

1.7 — The Terms of Trade Changes

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 [ryansafner/tradeS23](https://github.com/ryansafner/tradeS23)

 tradeS23.classes.ryansafner.com



Outline



Quick Review of Standard Model

Changes in the Terms of Trade

Causes of Terms of Trade Changes



Quick Review of Standard Model

The Global Market for x

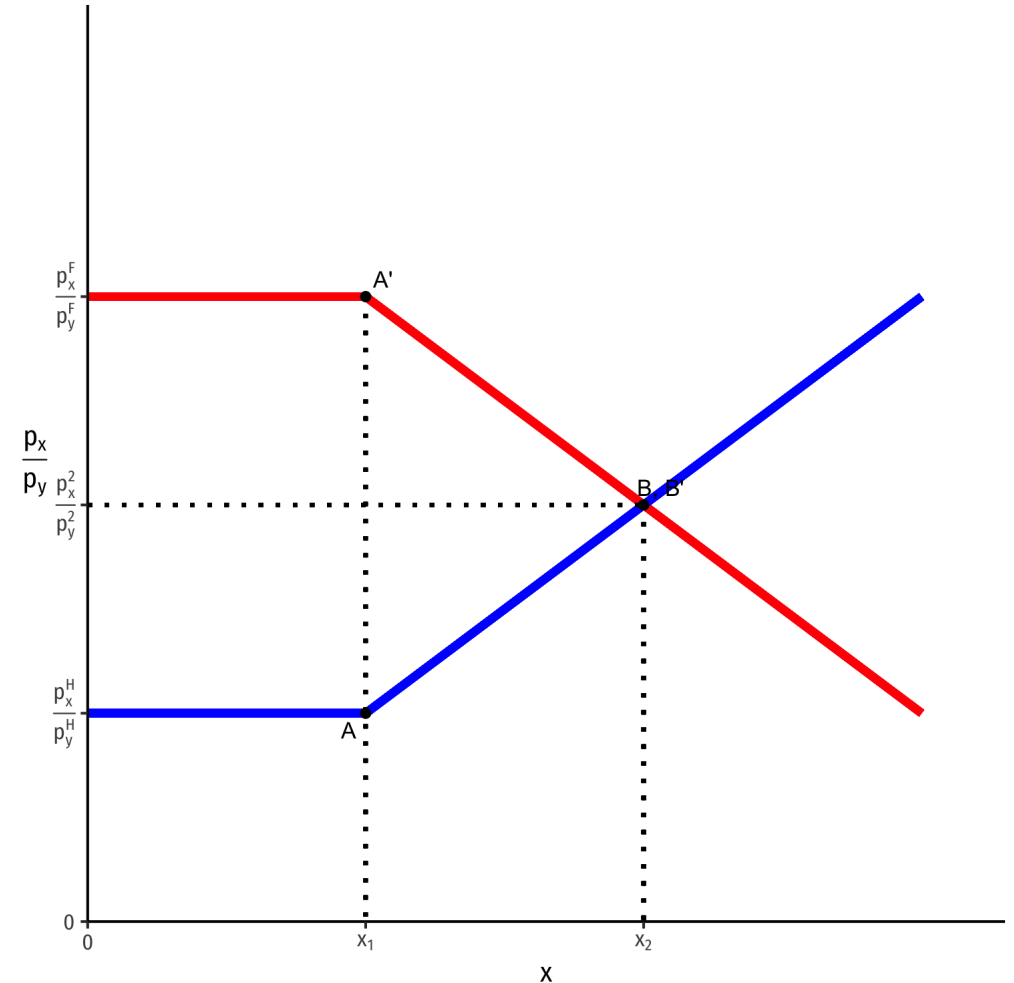


- **World equilibrium relative price of x:**

$\left(\frac{p_x}{p_y}\right)^2$ balances Home's exports and Foreign's imports of x

- As countries trade, changes relative price of x in each country until both reach equilibrium world relative price (B,B'), where both countries have same relative price:

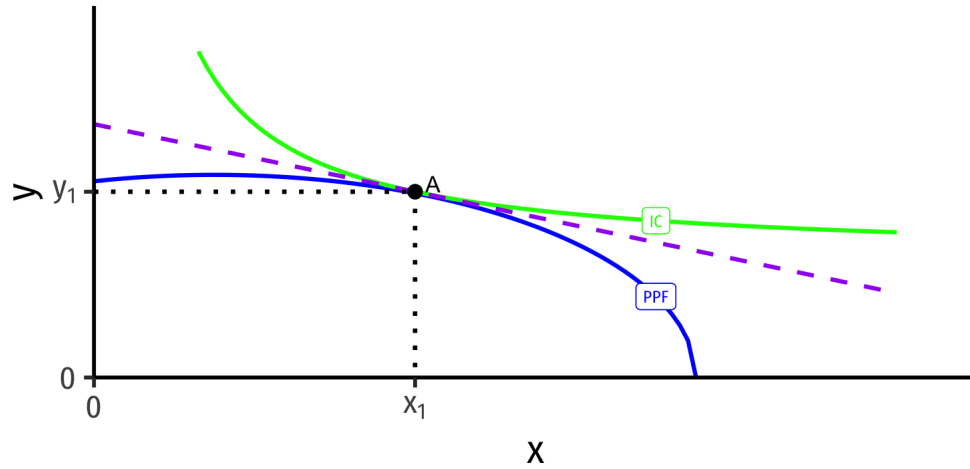
$$\left(\frac{p_x}{p_y}\right)^H < \left(\frac{p_x}{p_y}\right)^2 < \left(\frac{p_x}{p_y}\right)^F$$



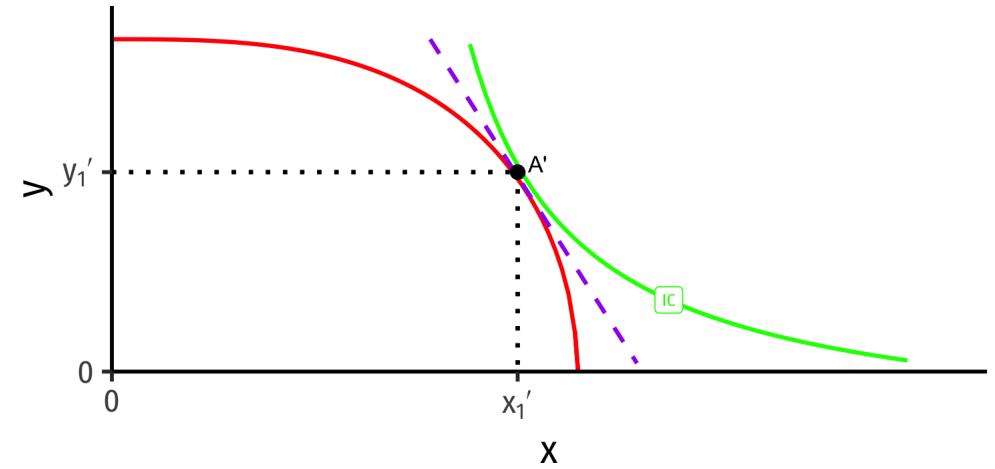
Autarky Equilibrium



Home



Foreign

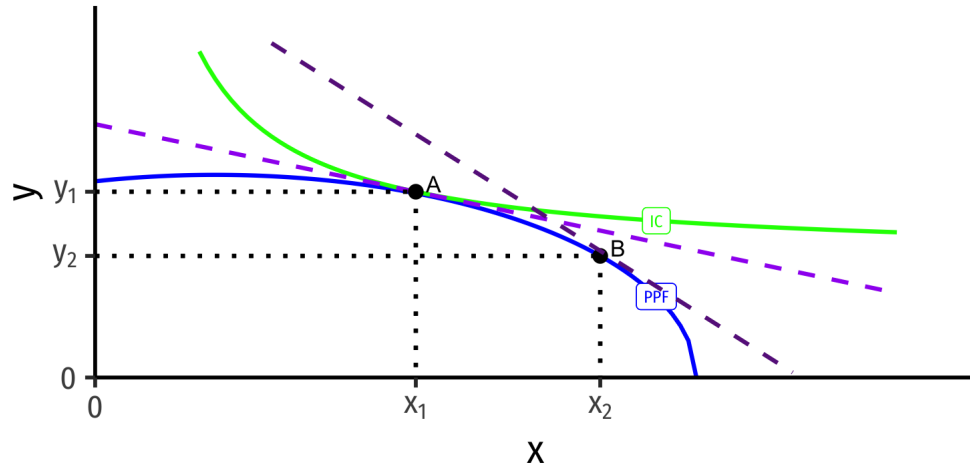


- Countries begin in **autarky** optimum with different relative prices
 - A is optimum for **Home**
 - A' is optimum for **Foreign**

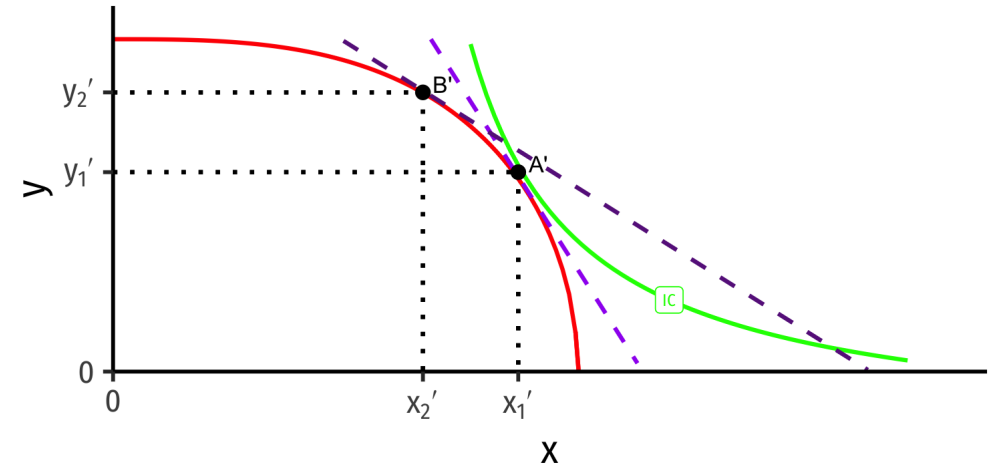
Specialization



Home



Foreign

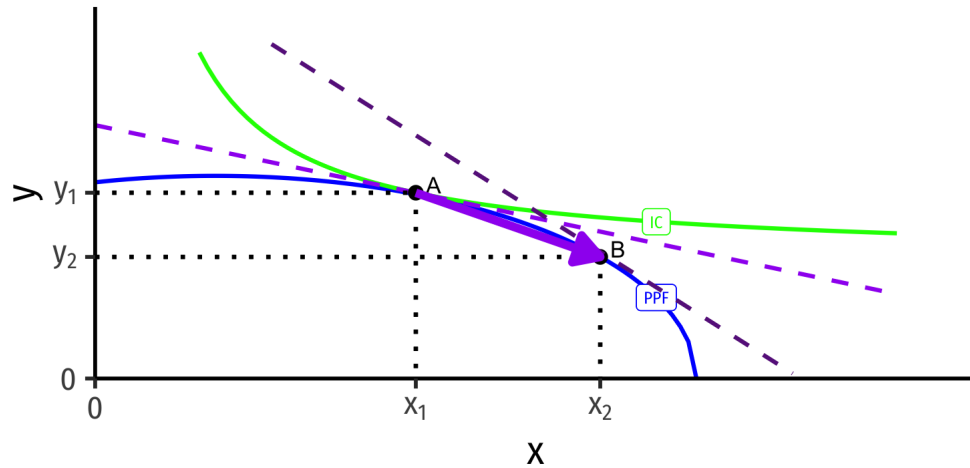


- International trade changes the relative price of x (\uparrow for Home, \downarrow for Foreign)
- **With international trade, countries face same world relative prices** (slope of dark purple dashed line)

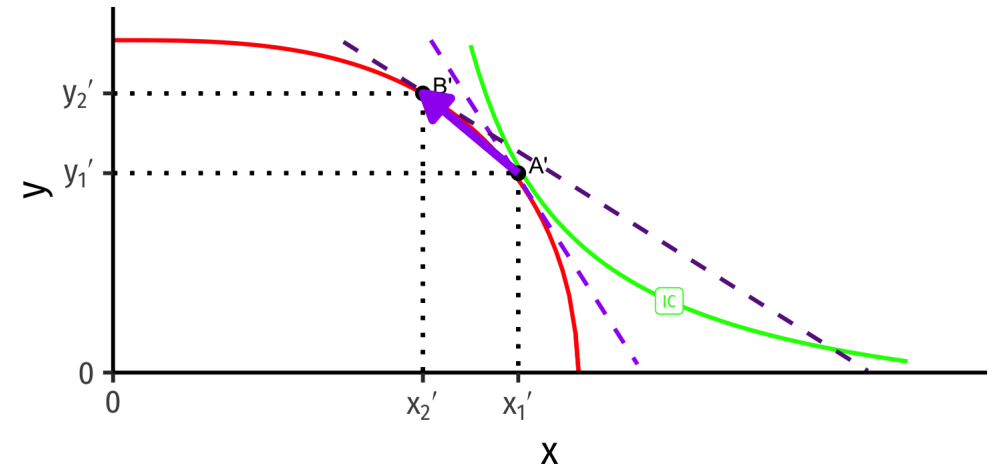
Specialization



Home



Foreign

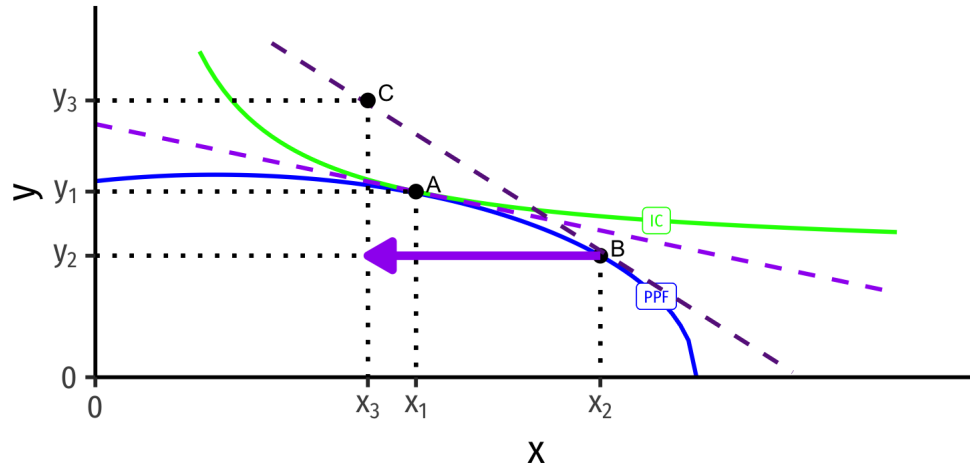


- Countries **specialize**: produce *more* of comparative advantaged good, *less* of disadvantaged good
 - **Home**: A \rightarrow B: produces more x , less y
 - **Foreign**: A' \rightarrow B': produces less x , more y
- Note this is **incomplete specialization**: countries still produce both goods!

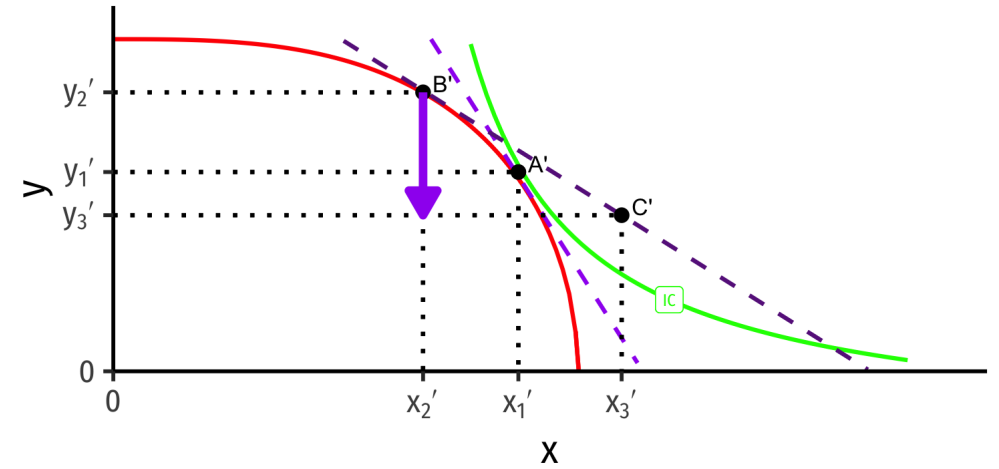
Trade Triangles



Home



Foreign

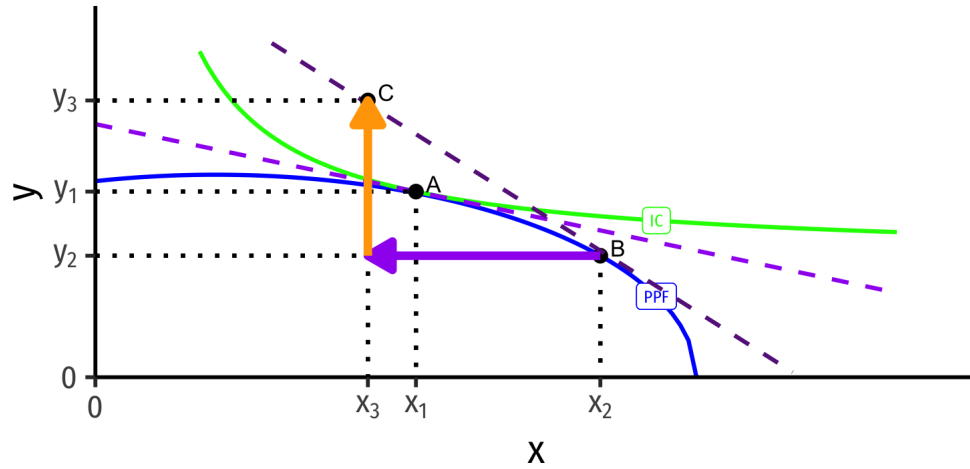


- Home \rightarrow X \rightarrow Foreign

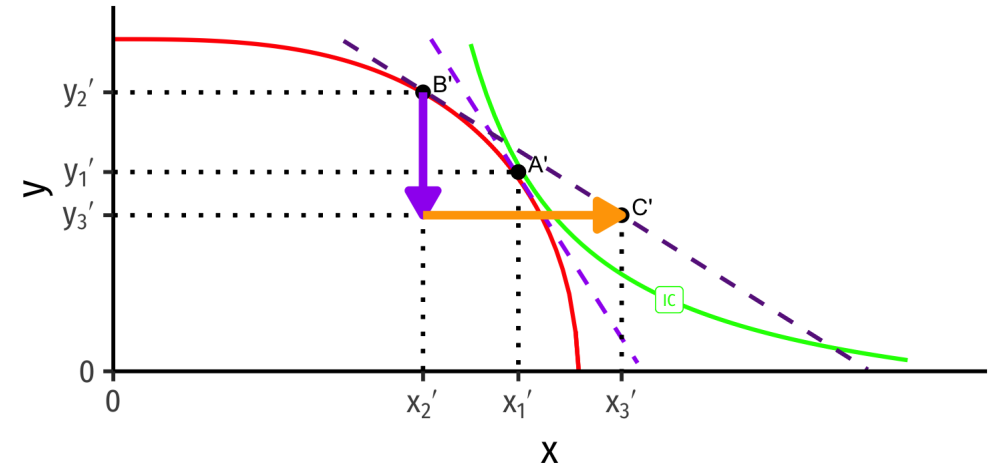
Trade Triangles



Home



Foreign

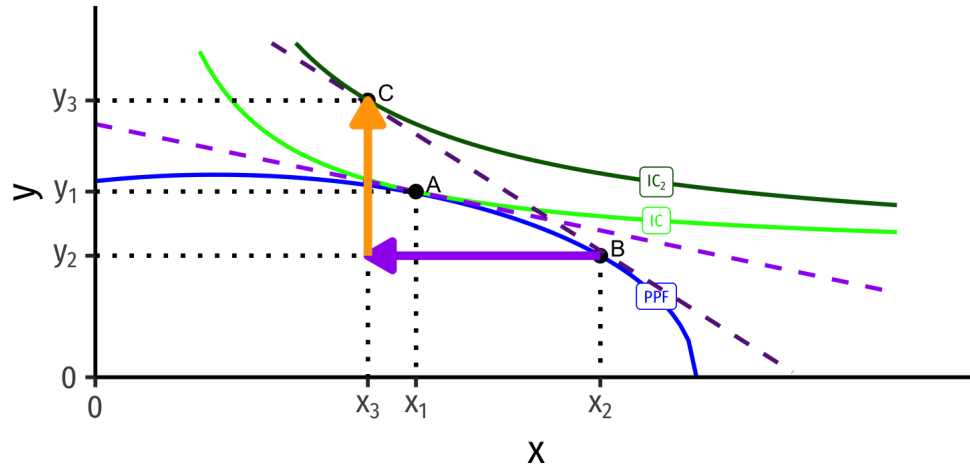


- Home $\rightarrow x \rightarrow$ Foreign
- Home $\leftarrow y \leftarrow$ Foreign

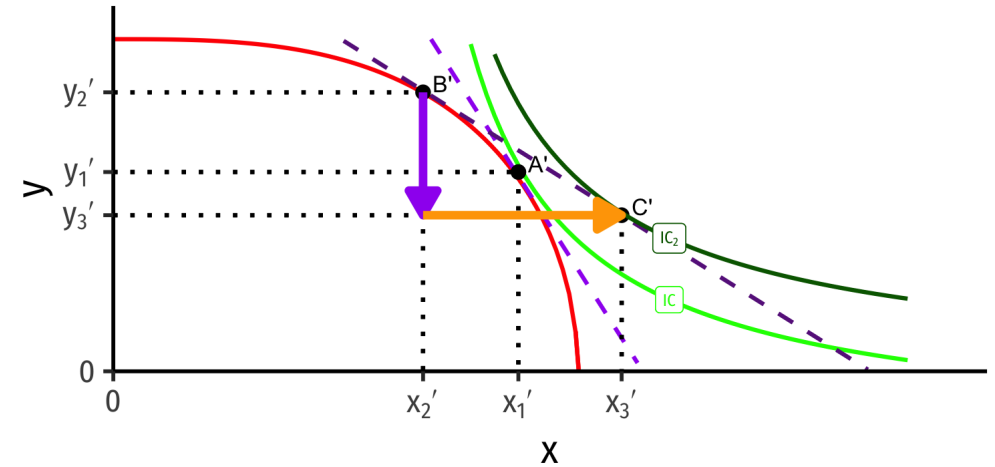
Gains from Trade



Home



Foreign



- Both countries exchange their imports & exports and consume at C and C'
- Both reach a higher indifference curve with trade, well beyond their PPFs!



Changes in the Terms of Trade

Some Trade-Related Issues



- **Is economic growth in other countries good or bad for *our* country?**
 - Good: larger markets for our exports, lower prices for our imports
 - Bad: increased competition for our exporters and for our domestic producers competing with imports



Some Trade-Related Issues



- Is economic growth in our country more or less valuable when we are part of a *globalized world economy*?
 - Good: we can sell more to the world market
 - Bad: the benefits of our growth don't stay at home, are dispersed to foreigners importing at cheaper prices



The Terms of Trade



- **Terms of trade** are another name for the relative price of x or y in the international trade equilibrium
- We express the terms of trade (TOT) for a country as the relative price of that country's *exports*:
 - **How many imports does a country gain per export**

$$TOT = \frac{P_{exports}}{P_{imports}}$$



The Terms of Trade



$$TOT = \frac{P_{exports}}{P_{imports}}$$

- In our examples:

- For **Home** (exporter of x):

$$TOT = \frac{p_x}{p_y}$$

- For **Foreign** (exporter of y):

$$TOT = \frac{p_y}{p_x}$$

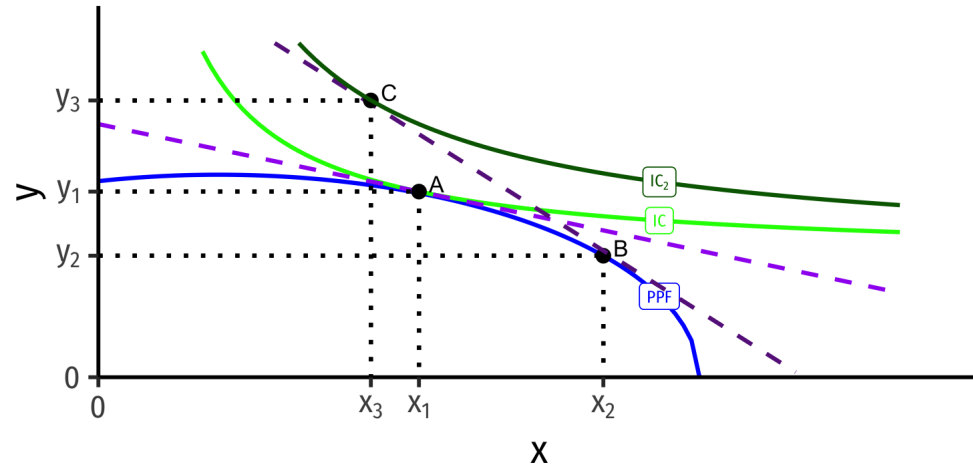
- The terms of trade can change over time as countries' supply (of exports) and demand (for imports) changes



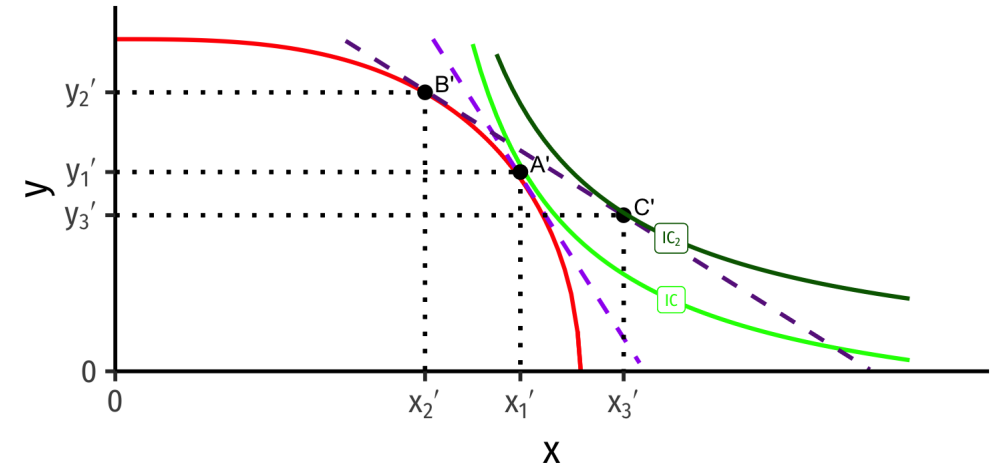
Changes in the Terms of Trade



Home



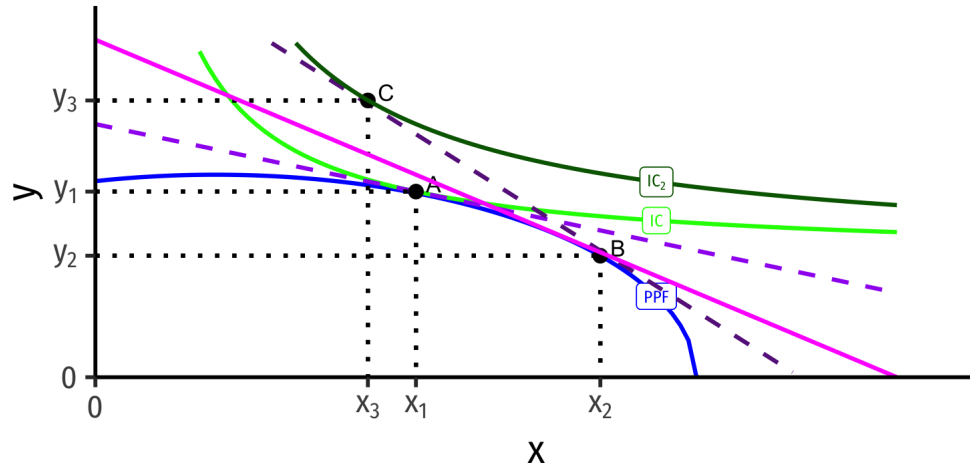
Foreign



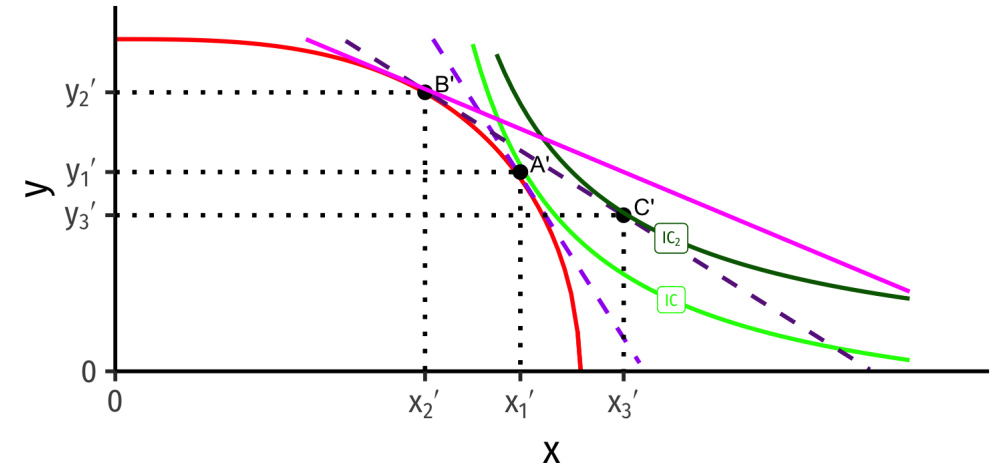
Changes in the Terms of Trade



Home



Foreign

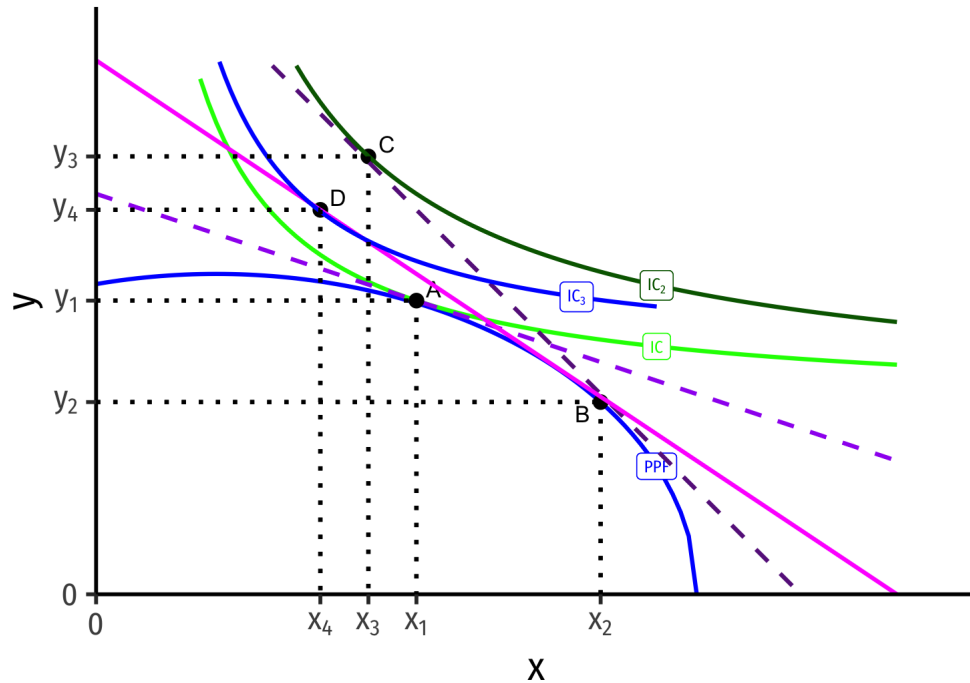


- Suppose equilibrium relative price of x **decreases** (relative price of y increases): **slope gets flatter**

Changes in the Terms of Trade



Home



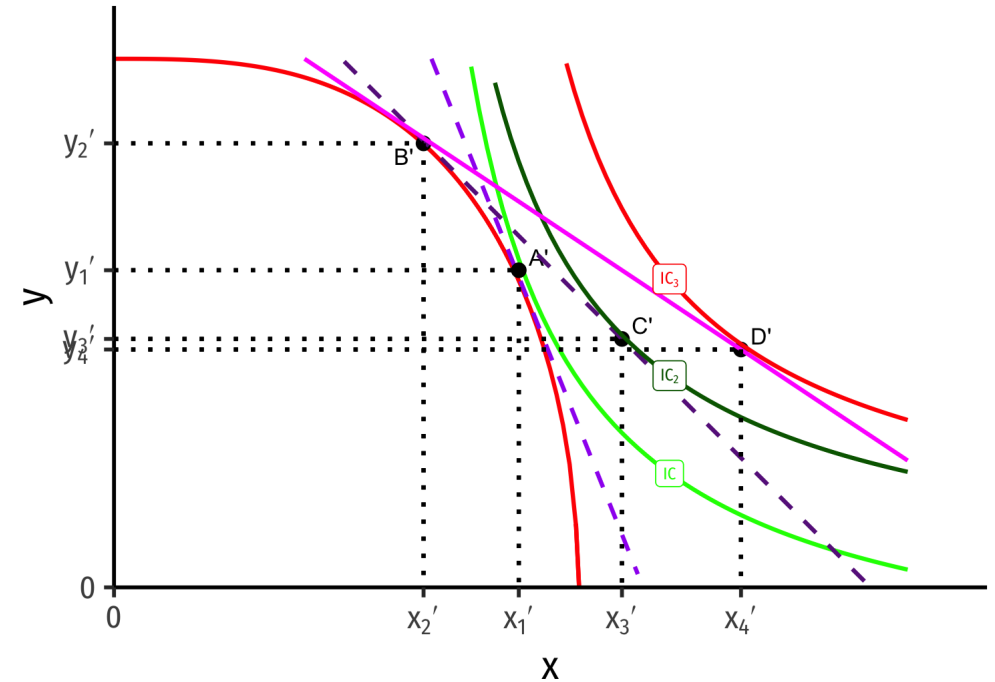
- Suppose equilibrium relative price of x **decreases** (relative price of y increases): **slope gets flatter**
- **Home** (exporter of x, importer of y) reaches a **lower indifference curve** (at D) than before (at C)
- **Home's** TOT: $\frac{p_x}{p_y}$ *worsened* (fewer imports per export)

Changes in the Terms of Trade



- Suppose equilibrium relative price of x **decreases** (relative price of y increases): **slope gets flatter**
- **Foreign** (exporter of y, importer of x) reaches a **higher indifference curve** (at D') than before (at C')
- **Foreign's** TOT: $\frac{p_y}{p_x}$ *strengthened* (more imports per export)

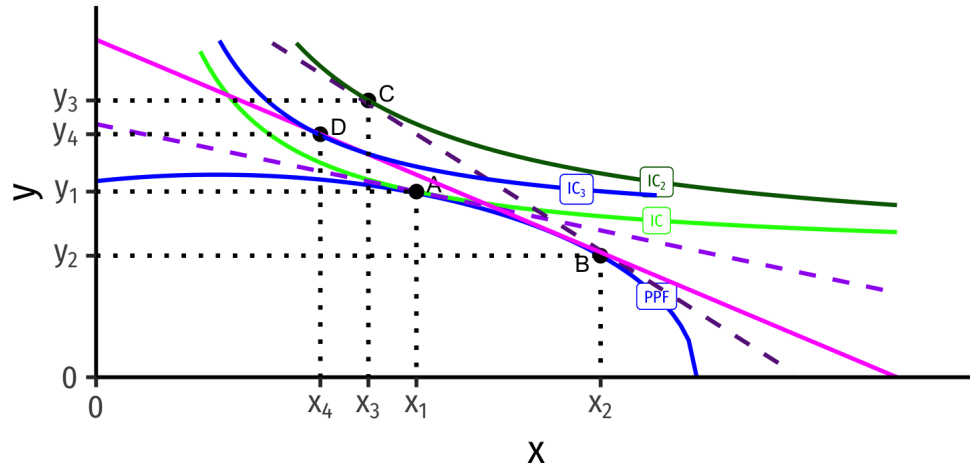
Foreign



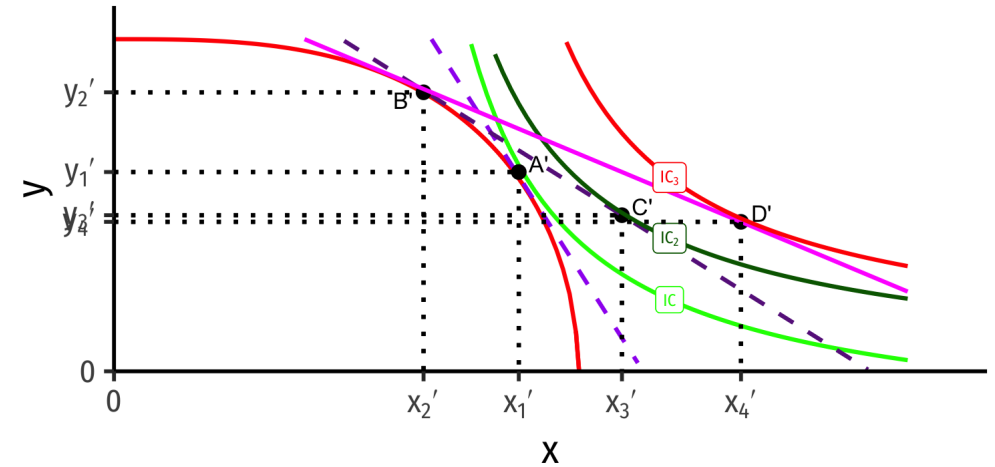
Changes in the Terms of Trade



Home



Foreign



- Suppose equilibrium relative price of x **decreases** (relative price of y increases): **slope gets flatter**
- Home's TOT: $\frac{p_x}{p_y}$ *worsened* (fewer imports per export)
- Foreign's TOT: $\frac{p_y}{p_x}$ *strengthened* (more imports per export)

Terms of Trade Changes



- Increases in a country's TOT (higher relative price of its exports) is generally better
 - country can buy more imports per export
 - Caused by price of exports increasing or price of imports decreasing
- Decreases in a country's TOT (lower relative price of its exports) is generally worse
 - country can buy fewer imports per export
 - Caused by price of exports decreasing or price of imports increasing



Terms of Trade Changes



- Recall, terms of trade can only fall within the range between countries' relative autarky prices!

$$\left(\frac{p_x}{p_y}\right)^H < \left(\frac{p_x}{p_y}\right)^* < \left(\frac{p_x}{p_y}\right)^F$$

- But there is still room for TOT to increase or decrease



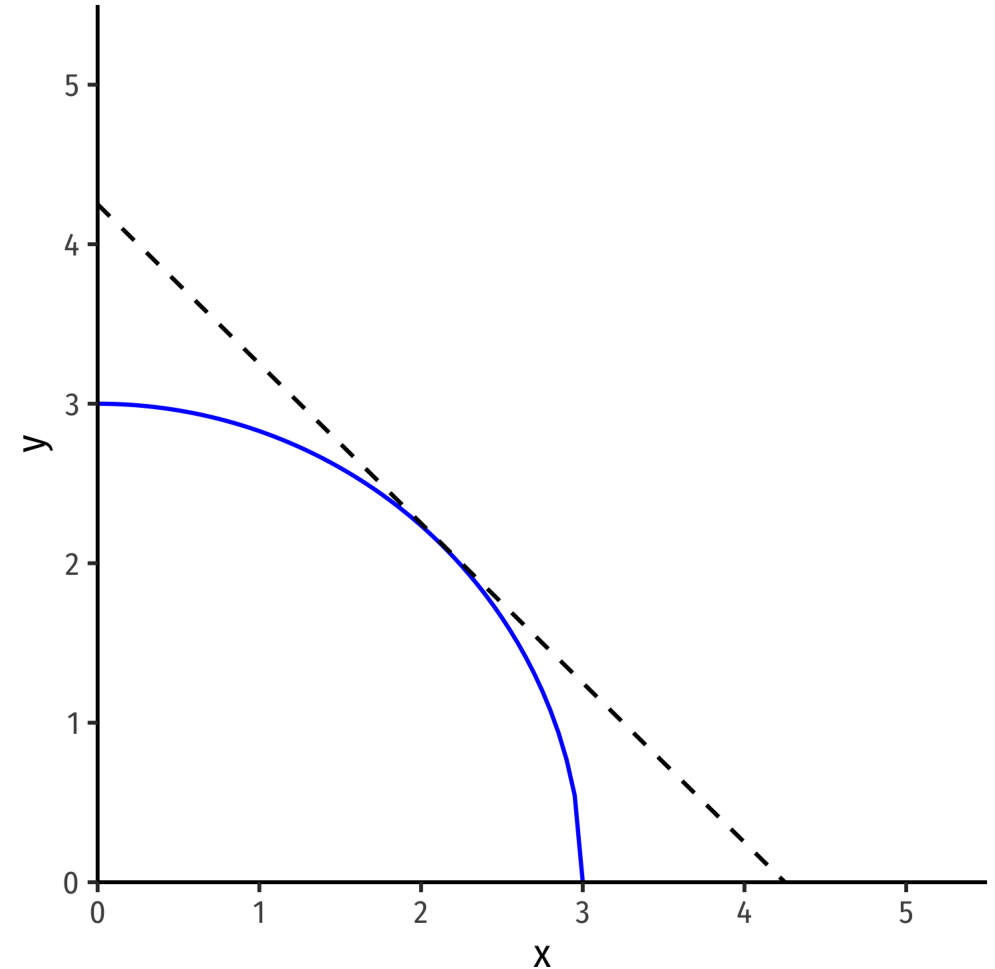


Causes of Terms of Trade Changes

Economic Growth



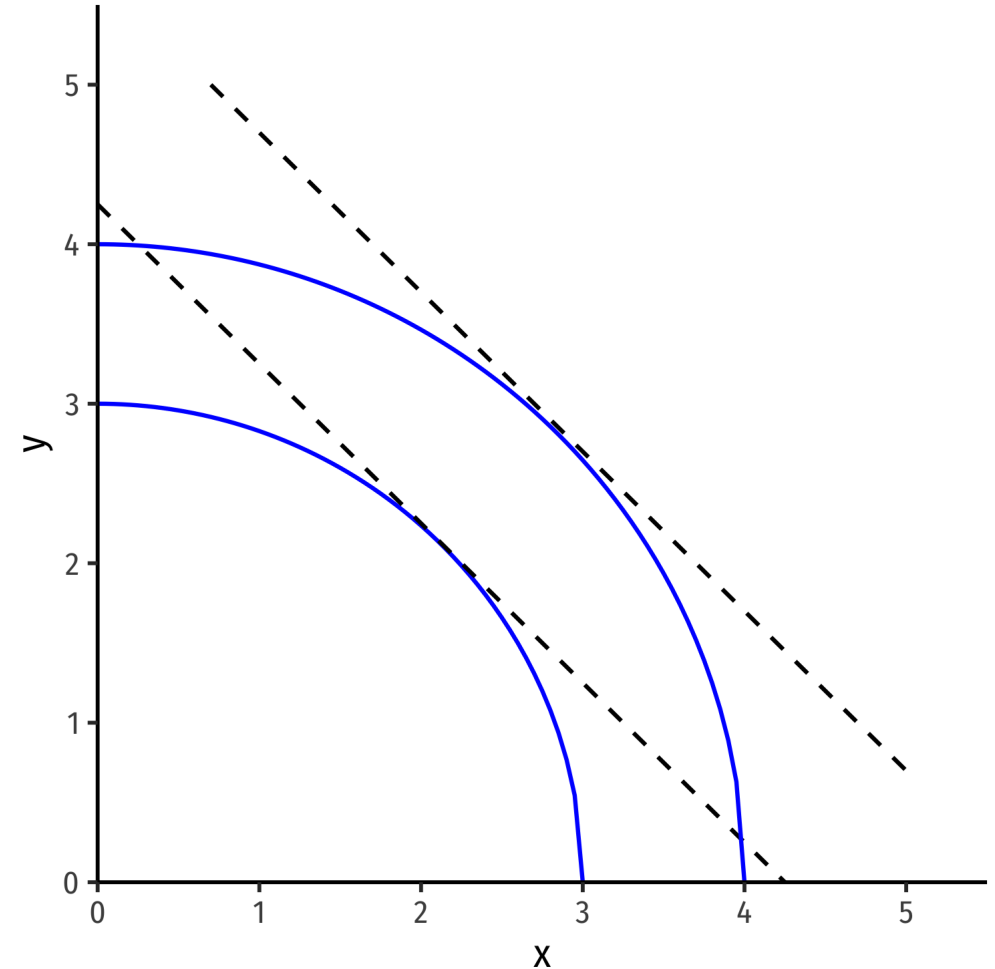
- **Economic growth:** an outward expansion of a country's PPF
 - increase in productivity
 - generating greater output with (fewer) inputs



Economic Growth



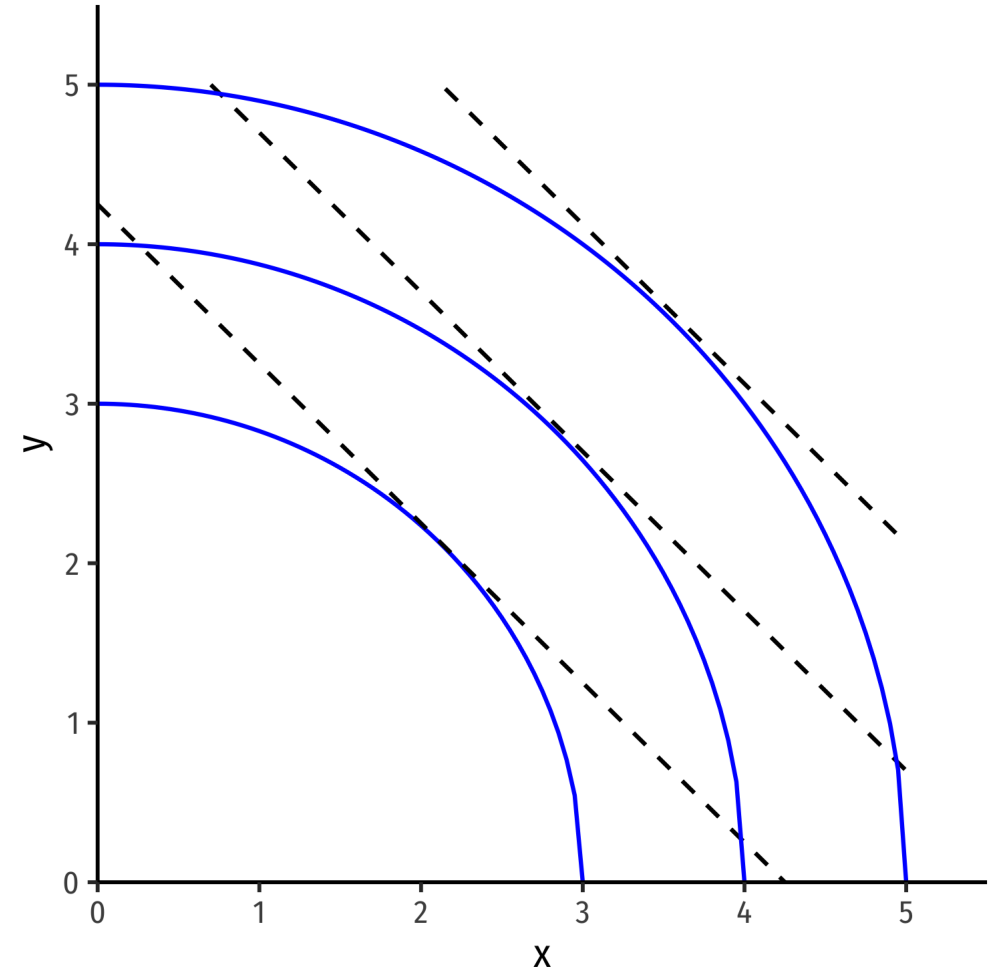
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Economic Growth



- **Economic growth**: an outward expansion of a country's PPF
 - increase in productivity
 - generating greater output with (fewer) inputs
- Here we demonstrate **balanced growth**, where relative prices (slopes) remain unchanged

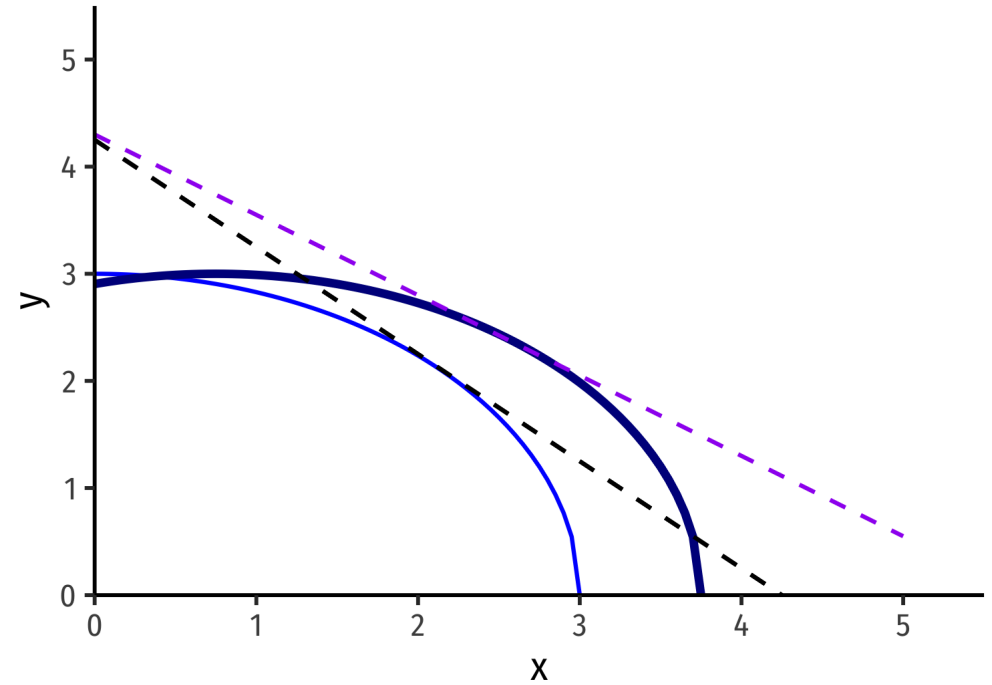


Biased Growth



- Economic growth is often **biased** towards particular industries

x-Biased Growth

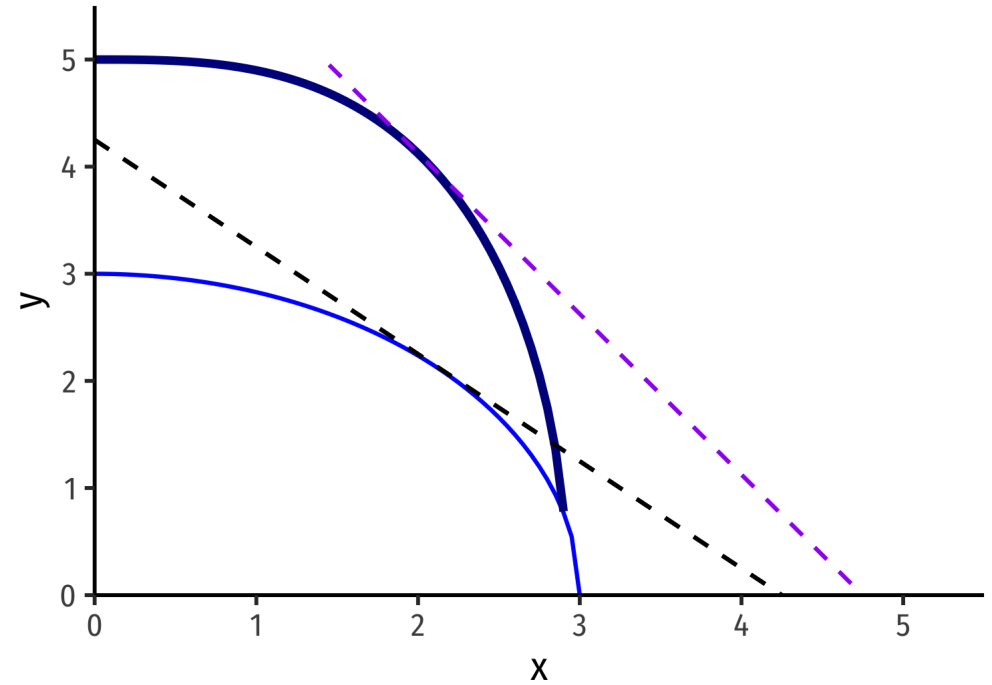


Biased Growth



- Economic growth is often **biased** towards particular industries

y-Biased Growth

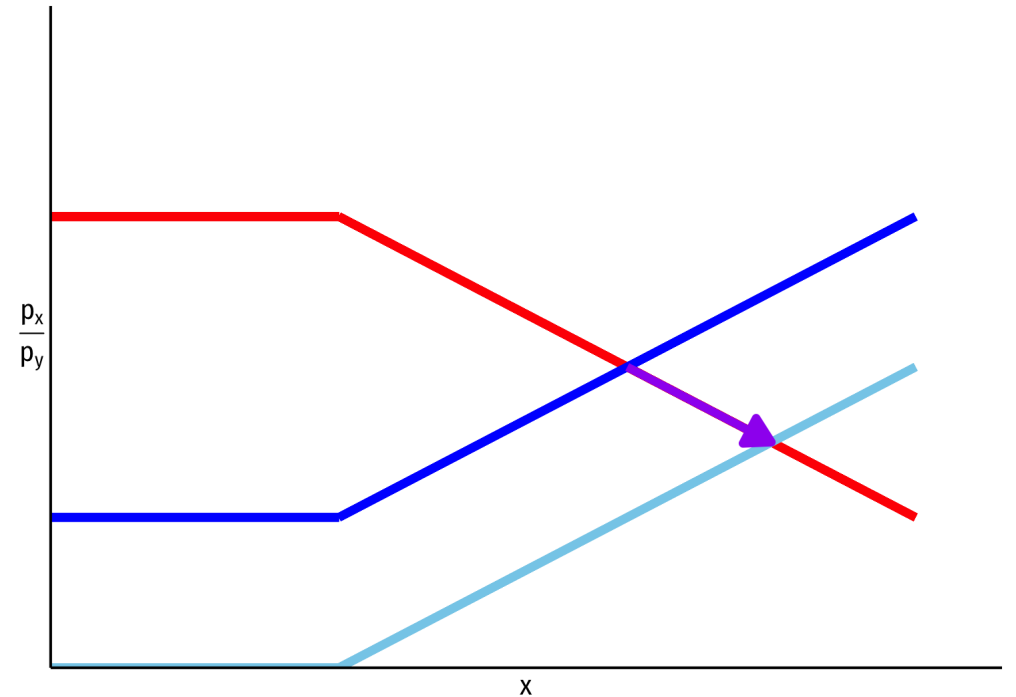


Biased Growth Affecting Global Relative Supply



- Growth biased towards x: increases relative supply of x
 - (If we graphed market for y, would decrease relative supply of y)
- Will push down relative price of x (push up relative price of y)

x-Biased Growth

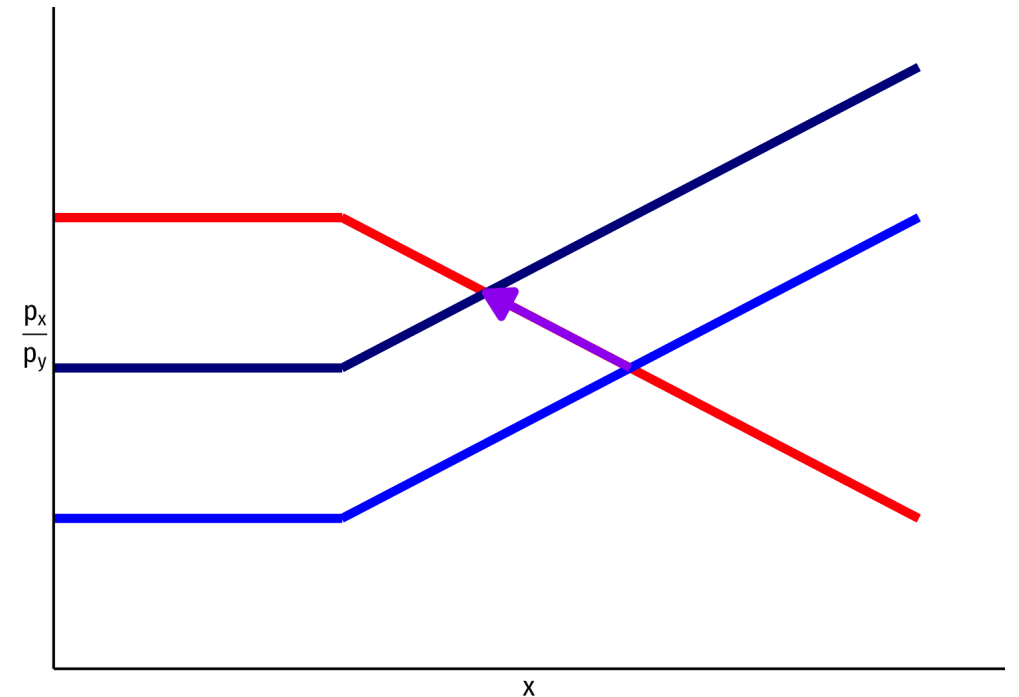


Biased Growth Affecting Global Relative Supply



- Growth biased towards y: decreases relative supply of x
 - (If we graphed market for y, would increase relative supply of y)
- Will push up relative price of x (push down relative price of y)

y-Biased Growth



Causes of Terms of Trade Changes



- What is important is *not which country grew, but which industry*



Causes of Terms of Trade Changes



- Biased growth is caused by a variety of factors
- Technological progress increasing labor productivity in a particular industry
- Increase in supply of certain factors (labor, capital, land) may affect some industries more than others
- Trade policies
 - export subsidies
 - import tariffs
 - industrial policy



The Terms of Trade



- Recall each country's terms of trade are:

$$TOT = \frac{P_{exports}}{P_{imports}}$$

- Events that raise (lower) price of our exports raise (lower) our TOT
- Events that raise (lower) price of our imports lower (raise) our TOT

“How many imports can we buy with a unit of our exports?”



The Terms of Trade



Example: Suppose the U.S. exports cars and imports raw materials. How would the U.S.' terms of trade be affected by:

1. A war in the Middle East disrupts the supply of oil.
2. Japan provides export subsidies to its car industry.
3. The U.S. reduces tariffs on imported fruit.
4. Germany reduces tariffs on imported American cars.



The Terms of Trade



- Recall each country's terms of trade are:

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The Terms of Trade



- Often compare export industries & import industries growth
- Export-biased growth tends to worsen a growing country's TOT, to the benefit of the rest of the world
 - Raises other importing countries' TOT
- Import-biased growth tends to increase a growing country's TOT, to the expense of the rest of the world
 - Lowers other exporting countries' TOT



Don't Get Misled!



- **Trade is a positive sum game!**
- Regardless of what TOT are, both countries are still consuming beyond their PPFs!
- We are arguing about *how far* each country gets beyond its PPF
- The **distribution of the gains from exchange** are zero sum
- Both countries are “winners”, this is about “who wins more?”



Don't Get Misled!



- Exports are the price a country pays for imports!
- Exports are a *cost!* (our consumers lose them)
- Imports are a *benefit!* (our consumers gain them)



Distribution With vs. Across Countries



- We have still been considering countries *as a whole*
 - A “national” indifference curve
- Trade benefits entire nation *in aggregate* (for both countries)
- TOT trade changes affect *how much* a nation gains from exchange



Distribution With vs. Across Countries



- In reality, changes in international trade and changes in TOT affect groups *within* a country differently
 - Some may clearly be harmed from international trade & TOT changes
- We next consider 2 models to reflect reality:
 - **Specific factors model**: some factors are mobile between industries, some are not
 - Trade changes will benefit/hurt factors in proportion to their mobility
 - **Heckscher-Ohlin model** where comparative advantage is determined by relative factor endowments

