

International Trade



L4

International Trade

- Major concerns are:
 - Pattern of trade (nature of exports and imports)?
 - **Volume of trade**
 - **Who trades with whom?**
 - Trade barriers

Ex: US Trade (2015)

- These 15 countries account for 75% of the value of US trade
- Why did the US trade so much with these countries
- Who trades with whom?

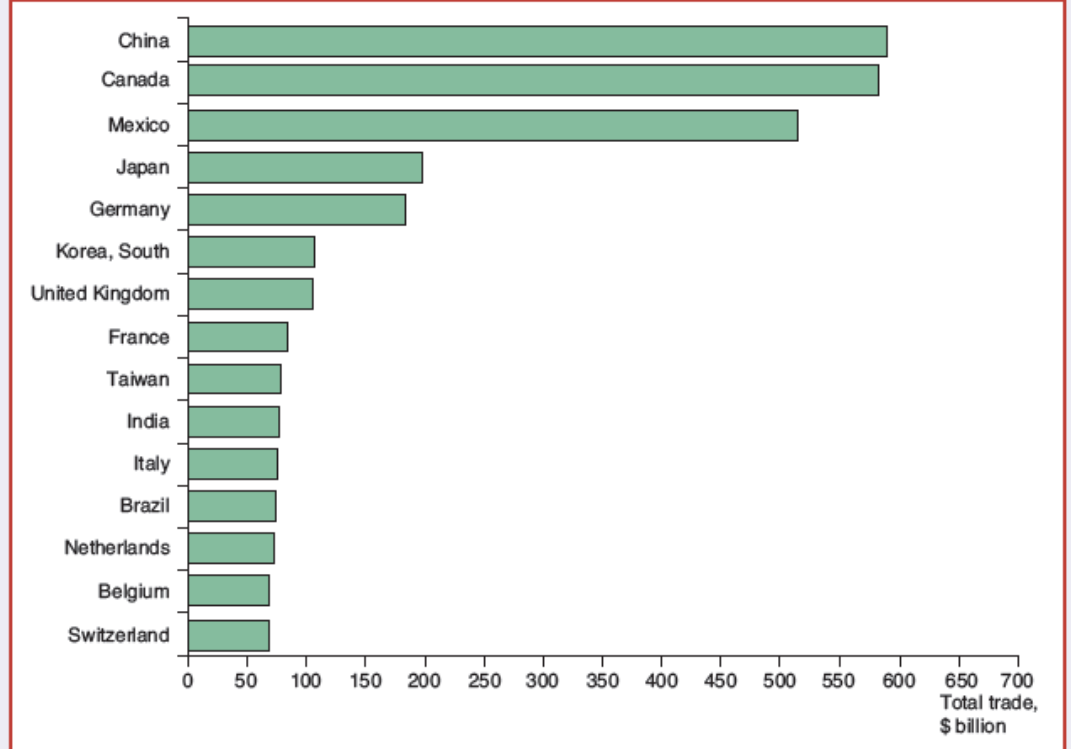


FIGURE 2-1

Total U.S. Trade with Major Partners, 2015

U.S. trade—measured as the sum of imports and exports—is mostly with 15 major partners.

Source: U.S. Department of Commerce.

Size matters for Trade

- Three of the top 15 U.S. trading partners are European nations: Germany, the United Kingdom, and France
- Why does the US trade more heavily with these 3 European countries than with others?
- The answer is that these are the three largest European economies. That is, they have the highest values of **gross domestic product (GDP)**, (which measures the total value of all goods and services produced in an economy)
- There is a strong empirical relationship between the size of a country's economy and the volume of both its imports and its exports.

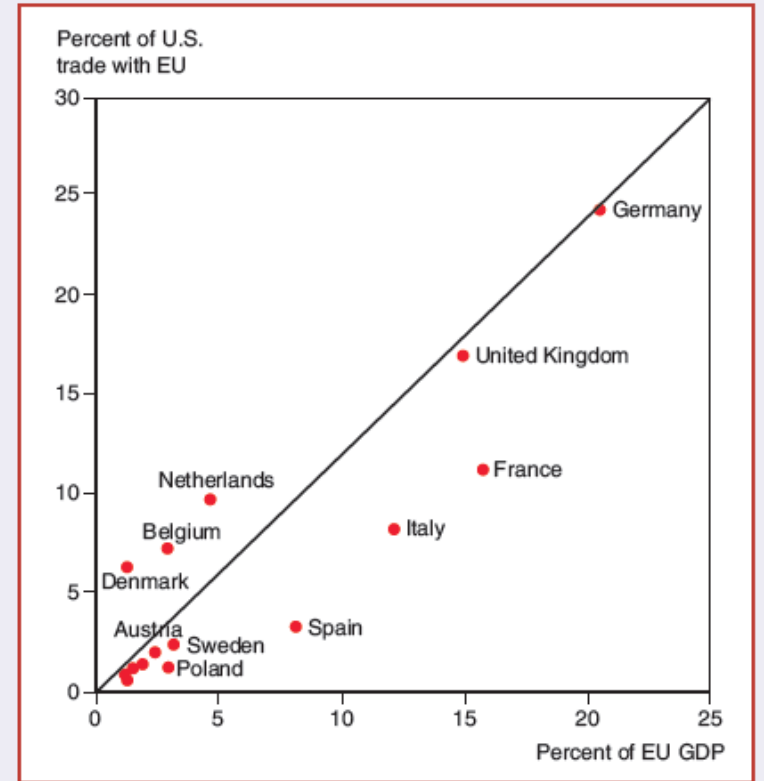
Size of the economy and Trade

- On the horizontal axis is each country's GDP, expressed as a percentage of the total GDP of the European Union;
- On the vertical axis is each country's share of the total trade of the United States with the EU.

FIGURE 2-2

The Size of European Economies and the Value of Their Trade with the United States

Source: U.S. Department of Commerce, European Commission.



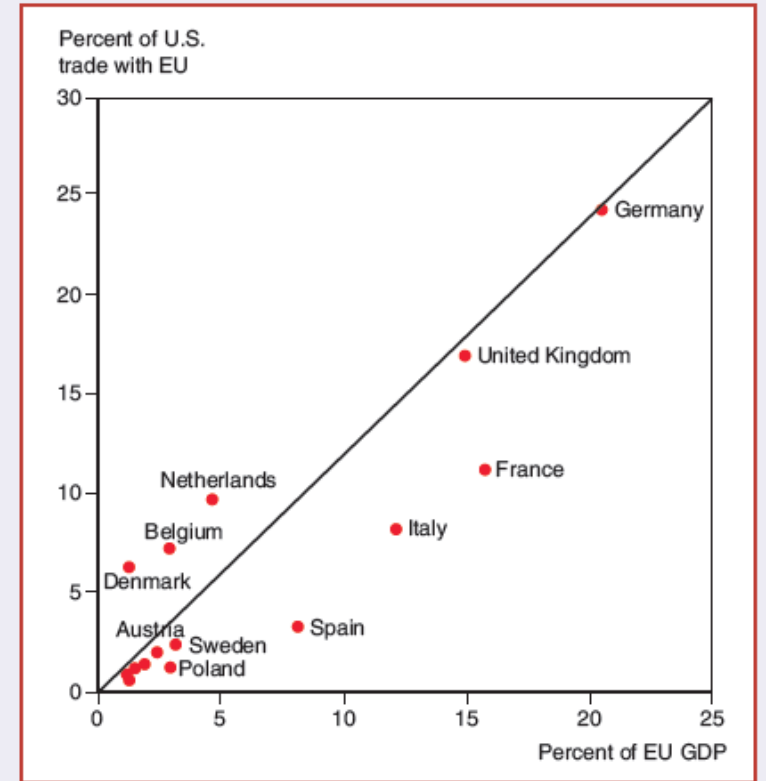
Size of the economy and Trade

- The scatter of points is clustered around the dotted 45-degree line—that is, each country's share of U.S. trade with Europe was roughly equal to that country's share of Western European GDP.
- Germany has a large economy, accounting for 20 percent of Western European GDP; it also accounts for 24 percent of U.S. trade with the region.
- Sweden has a much smaller economy, accounting for only 3.2 percent of European GDP; correspondingly, it accounts for only 2.3 percent of U.S.–Europe trade.

FIGURE 2-2

The Size of European Economies and the Value of Their Trade with the United States

Source: U.S. Department of Commerce, European Commission.



The Gravity Model

- If two countries **are more similar** (size of the economy, culture, language, technological development etc) **then trade will be more** between these countries than countries that are not similar
- Countries who **are neighbors** than who are far away will **trade more – because distance increases the transportation cost.**
 - Thus according to the model , US will trade more with its neighbours Canda and Mexico, and moe with large economies such as China, Japan and Germany

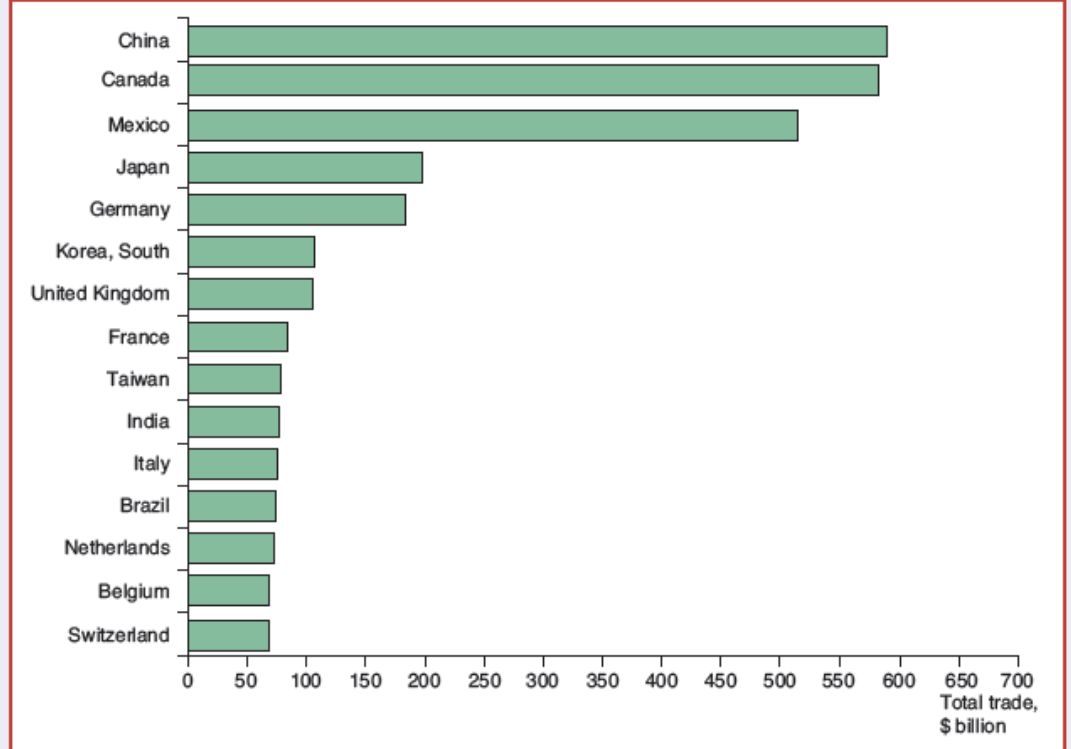


FIGURE 2-1

Total U.S. Trade with Major Partners, 2015

U.S. trade—measured as the sum of imports and exports—is mostly with 15 major partners.

Source: U.S. Department of Commerce.

Gravity Model

- Looking at world trade as a whole, economists have found that a relationship of the following form predicts the **volume of trade** between **any two countries** fairly accurately
- $T_{ij} = A * \frac{Y_i Y_j}{D_{ij}}$
- where A is a constant term, T_{ij} is the value of trade between country i and country j , Y_i is country i 's GDP, Y_j is country j 's GDP, and D_{ij} is the distance between the two countries.
- That is, the **value of trade between any two countries is proportional, other things equal, to the *product* of the two countries' GDPs and diminishes with the distance between the two countries.** This is known as **the gravity model** of world trade.



The Gravity Model

- It postulates that (other things being constant) the bilateral **trade between two countries is :**
- 1. Proportional or positively related to the product of the two countries GDP (i.e the size of the economy of these countries)
- 2. And negatively related to the distance between the two countries

The Gravity Model

- The reason for the name is the **analogy** to Newton's law of gravity. Just as the gravitational attraction between any two objects is proportional to the product of their masses and diminishes with distance, the trade between any two countries is, other things equal, proportional to the product of their GDPs and diminishes with distance
- In Gravity model (GM) , we use distance as a proxy for transportation cost.
- GM doesn't explain the pattern of trade (i.e. which products are exported and which are imported)

Gravity model: Estimation

- GM general form

$$T_{ij} = A * \frac{Y_i^a Y_j^b}{D_{ij}^c}$$

- GM empirical estimation

$$T_{ij} = A * \frac{Y_i^a Y_j^b}{D_{ij}^c} \omega_{ij}$$

Gravity model: Estimation

- GM empirical estimation

Log-log model

$$\ln T_{ij} = \beta_0 + \beta_1 \ln Y_i + \beta_2 \ln Y_j - \beta_3 \ln D_{ij} + \epsilon_{ij}$$

Poisson Psuedo maximum likelihood (PPML) model

$$\ln T_{ij} = \exp[\beta_0 + \beta_1 \ln Y_i + \beta_2 \ln Y_j - \beta_3 \ln D_{ij}] \epsilon_{ij}$$

Why does GM work?

- Large economies tend to spend large amounts on imports because they have large incomes. They also tend to attract large shares of other countries' spending because they produce a wide range of products. So, other things equal, the trade between any two economies is larger—the larger is *either* economy.
- Another main reason is transportation cost. All estimated gravity models show a strong negative effect of distance on international trade; typical estimates say that a 1 percent increase in the distance between two countries is associated with a fall of 0.7 to 1 percent in the trade between those countries. This drop partly reflects increased costs of transporting goods and services
- Less tangible factors play a crucial role: Trade tends to be intense when countries have close personal contact, and this contact tends to diminish when distances are large.

Why does GM work?

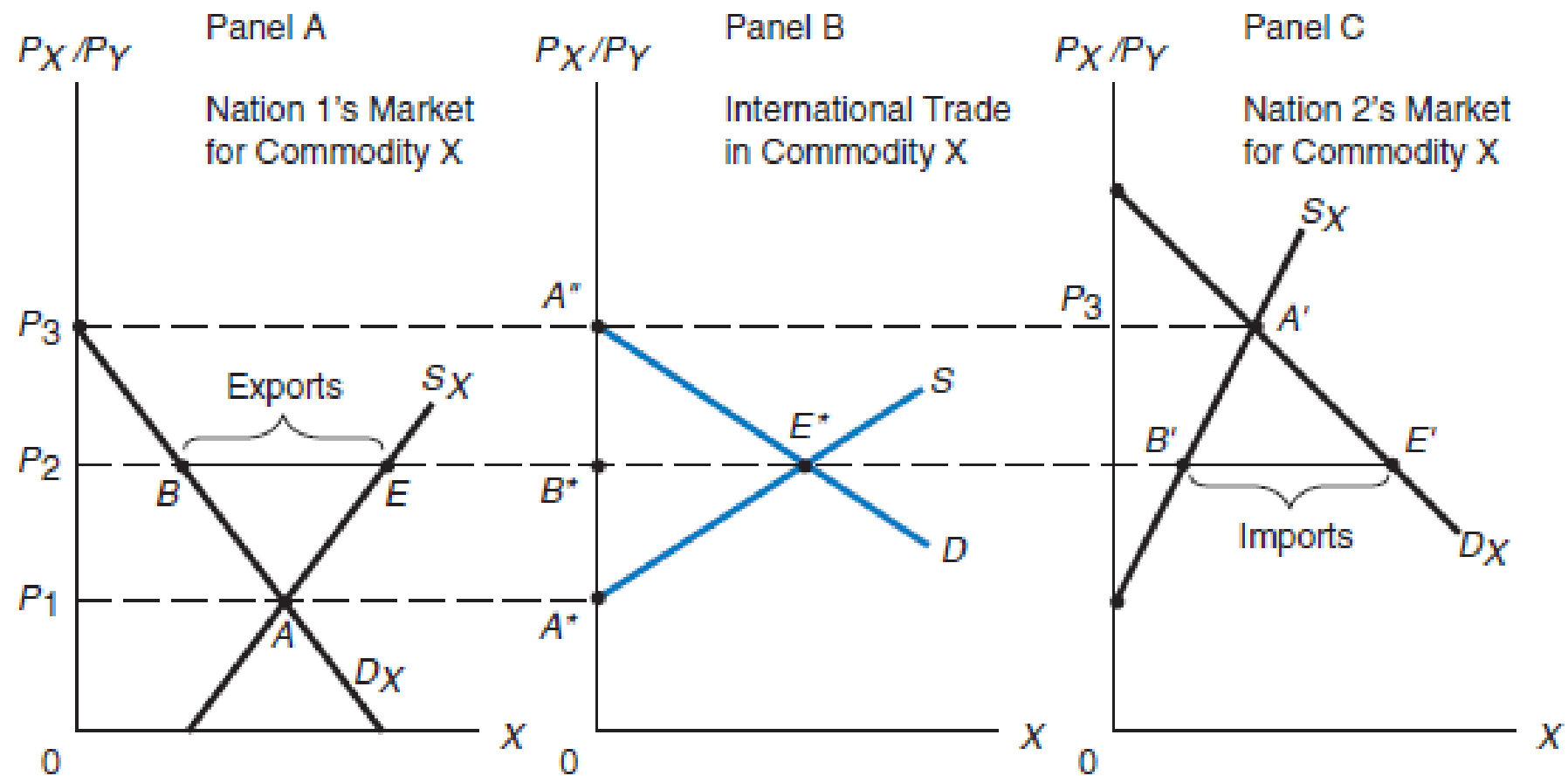
- Trade agreement – NAFTA (North American Free Trade Agreement) ensures that most goods shipped among US , Canada and Mexico are not subject to tariffs and other barriers to trade.
- Hence GM can be used to analyse the impact of trade agreements on international trade. If a trade agreement is effective, it should lead to significantly more trade among its partners than one would otherwise predict given their GDPs and distances from one another.
- Trade agreements between same regions generate more volume of trade , than agreements among countries with different regions.

Service Offshoring

- One of the major disputes in international economics recently is whether modern information technology, which makes it possible to perform some economic functions at long range, will lead to a dramatic increase in new forms of international trade.
- Example - call centers, where the person answering your request for information may be thousands of miles away. Many other services can also be done in a remote location.
- When a service previously done within a country is shifted to a foreign location, the change is known as **service offshoring** (sometimes known as **service outsourcing**).
- In addition, producers must decide whether they should set up a foreign subsidiary to provide those services (and operate as a multinational firm) or outsource those services to another firm.

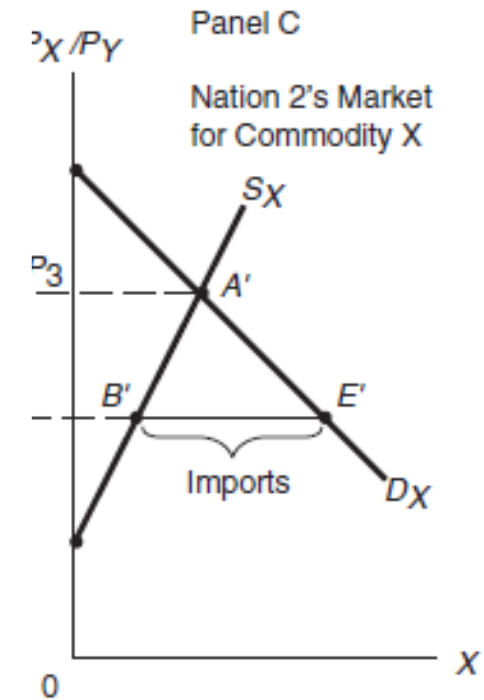
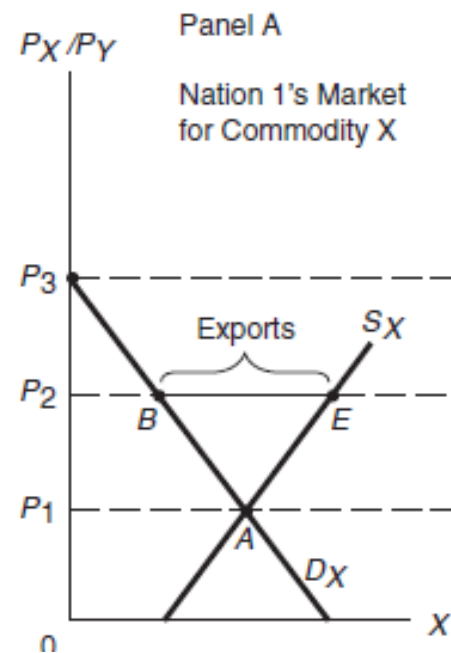
Partial Equilibrium-Relative Commodity Price with Trade

Relative Commodity Price with Trade—Partial Equilibrium Analysis

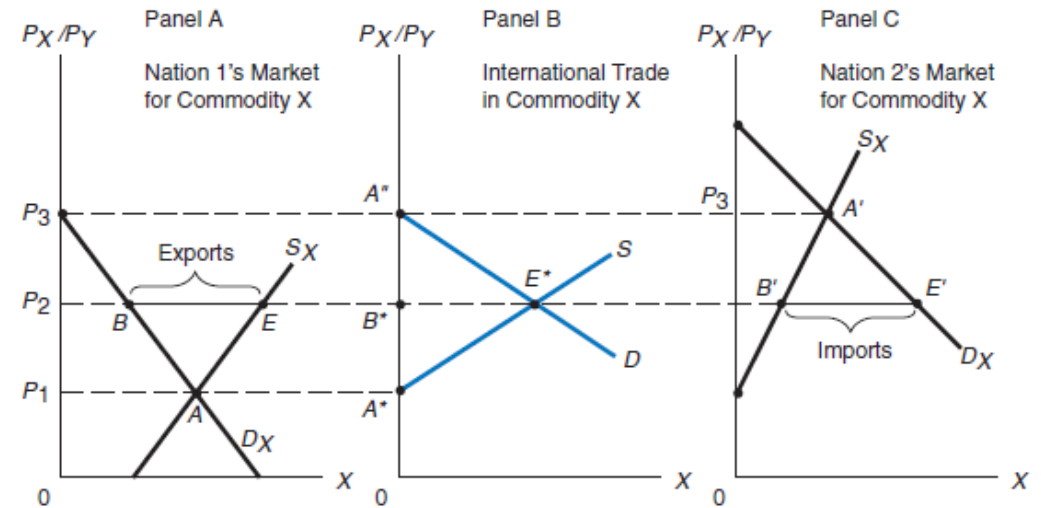


- Curves DX and SX in panels A and C of the Figure refer to the demand and supply curves for commodity X of Nation 1 and Nation 2, respectively.
- The vertical axes in all three panels of the Figure measure the relative price of commodity X (i.e., PX/PY), or the amount of commodity Y that a nation must give up to produce one additional unit of X). The horizontal axes measure the quantities of commodity X.
- Panel A of the Figure shows that in the absence of trade, Nation 1 produces and consumes at point A at the relative price of X of $P1$,
- While Nation 2 produces and consumes at point A at $P3$.
- With the opening of trade, the relative price of X will be between $P1$ and $P3$ if both nations are large.

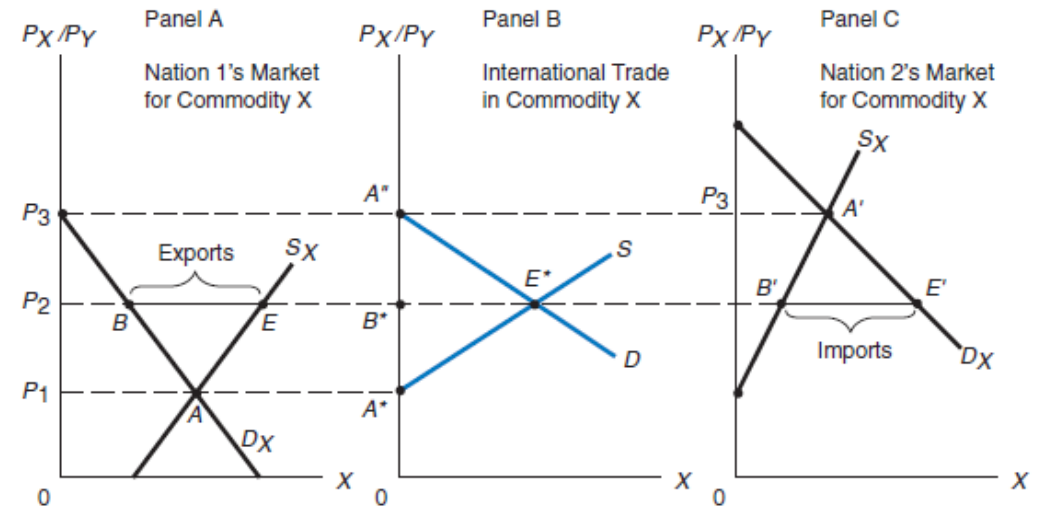
- At prices above P_1 , Nation 1 will supply (produce) more than it will demand (consume) of commodity X and will export the difference or excess supply (see panel A).
- Alternatively, at prices below P_3 , Nation 2 will demand a greater quantity of commodity X than it produces or supplies domestically and will import the difference or excess demand (see panel C).



- Specifically, panel A shows that at P_1 , the quantity supplied of commodity X (Q_{SX}) equals the quantity demanded of commodity X (Q_{DX}) in Nation 1, and so Nation 1 *exports* nothing of commodity X. This gives point A^* on curve S (Nation 1's supply curve of exports) in panel B.
- Panel A also shows that at P_2 , the excess of BE of Q_{SX} over Q_{DX} represents the quantity of commodity X that Nation 1 would export at P_2 . This is equal to B^*E^* in panel B and defines point E^* on Nation 1's S curve of exports of commodity X.



- On the other hand, panel C shows that at P_3 , $QDX = QSX$ (point A'), so Nation 2 does not demand any *imports* of commodity X.
- This defines point $A^\#$ on Nation 2's demand curve for imports of commodity X (D) in panel B.
- Panel C also shows that at P_2 , the excess BE of QDX over QSX represents the quantity of commodity X that Nation 2 would import at P_2 .
- This is equal to B^*E^* in panel B and defines point E^* on Nation 2's D curve of imports of commodity X.



- At P_2 , the quantity of imports of commodity X demanded by Nation 2 (BE in panel C) equals the quantity of exports of commodity X supplied by Nation 1 (BE in panel A).
- This is shown by the intersection of the D and S curves for trade in commodity X in panel B.
- **Thus, P_2 is the equilibrium-relative price of commodity X with trade.**
- From panel B we can also see that at $P_X/P_Y > P_2$ the quantity of exports of commodity X supplied exceeds the quantity of imports demanded, and so the relative price of X (P_X/P_Y) will fall to P_2 .
- On the contrary, at $P_X/P_Y < P_2$, the quantity of imports of commodity X demanded exceeds the quantity of exports supplied, and P_X/P_Y will rise to P_2 .

