect behavior?

3. Uncertainty in the presence of pre-commitment (sunk costs) also creates incentives to wait and see what happens.

Example

- Suppose an exporting contract commits a firm to two periods of supply.
- Whether exporting is profitable or not depends upon exchange rate policy:

Policy regime	Period 1	Period 2
<i>Favorable</i>	150	150
<i>Unfavorable</i>	-100	-100

- As seen from the current period, either regime is equally likely. But next period the policy uncertainty will be resolved.

How does uncertainty affect behavior?

Example, continued

- If you get in now, expected profits for the next two years are $.5*(150+150) + .5*(-100-100) = 50$
- If you wait a year and then make the optimal decision, profits for the next two years are $0 + .5(150) + .5(0) = 75$.

Policy regime	Period 1	Period 2
<i>Favorable</i>	150	150
<i>Unfavorable</i>	-100	-100

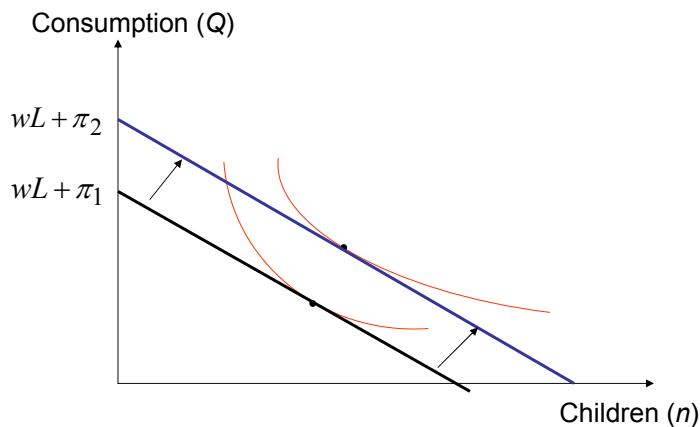
Economic costs and benefits

Budget constraint

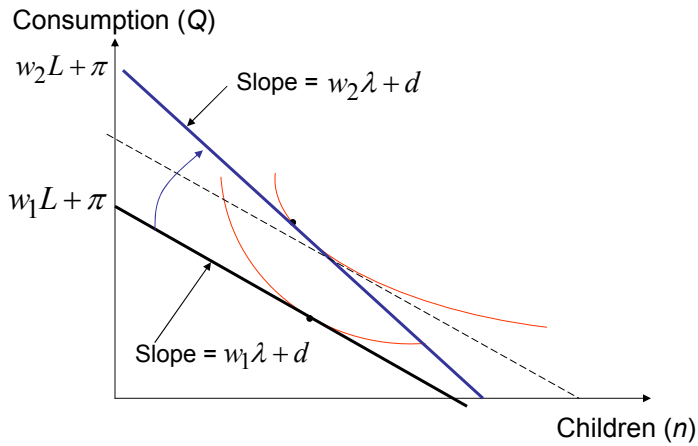
$$Q = w(L - \lambda \cdot n) + \pi - d \cdot n$$

- Q = goods consumption (price is normalized to 1)
- n = number of children
- w = market wage for mother's labor
- L = total hours available to mother (to be divided between child-rearing and income generation)
- λ = hours needed to care for one child
- π = father's earnings
- d = direct cost of children (food, clothing, health care, etc.)

An increase in father's income

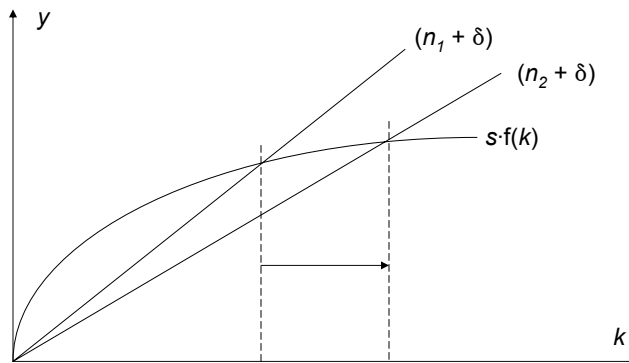


An increase in mother's wage



Causation from population growth to development

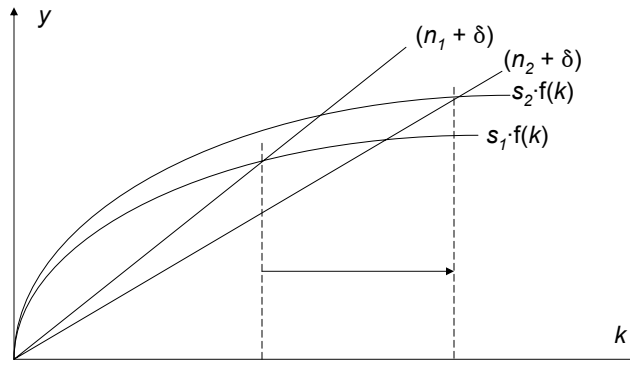
- The Solow-Swan model:



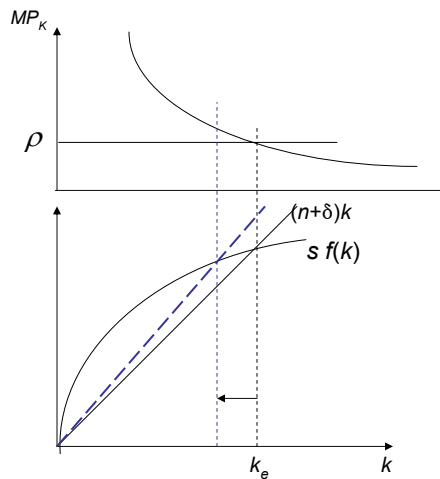
Lowering population growth rates can increase capital per worker. If savings rates improve because of lower dependency rates, the effect is compounded (not pictured).

Causation from population growth to development

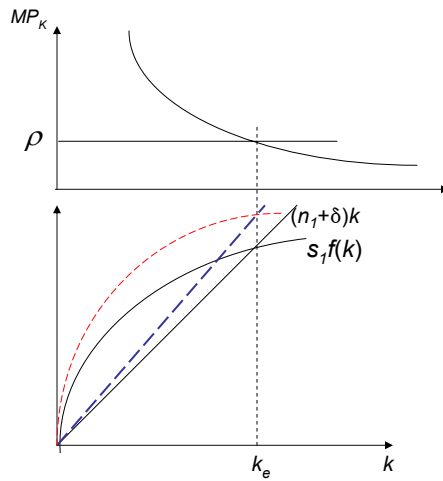
- The Solow-Swan model:



If savings rates improve because of lower dependency rates, the effect is compounded.



If the population growth rate increases, this reduces the equilibrium capital-labor ratio (k), and drives up the marginal product of capital.



People should react by saving more, thereby restoring equality between the marginal product of capital and the rate of time preference.

Why is inequality so persistent?

- Becker, Murphy, Tamura (1990) poverty traps apply on a regional level.

Parents' characteristics		Parents' Incentives				Parents' Choices	
income	education	Opportunity cost of child rearing	Cost of educating each child	Need for children to work	Return to children's education	Family size	Education per child
→ low	low	low	high	high	low	big	low
→ high	high	high	low	low	high	small	high

Inequality and poverty cycles (Banerjee and Newman)

- When are borrowers a default risk?
 - Borrower offers his wealth, W , as collateral, which after one period will be worth $(1+r)W$,
 - Total costs of default (monetary and psychic) can be summarized by F .
 - Creditors manage to capture some fraction λ of borrower's profits if he defaults.

So the return to a defaulting entrepreneur is:

$$(q - wm)(1 - \lambda) - W(1 + r) - F$$

- Default occurs if:

$$(q - wm)(1 - \lambda) - W(1 + r) - F > q - wm - I(1 + r)$$

or

$$I(1 + r) > W(1 + r) + F + \lambda(q - wm)$$

Inequality and poverty cycles (Banerjee and Newman)

- Default occurs if: $I(1 + r) > W(1 + r) + F + \lambda(q - wm)$

Note that

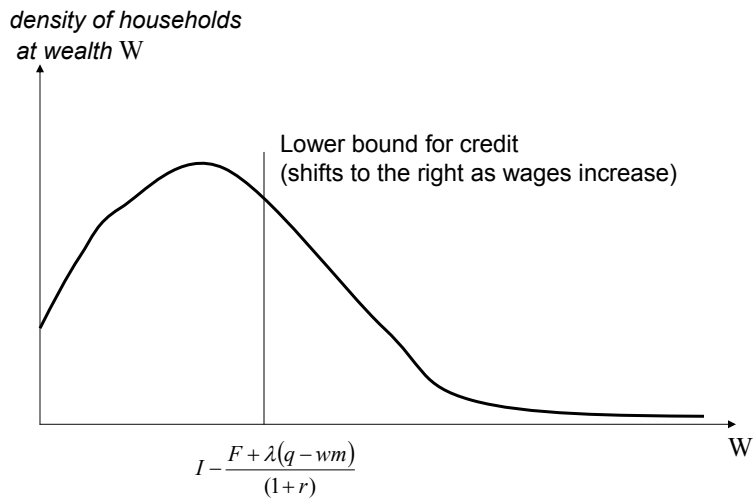
- Those with little collateral (W) are relatively likely to default, so creditors won't lend to them. Lower bound on wealth:

$$I - \frac{F + \lambda(q - wm)}{(1 + r)} < W$$

- High wages increase the likelihood of default because they reduce the attraction of full claims on the profit stream.

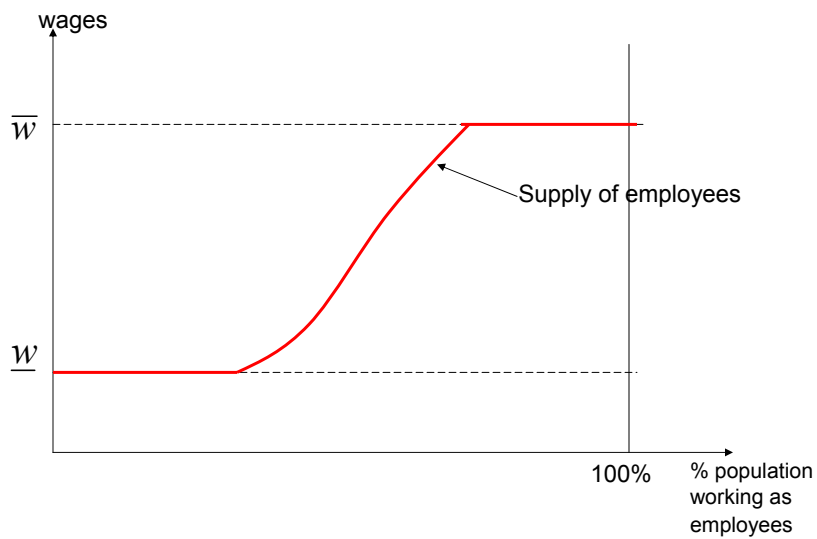
Inequality and poverty cycles

(Banerjee and Newman)



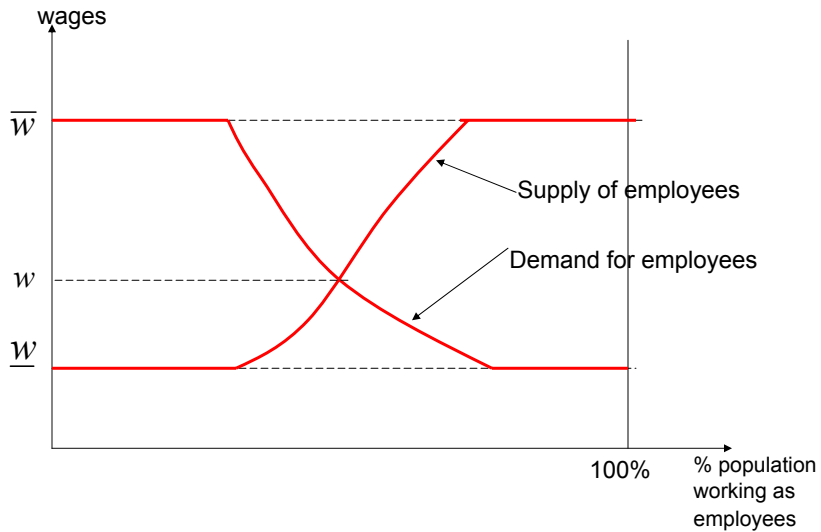
Inequality and poverty cycles

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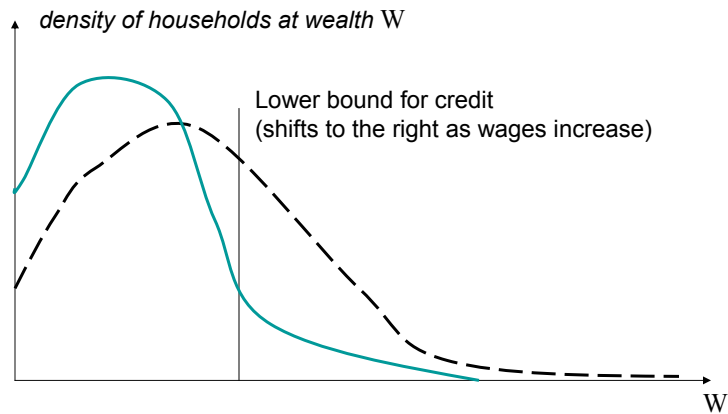
Inequality and poverty cycles

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Inequality and poverty cycles

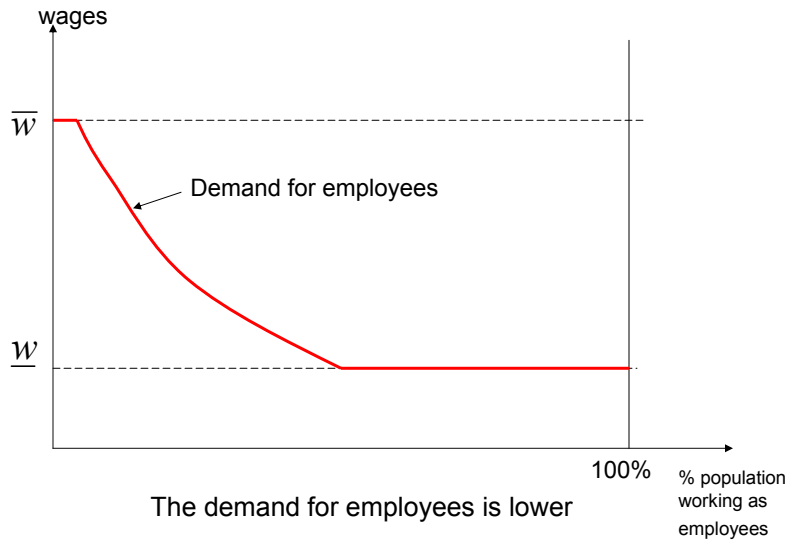
(Banerjee and Newman)



With more inequality (shift dotted to solid line), fewer people have the option to become entrepreneurs

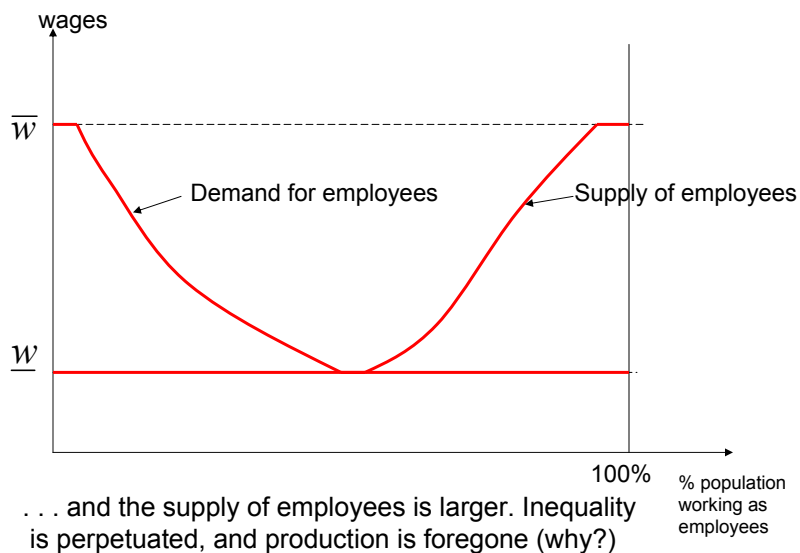
Inequality and poverty cycles

(Banerjee and Newman)

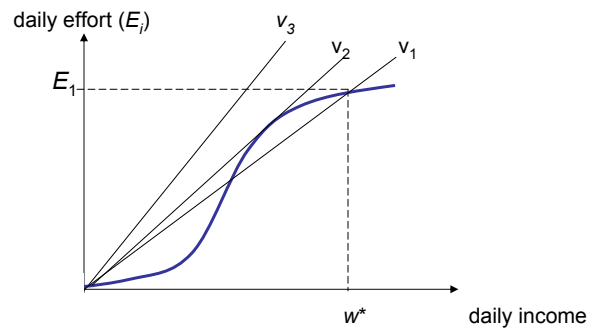


Inequality and poverty cycles

(Banerjee and Newman)



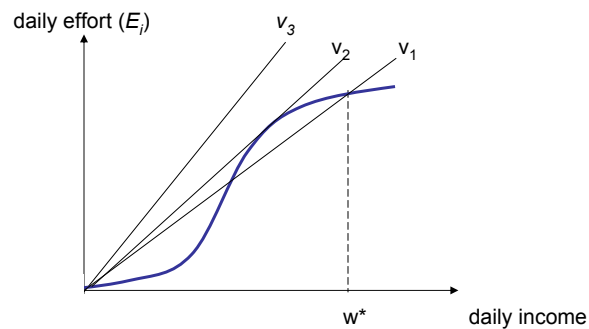
Nutrition and labor markets



v is the piece rate (payment per unit produced). Note that $v_1 > v_2 > v_3$.

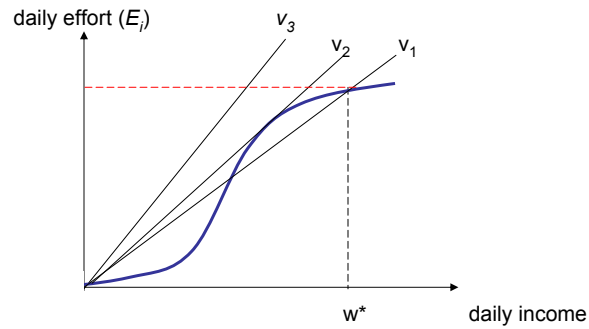
Given v , the effort level of income-maximizing workers is implied. The case of v_1 is depicted above.)

Nutrition and effort



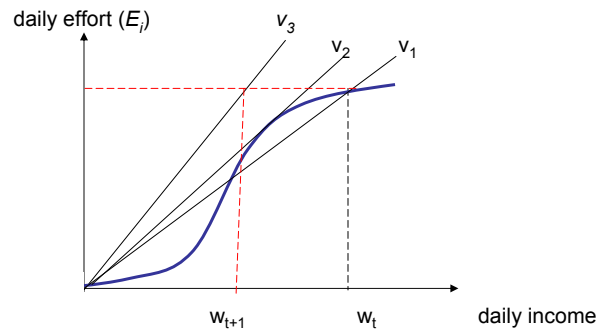
At any rate below v_2 (v_3 , for example), it is not possible to work.

Nutrition and effort



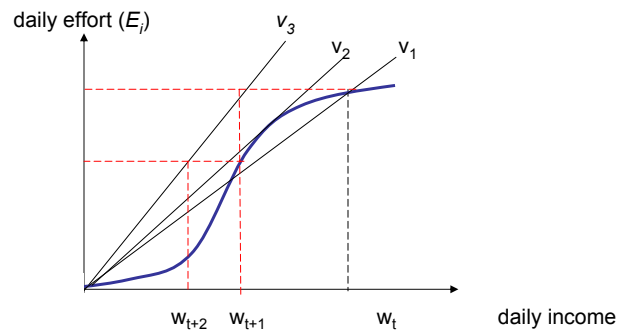
Suppose a worker begins with income w^* at piece rate v_1 , but the piece rate falls to v_3

Nutrition and effort



The next period, her income is w_{t+1} .

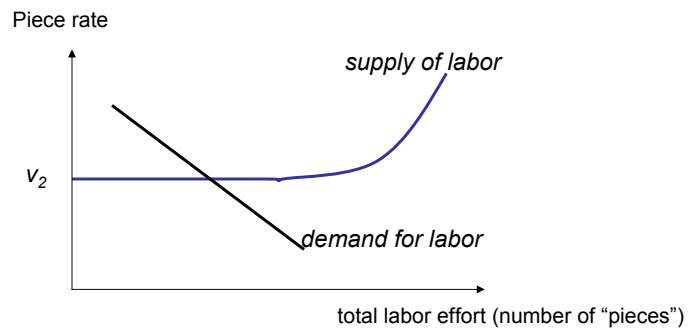
Nutrition and effort



And the period after that, her income is w_{t+2} .

Eventually, income reaches 0.

Poverty and labor markets

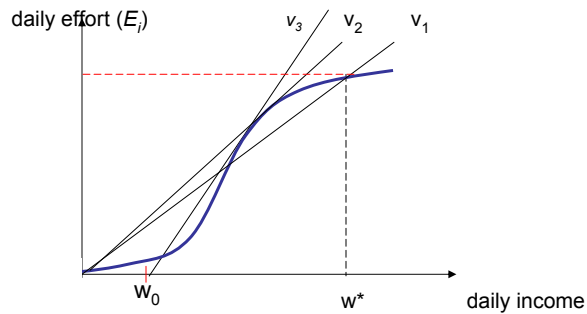


The labor supply schedule can be obtained by aggregating over individuals.

When demand is limited, some fraction of the work force remains unemployed.

Poverty breeds both low productivity and inequality.

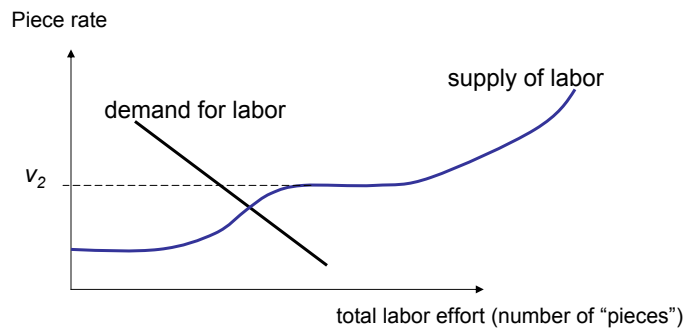
Poverty and labor markets



Existing poverty is likely to be exacerbated. Suppose some people have access to outside income, w_0 . (Family transfers, rent from a spare room, etc.)

These people will be able to work at a lower piece rate (v_3).

Poverty and labor markets

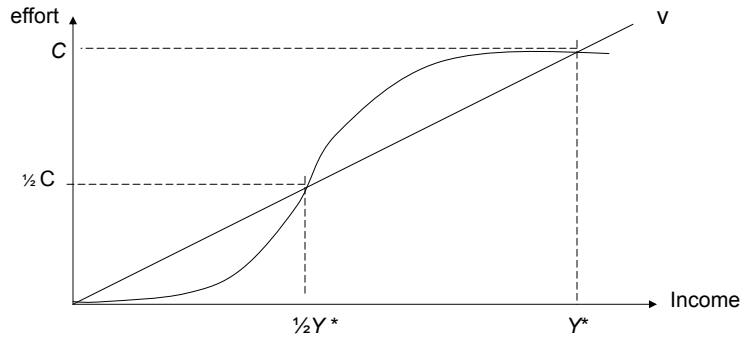


With different people enjoying different levels of outside income, the labor supply schedule might look something like that above.

Those with outside income get the limited jobs; others who are worse off may not be employed. So existing inequality is exacerbated.

Poverty and labor markets

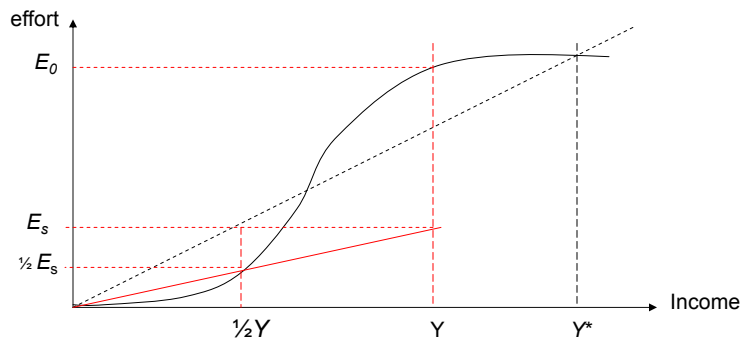
Poverty can also exacerbate inequality when families allocate their income among members.



Consider a household with income Y^* and twin brothers.

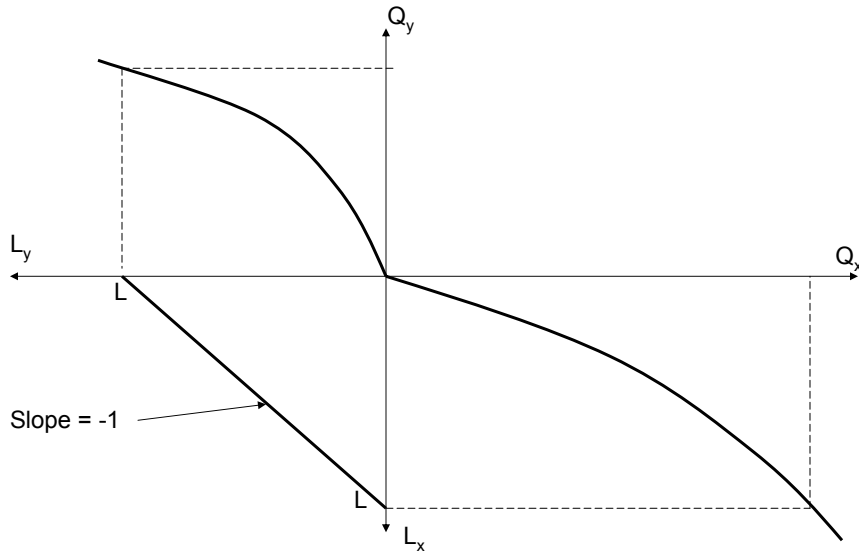
They can generate the same amount of effort, regardless of whether one brother consumes everything and supplies all effort, or they share effort and consumption equally.

Poverty and labor markets

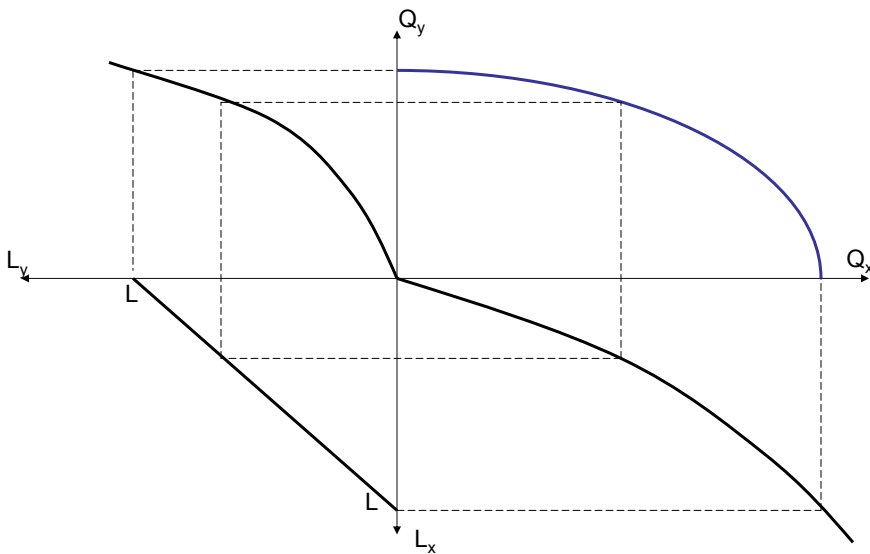


But if household income is less than Y^* , say Y , the brothers generate more effort if one of them does all the producing and consuming (E_0) than if they share the income equally (E_s).

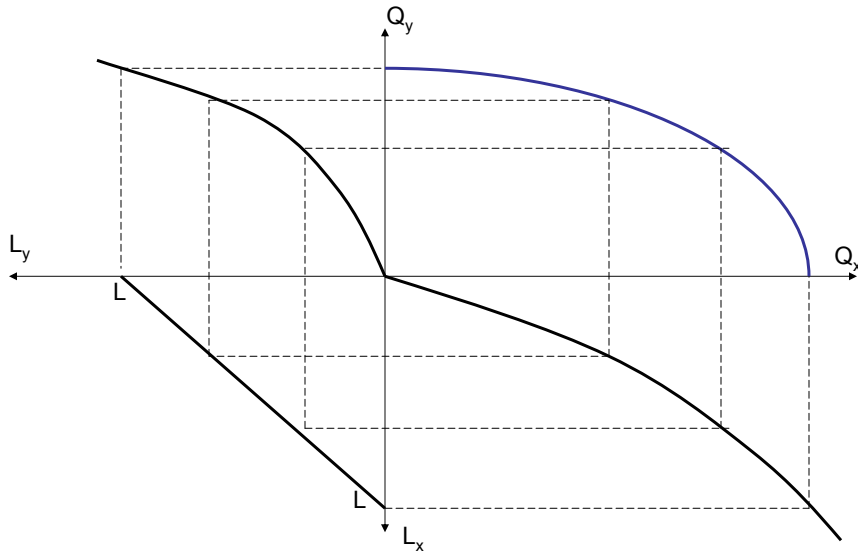
Trade and domestic distortions: the PPF



Trade and domestic distortions: the PPF

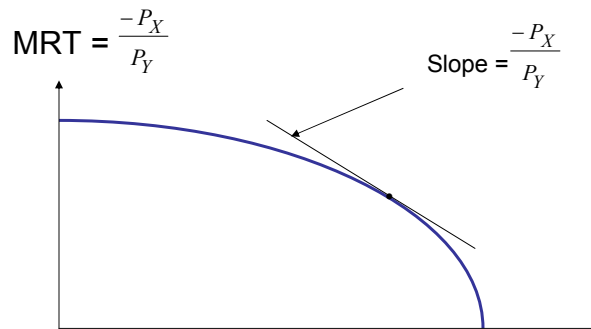


Trade and domestic distortions: the PPF

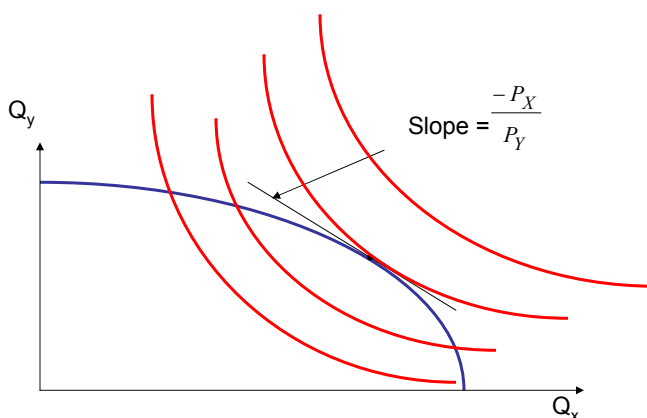


Identifying the production point

- If the relative price of agricultural goods is P_x/P_y , the economy will gravitate to the point on the PPF where:



Equilibrium in the absence of trade

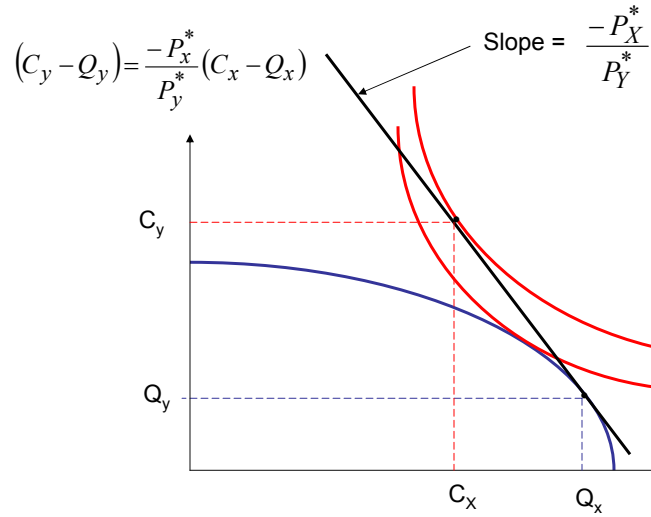


Equilibrium with free trade

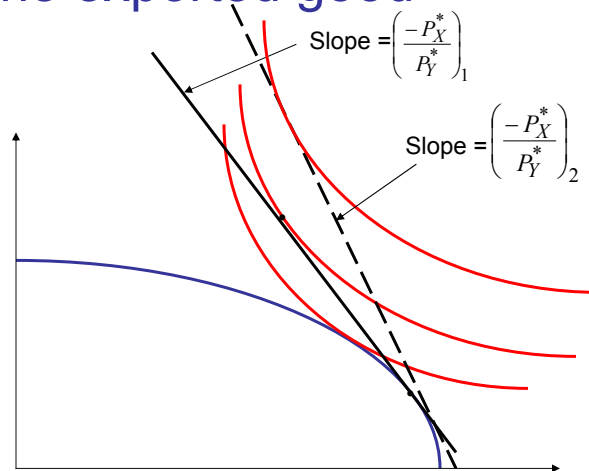
- Now suppose this economy can trade at world prices, denoted by asterisks (*).
- Producers and consumers still behave the same, but it is no longer true that the quantity of domestic production must match the quantity of domestic consumption, good by good.
- Instead the value of goods produced and not consumed at home (i.e., goods exported) must match the value of goods consumed at home but not produced at home (i.e., goods imported):

$$P_x^*(Q_x - C_x) = P_y^*(C_y - Q_y), \quad (C_y - Q_y) = \frac{-P_x^*}{P_y^*}(C_x - Q_x)$$

Equilibrium with free trade

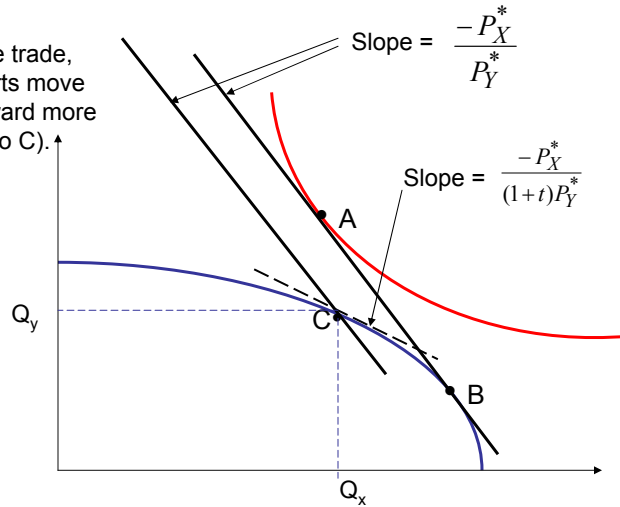


An increase in the world price of the exported good



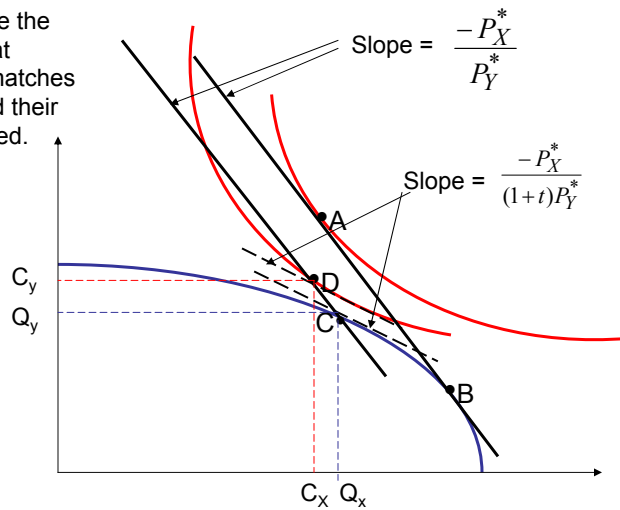
Equilibrium with free trade

Starting from free trade, tariffs on Y imports move the economy toward more Y production (B to C).

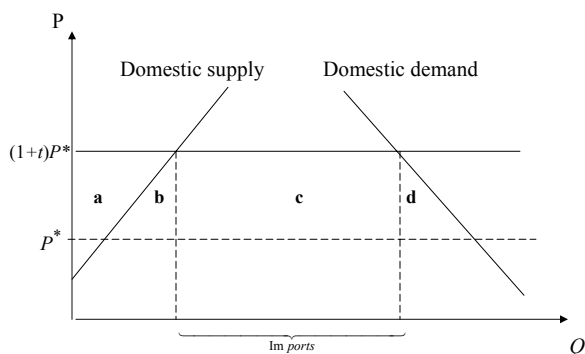


Equilibrium with free trade

Consumers choose the consumption mix at which their MRS matches relative prices, and their income is exhausted.



Partial equilibrium analysis of tariffs



Effects of the tariff

- In terms of factor payments, who are the winners and losers from protection?
 - With competitive factor markets, each factor is paid the value of its marginal product. Letting q denote the rental cost of land, w denote the wage rate, and r denote the return on capital:

$$r = P_y MP_K^y \quad q = P_x MP_N^x$$

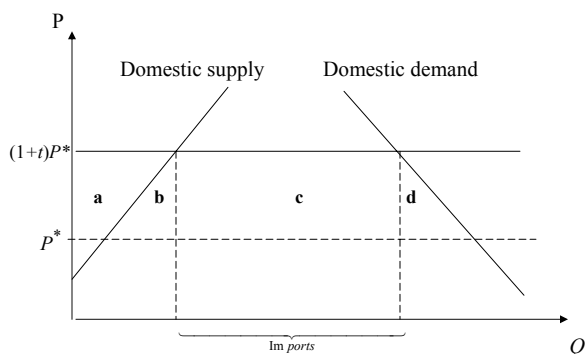
$$w = P_y MP_L^y \quad w = P_x MP_L^x$$

- So real factor returns are determined by:

$$\frac{r}{P_y} = MP_K^y \uparrow \quad \frac{q}{P_x} = MP_N^x \downarrow$$

$$\frac{w}{P_y} = MP_L^y \downarrow \quad \frac{w}{P_x} = MP_L^x \uparrow$$

Partial equilibrium analysis of tariffs



External Economies and Trade

- Is it possible that liberalization can actually make a country worse off when these effects are important?
- Consider a simple model with 2 countries (North and south), 2 sectors.

Output requires only labor. It is subject to constant returns in the fish sector, and increasing returns in chips. Unit labor requirements are given below:

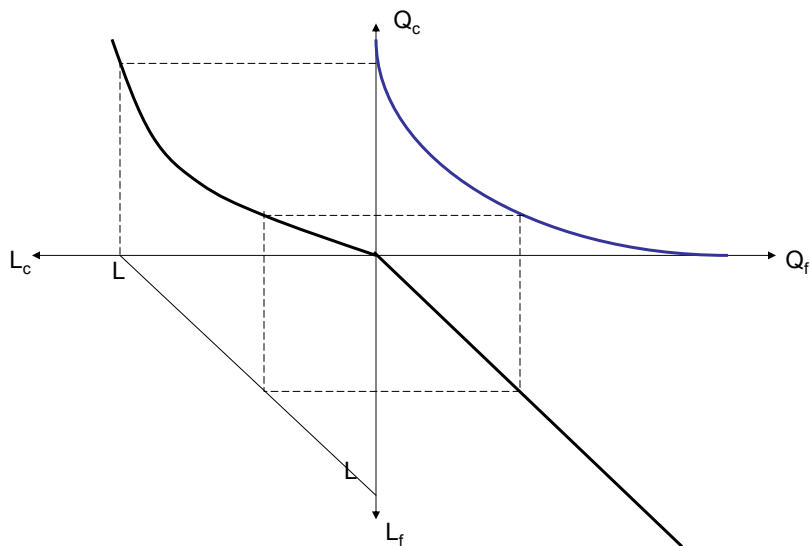
– CRS: fish $a_f^S = a_f^N = a_f$ (constant)

– IRS: chips $a_c^S = A(Q_c^S)$ $a_c^N = A(Q_c^N)$ $A' < 0$

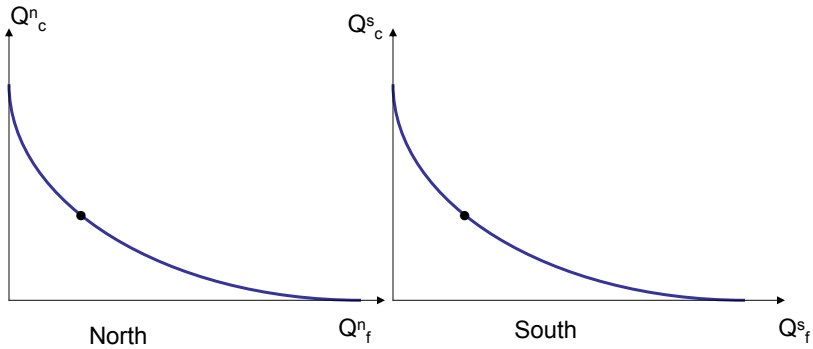
External Economies of Scale and Trade

- Perfect competition implies production (labor) costs are exactly covered. For example, in the chip sector of the home country, $P_c = wa_c$,

External Economies of Scale and Trade

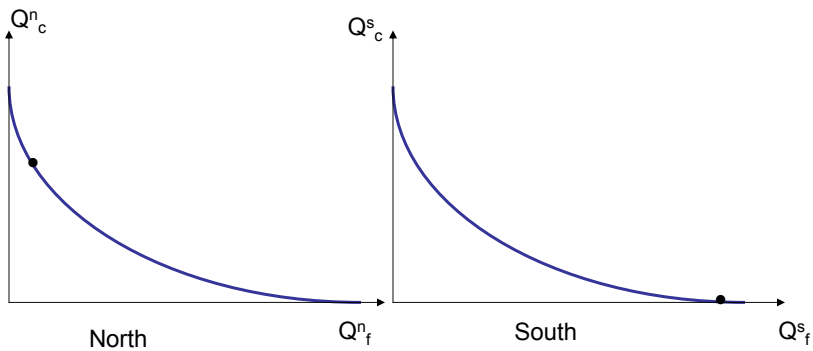


External Economies and Trade



In autarky, i.e., without trade, both regions produce both goods.
(Indifference curves are omitted here.)

Scenario 1: Both produce fish



Now imagine opening to trade, and suppose world demand is such that both countries produce fish: $P_f^* = a_f w^n = a_f w^s$

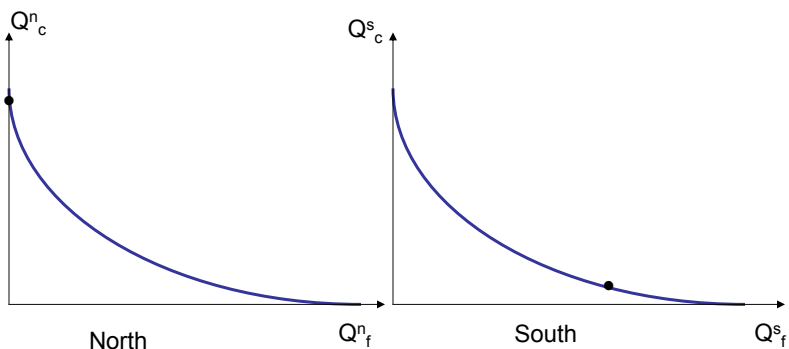
Then $w^s = w^n$, and only one country will produce chips. Why?

Both produce fish, continued

- As the chip producer moves toward specialization in chips and unit production costs fall, so the cost of producing a unit of chips falls (globally), and both countries benefit.
- To be concrete, suppose the foreign country captures the chips market. Purchasing power in terms of chips improves. Purchasing power in terms of chips remains unchanged.

$$\frac{w^n}{P_c^*} = \frac{1}{A_c(Q_c^n)} \quad \frac{w}{P_f^*} = \frac{1}{a_f}$$

Scenario 2: Both produce chips

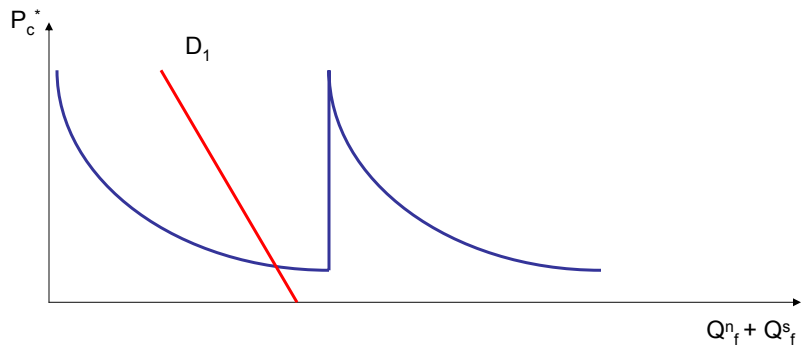


Imagine instead that world demand is such that both countries produce chips when they open to trade:

Then South loses from trade. Why?

$$\frac{w^s}{P_c^*} = \frac{1}{A_c(Q_c^s)} < \frac{1}{A_c(Q_c^n)} = \frac{w^n}{P_c^*}$$

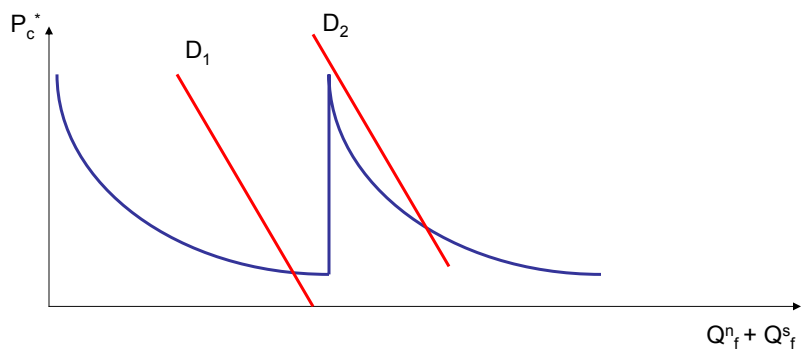
Both produce chips, continued



Imagine holding wages constant at the same level in both countries, as we saw must occur in scenario 1. Then the global supply of chips will look something like the blue curve above.

These supply curves have downward slopes over regions where average production costs are falling.

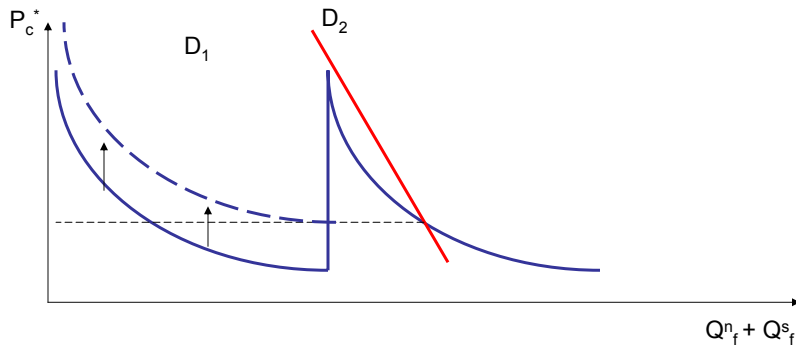
Both produce chips, continued



If demand shifts out from D_1 to D_2 , the price of chips must rise because the marginal supplier is very inefficient.

The higher prices create profits for the country that is specialized in chips, and cause wages to rise there until profits are eliminated.

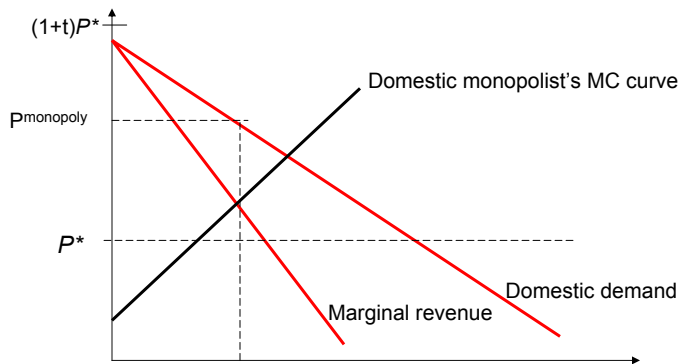
Both produce chips, continued



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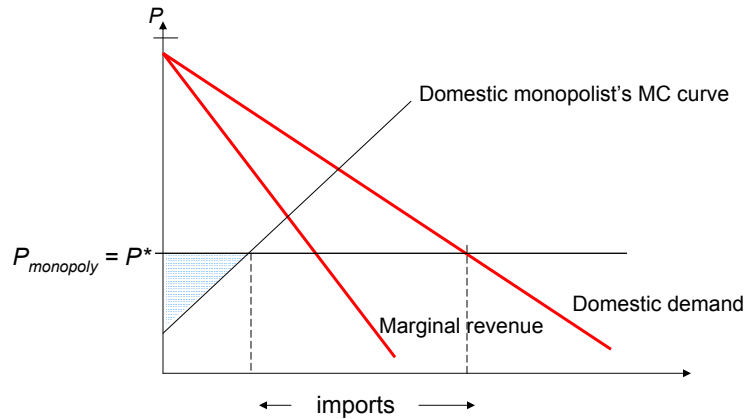
So wages become higher in the north than in the south.

Non-competitive markets



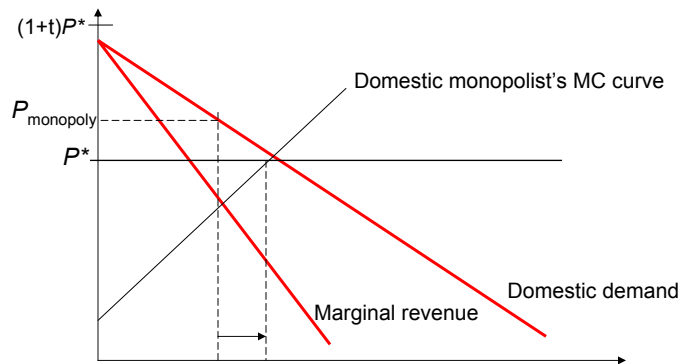
When tariffs are so high they prohibit imports, the domestic Monopolist simply sets marginal revenue = marginal cost and Earns profits represented by the blue area.

Non-competitive markets



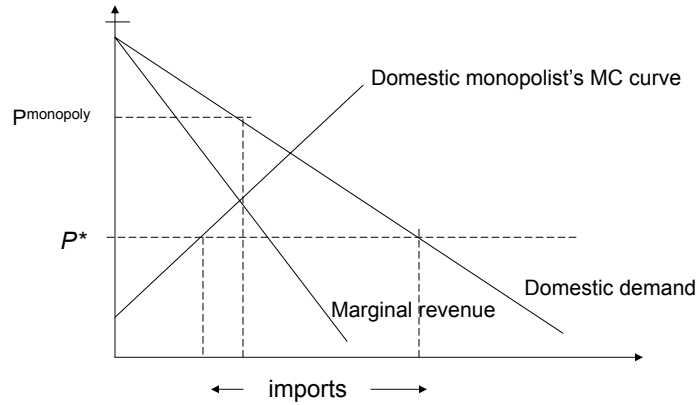
Removing the tariff essentially means that the monopolist must treat the world price as the new marginal revenue curve (why?) Profits shrink, output may rise or fall. (Here output falls; when might it rise?)

Non-competitive markets



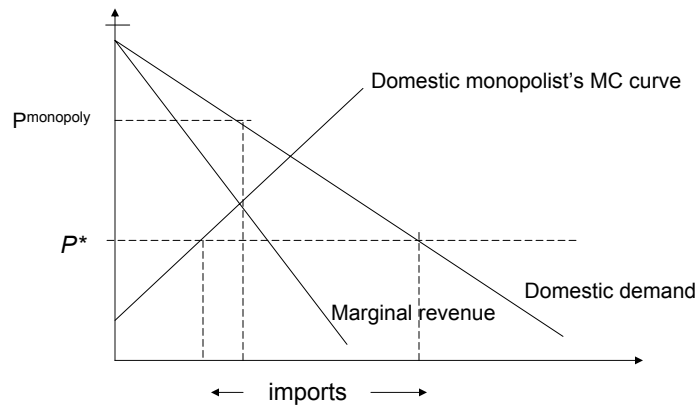
A case where output rises with heightened foreign competition:
If exposing a monopolist to world prices increases its marginal revenue at the initial output level, the monopolist will want to expand production.

Non-competitive markets



When price falls, consumers gain the shaded surplus area.

Non-competitive markets



Netting out the loss of surplus to producers, the welfare gain from the removal of protection is the remaining green area.

