

INTERNATIONAL ECONOMICS

Lecture 5 — December 1, 2020

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Organization

- ~~Gi X/Yb Y/gi b/~~: Possible, more info soon
- Tutorial starting today at 16h15, same Zoom meeting
- Office hours: Schedule directly on the website
- Evaluation: Thank you for participating!
→ Also: As some of you do, do share direct feedback with me 🙏

Last week: Heckscher-Ohlin Model of Trade

- Trade because of differences in factor endowments and intensities
 - comparative advantage!
- Distributional consequences within countries
- No perfect specialization

Today

Standard Model of Trade

- combines insights from Ricardo and Heckscher-Ohlin Models
 - each is special case
- terms of trade and welfare
- effects of economic growth, international transfers

Preview of future topics

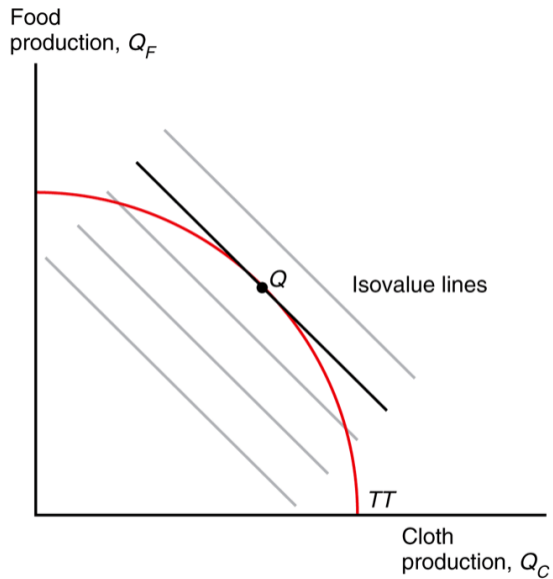
- tariffs and subsidies
- International borrowing and lending

BASIC SETUP

Setup

- Two countries, two goods (food F and cloth C)
- Countries different in endowments, technology, etc.
 - But: no strong assumptions on functional forms!
- PPF is a smooth curve
- PPF determines **relative supply function**
- National relative supply functions determine the **world relative supply function**
 - ...with **world relative demand** determines equilibrium under trade

AUTARKY

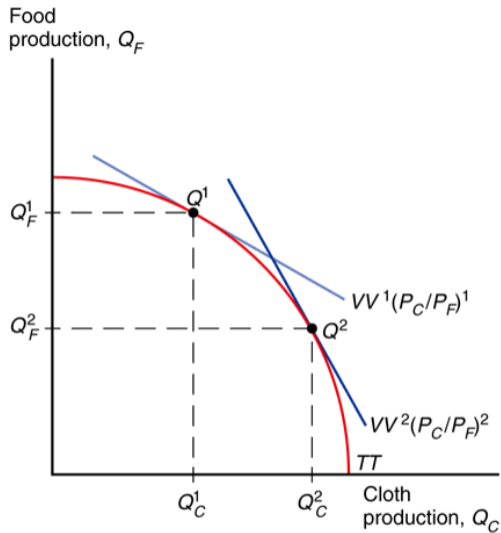


Production in autarky

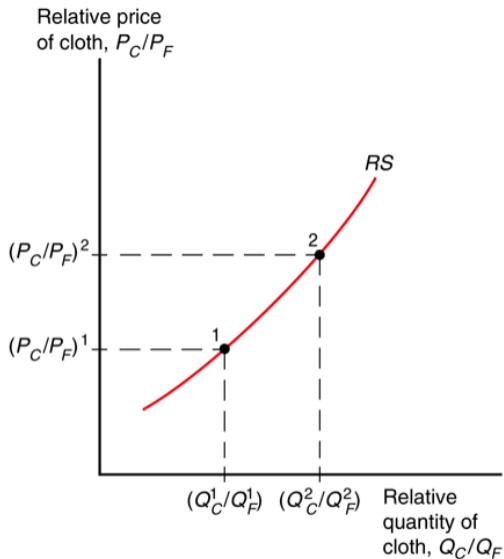
- relative price of cloth to food D_7/D_1 determines relative production
→ production of cloth E_7 and food E_1 that maximizes value of output

$$J = D_7 E_7 + D_1 E_1$$

- slope of an isovalue line equals (D_7/D_1)
→ optimum at point where PPF is tangent to isovalue line



(a)



(b)

Relative prices and relative supply

- increase in price of cloth relative to food D_7/D_1 makes isovalue line steeper
- production shifts from point E_1 to point E_2
- supply of cloth relative to food E_7/E_1 rises
 - Relative supply of cloth to food increases with relative price of cloth to food

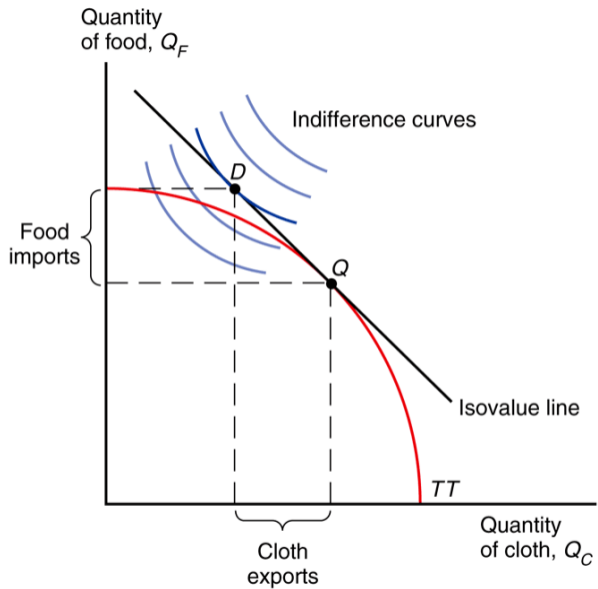
Demand in autarky

- in autarky value of consumption must equal value production

$$D_7 \mathcal{S}_7 + D_8 \mathcal{S}_8 = D_7 E_7 + D_8 E_8 = J$$

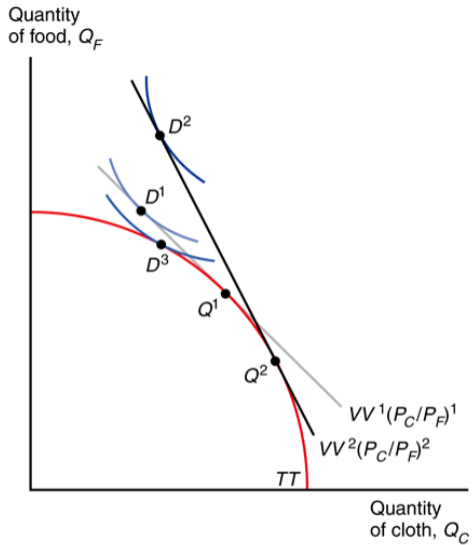
- Assume consumption represented by representative consumer
 - well-behaved indifference curve

TRADE

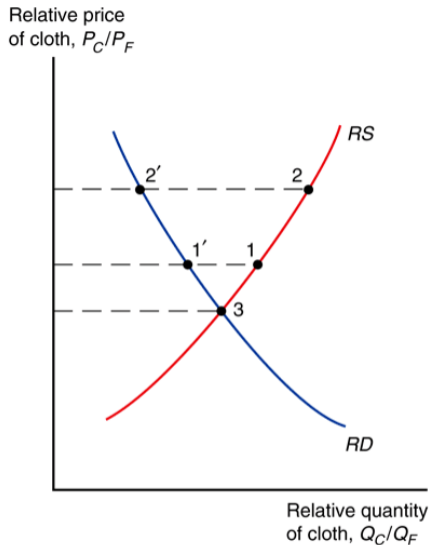


Relative Prices and Demand

- Consume at point D where isovalue line tangent to indifference curve
 - Economy exports cloth and imports food



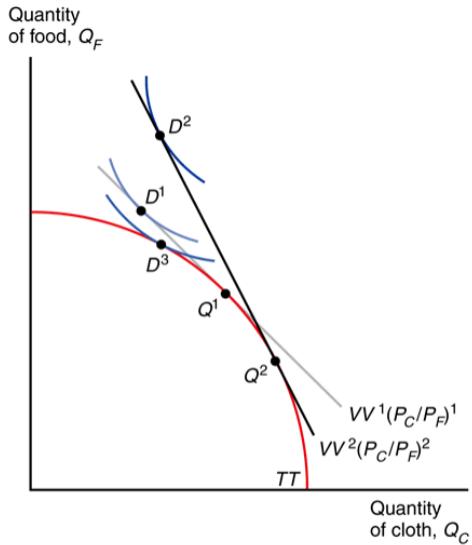
(a) Production and Consumption



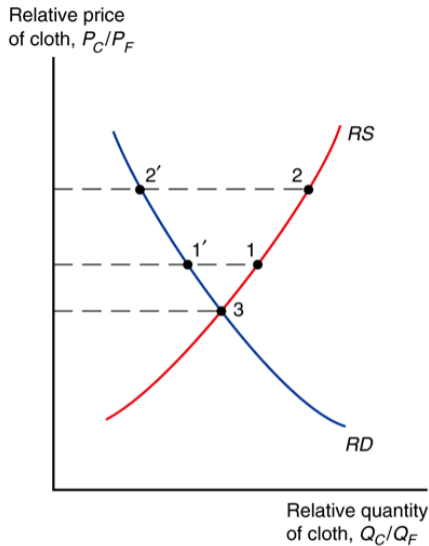
(b) Relative Supply and Demand

Relative Prices and Demand

- increase in relative price of cloth D_7/D_1 causes consumption choice to shift from g^1 to point g^2
 - Demand for cloth relative to food g_7/g_1 falls
 - Relative demand for cloth to food falls as relative price of cloth rises
- economy that exports cloth better off when price of cloth rises
 - isovalue line becomes steeper and a higher indifference curve can be reached



(a) Production and Consumption



(b) Relative Supply and Demand

Welfare Effects of Changes in the Terms of Trade

- terms of trade refers to price of exports relative to price of imports
- if country exports cloth and relative price of cloth increases: terms of trade rise
 - higher relative price for exports means country can afford to buy more imports
 - increase in terms of trade increases country's welfare

Determining Relative Prices

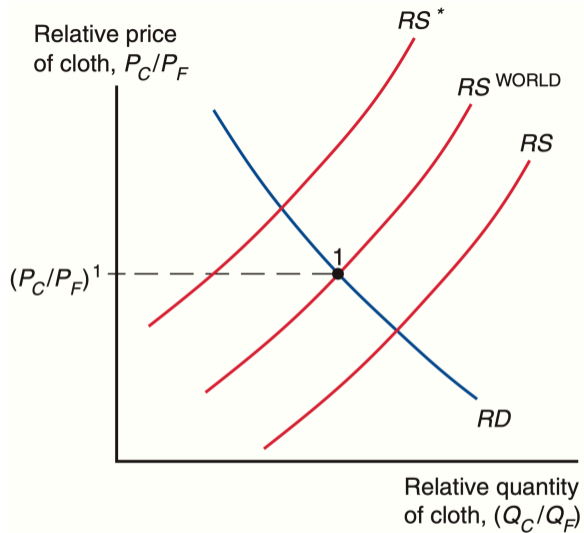
- relative supply and relative demand determine the relative price
- **world supply** of cloth relative to food at each relative price:

$$FG = (E_7 + E_7^*) / (E_1 + E_1^*)$$

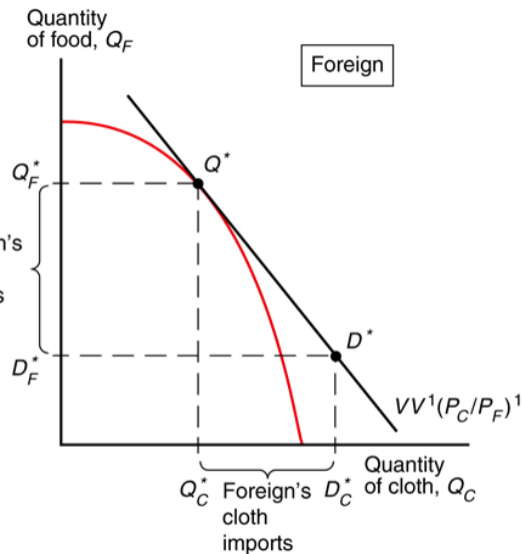
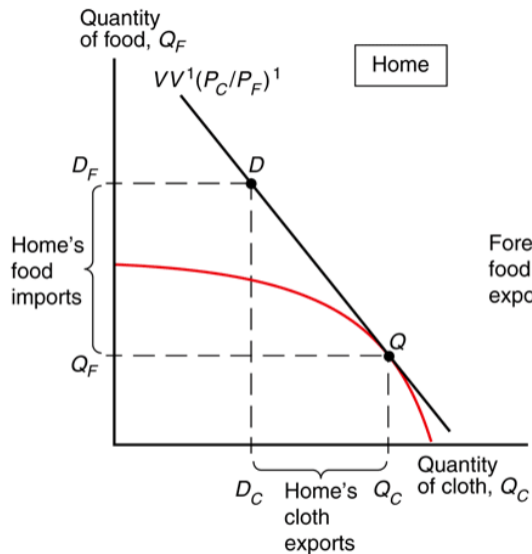
- **world demand** for cloth relative to food at each relative price:

$$F8 = (8_7 + 8_7^*) / (8_1 + 8_1^*)$$

→ World quantities are simply sum of quantities from the two countries



(a) Relative Supply and Demand



(b) Production, Consumption, and Trade

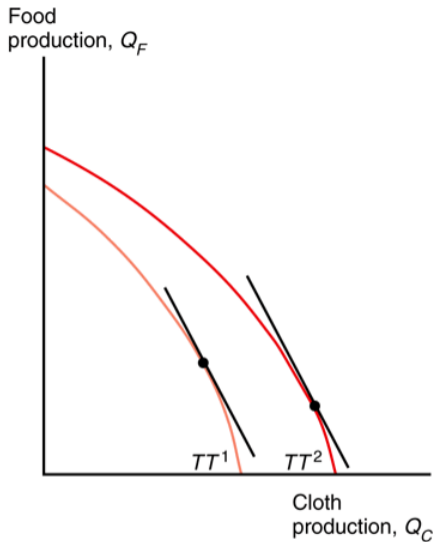
**EFFECTS OF
ECONOMIC
GROWTH**

Economic growth

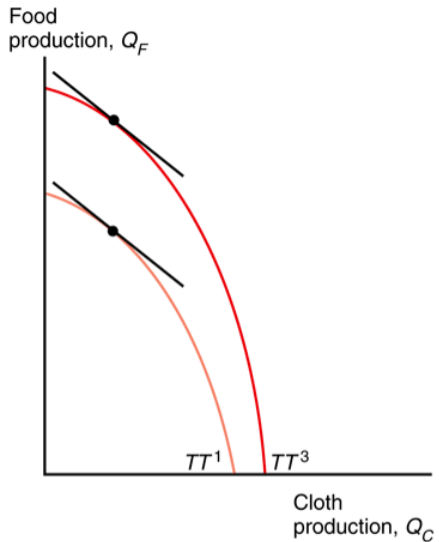
- Is economic growth in China good for the standard of living in the Europe?
- Is growth in a country more or less valuable when it is integrated in the world economy?
 - standard trade model gives answers to these questions!
- Economic growth causes outward shift of a country's PPF
 - can produce bundles previously not possible
 - due to productivity improvements or factor accumulation
- holding relative prices constant, economic growth is good for a country

Economic growth

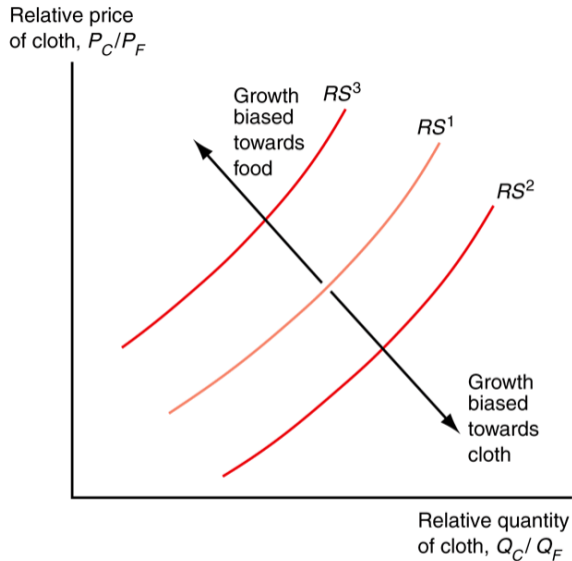
- Growth usually biased: it occurs in one sector more than others
 - causing relative supply to change
- Ricardian model: technological progress in one sector causes biased growth
- Heckscher-Ohlin model: increase in one factor of production causes biased growth



(a) Growth biased toward cloth



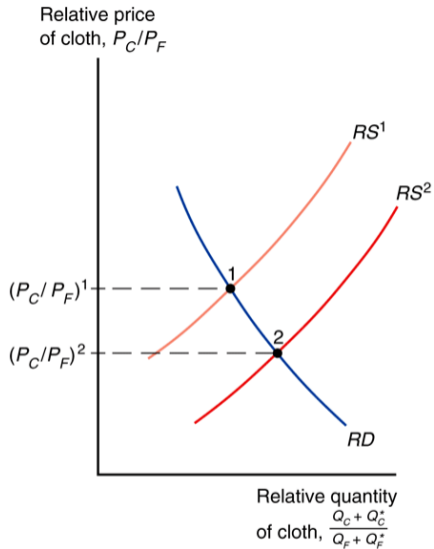
(b) Growth biased toward food



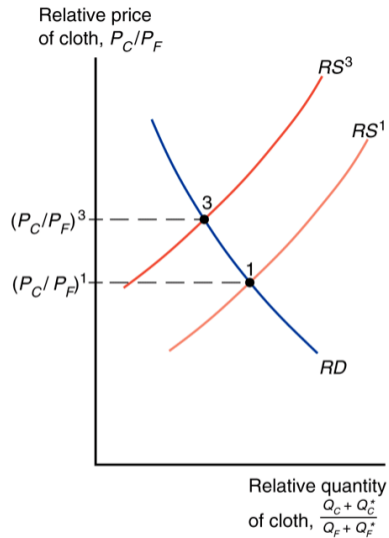
(c) Effects of biased growth on relative supply

Biased growth

- Biased growth causes change in terms of trade
- e.g. if growth in the cloth industry (in either the home or foreign country)
 - lowers price of cloth relative to the price of food
 - lowers terms of trade for cloth exporters!



(a) Cloth-biased growth



(b) Food-biased growth

Biased growth

- *Export-biased* growth expands country's production possibilities disproportionately in good it exports
 - Secondary burden: worsens a growing country's terms of trade, to the benefit of the rest of the world
- *Import-biased* growth expands country's production possibilities disproportionately in the good it imports.
 - Secondary benefit: improves a growing country's terms of trade, while deteriorating the terms of trade of the rest of the world

Growth in Asia

- Standard trade model predicts that import-biased growth in China reduces the EU terms of trade and the standard of living in the EU
 - Import-biased growth for China would occur in sectors that compete with EU exports
- not supported by data: there should be negative changes in terms of trade for EU and other high-income countries
 - but changes in the terms of trade for high-income countries have been positive and negative for developing Asian countries

INTERNATIONAL TRANSFERS

Effects of International Transfers

- Transfers of income sometimes occur from one country to another:
 - e.g. foreign aid may influence demand for traded goods and therefore relative demand
- How do transfers of income across countries affect relative demand and the terms of trade?

Terms of trade effects of transfers

- Donor country gives money to recipient country
 - International transfers of income may affect terms of trade by shifting world relative demand curve
- transfer worsens the donor's terms of trade if the donor has a higher marginal propensity to spend on its export good than the recipient
- Often true due to barriers to trade, both natural and artificial

Effects of International Transfers

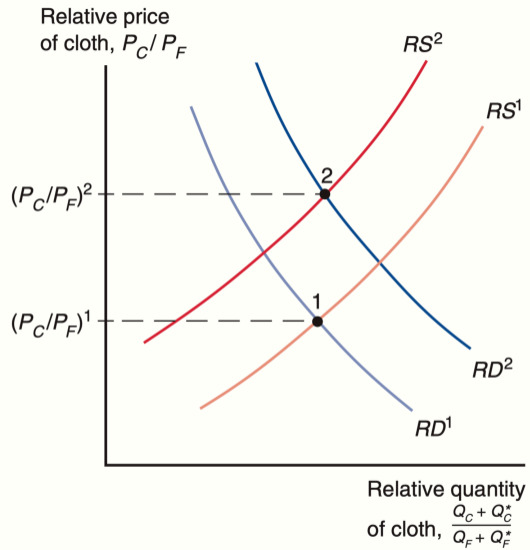
- countries spend most of their (marginal) income on their own products
 - e.g. Americans spend only 11% of national income on imports and 89% on domestically produced goods
- Suppose US spends 80 cents of each dollar on domestically produced goods, and Sri Lanka spends 40 cents of each dollar on imports from the United States
- Every dollar US gives to Sri Lanka decreases relative demand for US products

Effects of International Transfers

- If each country has a higher marginal propensity to spend on its own products, the relative demand curve would shift left after a transfer of income from the domestic country
 - Usually an international transfer of income will deteriorate the donor's terms of trade
 - total cost in excess of transfer amount due to adverse terms of trade effects

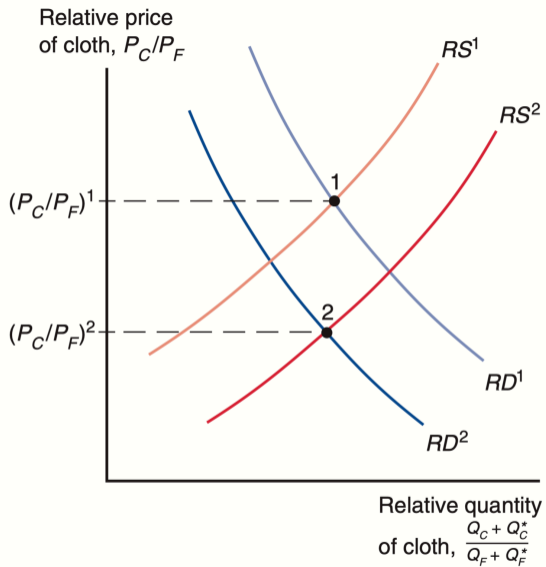
Impact of tariffs and subsidies

- drive a wedge between prices at which goods are traded
- internationally: external prices
- within a country: internal prices



Impact of tariffs and subsidies

- import tariff on food imposed by Home both reduces the relative supply of cloth (from FG^1 to FG^2)
- increases the relative demand (from FS^1 to FS^2) for the world as a whole
→ relative price of cloth increase

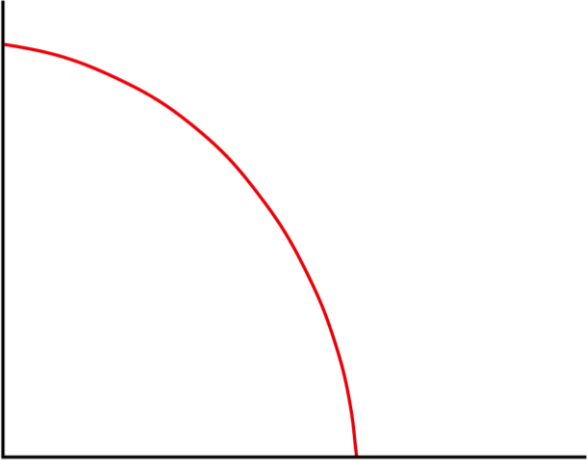


**INTERNATIONAL
LENDING AND
BORROWING**

International Borrowing and Lending

- standard trade model can be modified to analyze international borrowing and lending
- Two goods are W and Z consumption
 - same good at different times
- Countries usually have different opportunities to invest to become able to produce more in the future
- An intertemporal production possibility frontier depicts different possible combinations of current output and future output

Future
consumption



Present
consumption

International Borrowing and Lending

- Suppose that Home has production possibilities biased towards current output
- Foreign has production possibilities biased towards future output
 - Foreign has better opportunities to invest now to generate more output in the future
- Home has the lower real interest rate prior to intertemporal trade.
- If you borrow 1 unit of output, you must repay principal + interest ($1 + f$) in the future, where f is the real interest rate
 - price of current consumption relative to future consumption is $1 + f$
 - price of future consumption relative to current is $1/(1 + f)$

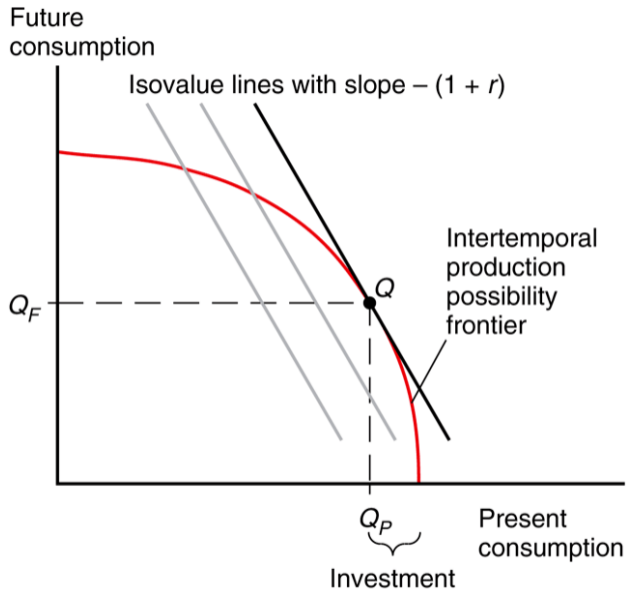
International Borrowing and Lending

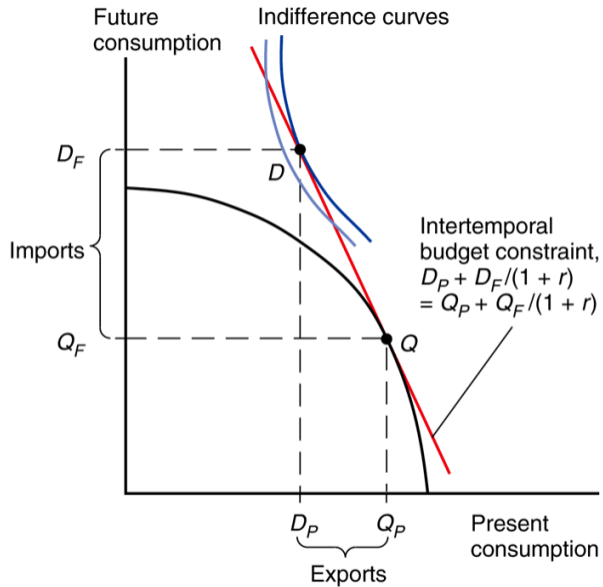
- $\frac{D_T}{D} S_T + S_T$ is similar to a regular budget constraint in restricting expenditure to match income, but in present discounted value terms
- Every unit loaned now permits consuming $1 + f$ more in the future (C = current, F = future)

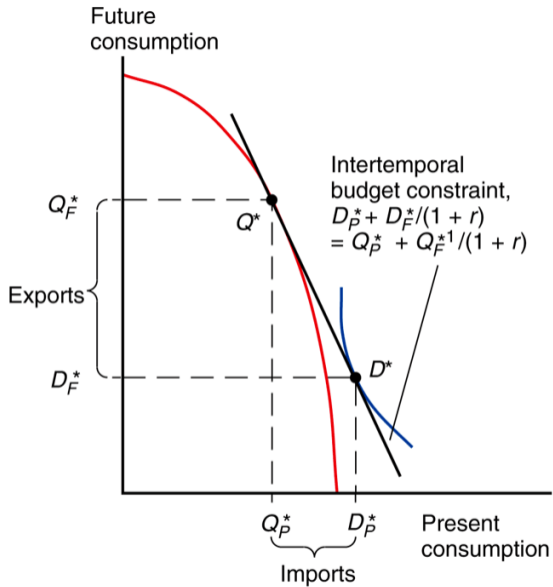
$$\frac{D_T}{D} S_T + S_T = \frac{D_T}{D} E_T + E_T$$

$$(1 + f) S_T + S_T = (1 + f) E_T + E_T$$

$$S_T = E_T + (1 + f)(E_T - S_T)$$

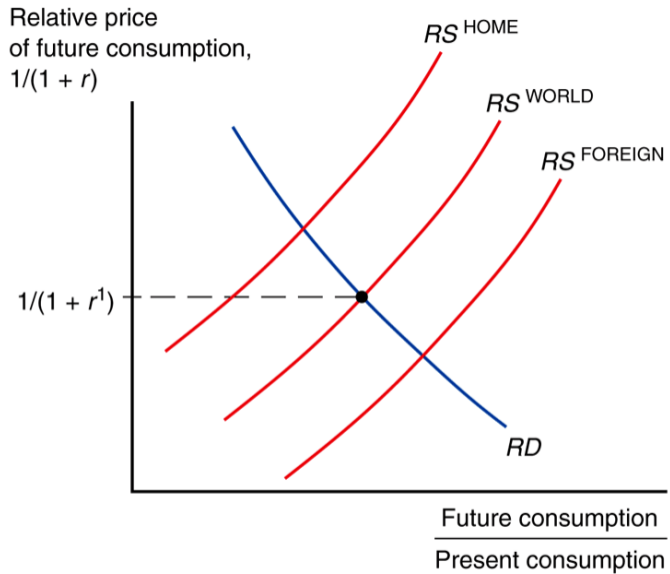






International Borrowing and Lending

- r^* determined by intersection of world relative demand and world relative supply
 - between the real interest rates that existed in the two country's prior to intertemporal trade
- real interest rate rises in the country that lends (home) and falls in the country that borrows (foreign)



C O N C L U S I O N

Conclusion

Standard model of international trade

- terms of trade refers to the price of exports relative to the price of imports
- impact of biased growth
- impact of tariffs and subsidies
- impact of international transfers
- intertemporal trade

Next week

- Next class: Krugman model
- Read: Chapter on Standard Model of Trade
- Questions? E-Mail or office hours.