Who Trades with whom?

The Gravity Model

Who Trades with whom?

- We consider the pattern of world trade that we observe today.
- Core idea: empirical model known as the gravity model.
- Gravity model is based on two observations:
  - Countries tend to trade with **nearby** economies.
  - Trade is proportional to country **size.**
- The model is called “gravity model” (coming from the physics equation that describes the attraction of one body to another as proportional to their size and distance).

Who Trades with whom? (The U.S. case)

- Geography (distance) and size (GDP) are the most important determinants of bilateral trade flows.

- Note that the world's largest economies (after the U.S.) are Japan, Germany, United Kingdom, France, and China.

The Importance of Size

- Large economies produce more goods and services, so there is more to sell in export markets.
- Large economies generate more income from the sales of goods and services
  - Higher income increases demand for all goods –including imported goods
- Therefore, trade is very concentrated among developed countries:
  - 50% of current world trade is among developed economies (countries in OECD & EU 25).
  - 12% of current world trade is among developing economies.

Who trades with whom

- Major US trade partners (2012): Canada, China, Mexico, Japan, Germany.
- 56% of the US trade is realized through the 10 major trade partners.

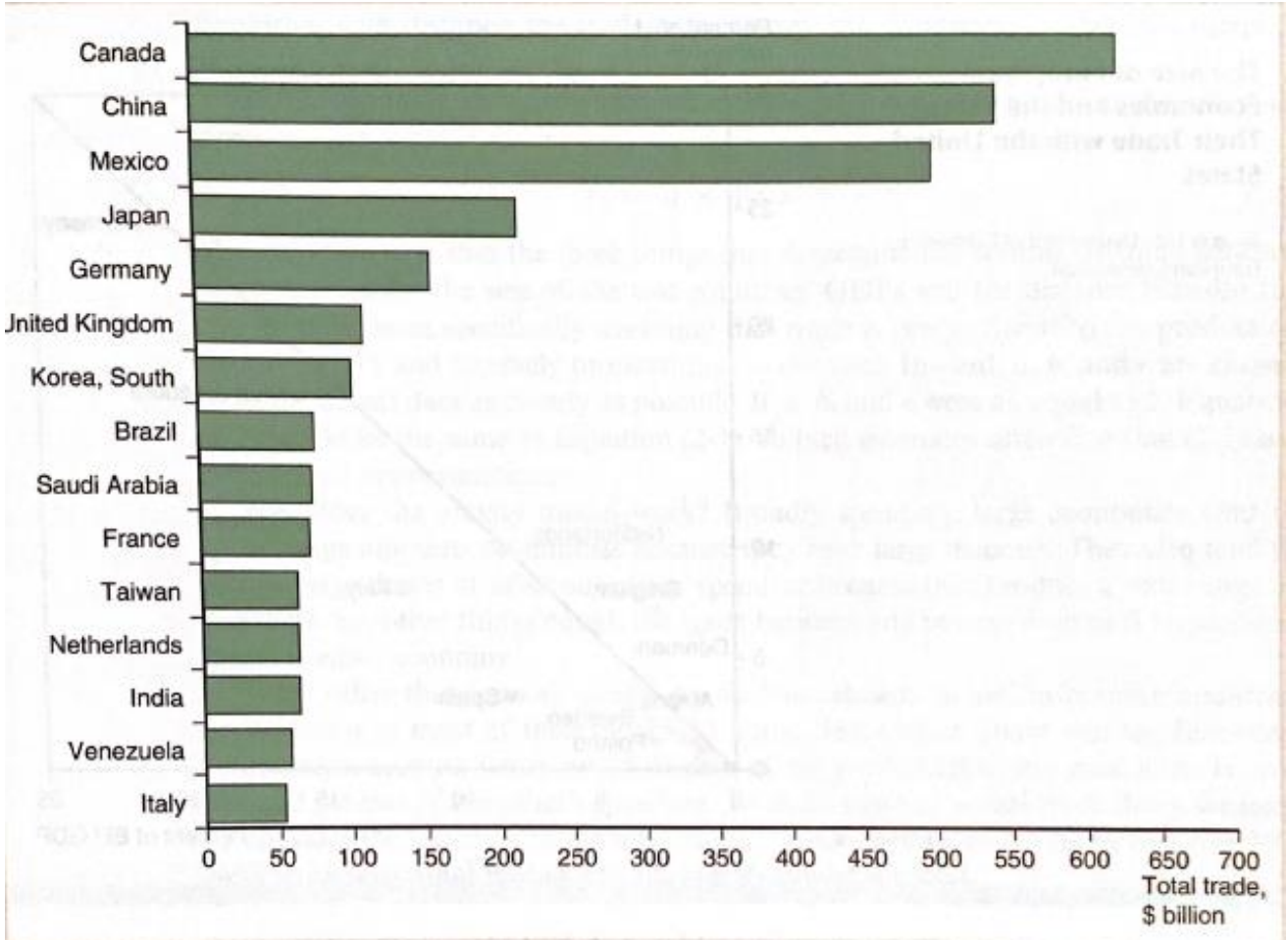


FIGURE 2-1

Total U.S. Trade with Major Partners, 2012

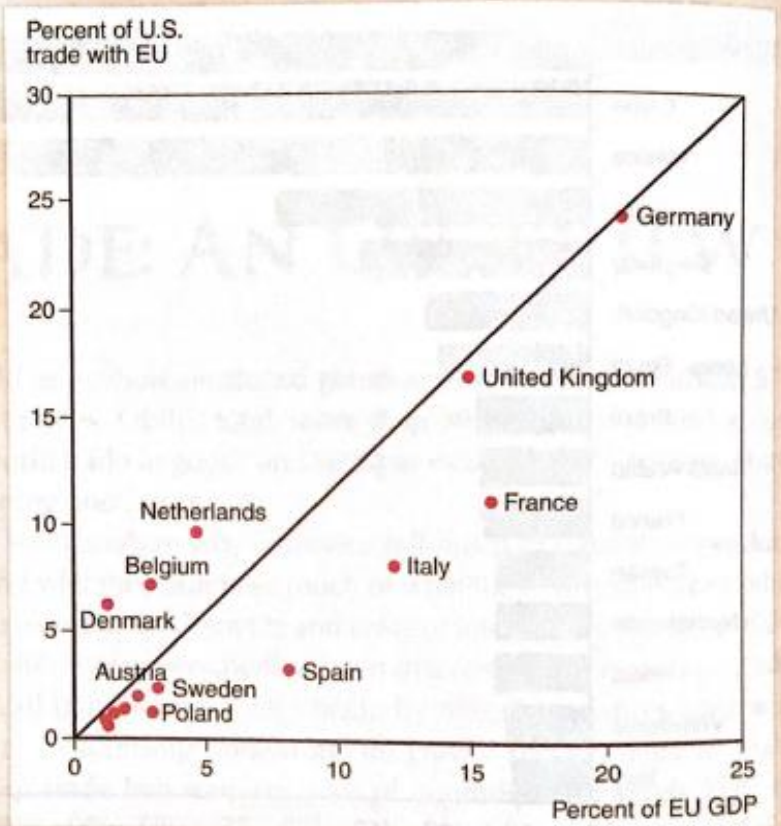
U.S. trade—measured as the sum of imports and exports—is mostly with 15 major partners.

Source: U.S. Department of Commerce.

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 Equation for Bilateral Trade

- Using bilateral trade data for all countries in the world, the best fit of the gravity equation:
- $Tij = [A(Yi)^a(Yj)^b] / (Dij)^c$
- T:trade Y: size D: distance
- Trade (T) is roughly proportional to country size (just like gravity force and mass).
- $(Dij)^c$
- Estimation of the equation yields coefficients a, b, and c that are very close to 1.
- On average doubling the distance between two countries of similar size will halve their bilateral trade.
- Surprisingly, even with substantial reductions in transportation costs, the effect of distance has not changed much, over the last 50 years!

Distance and Borders

- Estimates based on the model of gravity for the effect of distance, indicate that an increase in the distance separating two countries by 1% restricts their trade between 0.7% to 1%.
- Apart from the distance, **borders** increase the cost of trade in terms time and money.
- ***International trade agreements*** *intend to facilitate trade by facilitating procedures and duties required to overcome borders.*

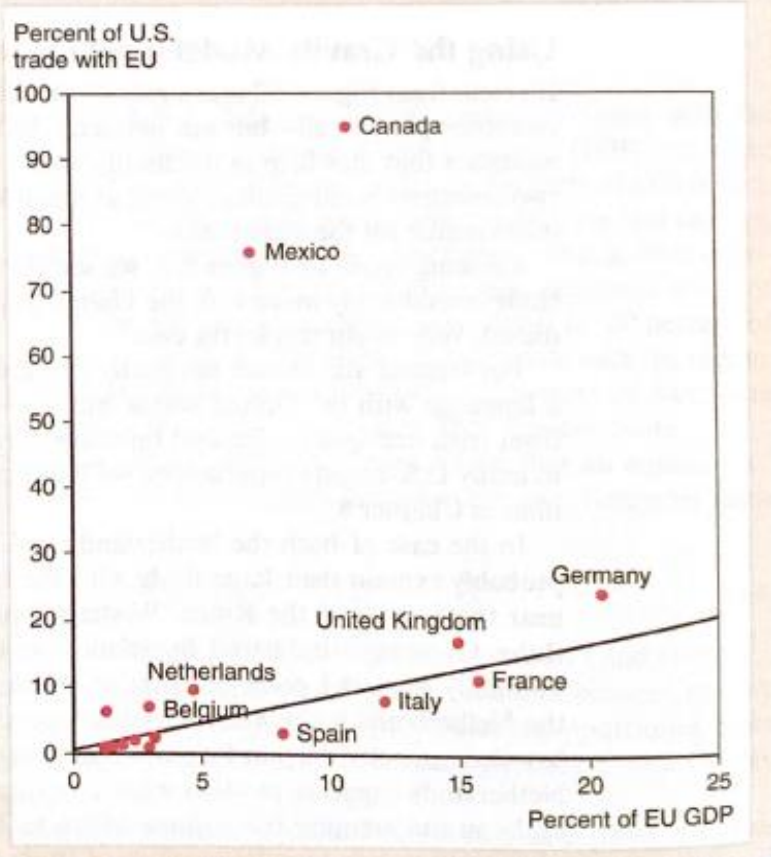
- in 1994 the US signed with Mexico and Canada the North American Free Trade Agreement (NAFTA) (North Atlantic Free Trade Area).
- Due to NAFTA and geographic proximity, the volume of trade between the US and its two neighbors is higher as a percentage of GDP compared to the volume of trade between the US and Europe.

FIGURE 2-3

Economic Size and Trade with the United States

The United States does markedly more trade with its neighbors than it does with European economies of the same size.

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



Other factors that influence trade

- Although country *size and distance* are the main determinants of bilateral trade, other characteristics of country-pair relationships also matter for trade:
- Sharing a common border (beyond the effect of distance).
- Sharing a common language.
- Former colonial ties.
- Being part of a free-trade agreement.
- Other cultural ties.

- Geography (sea harbours, absence of high mountains that obstruct trade)
- Multinational companies (firms of the same company trade large volume of commodities with each other)
- Borders in general require time consuming processes and the imposition of costly tariffs, …in different currencies.

Trade Deficits and Surpluses

- ***The factors that generate trade*** (how much and which commodities a country trades) are distinct from the factors that generate trade ***deficits*** or ***surpluses***.
- ... and their consequences are very different too.
- A country that has a trade deficit (surplus) means that this country is borrowing (lending) from the rest of the world.
- A country can be a net borrower or a net lender.
- ...and has nothing to do with what and how much that country trades.

Trade Deficits and Surpluses

- For example, the U.S. is currently running a very large trade deficit (above 5% of GDP)
- This means that the U.S. is borrowing that amount from the rest of the world…
- ... by selling financial assets (U.S. treasury bonds, stocks, corporate bonds, etc...) equal in value to the trade deficit.
- The determinants of country trade deficits/surpluses are studied in a separate course of international macroeconomics (second half of textbook)
- In this course, we will not worry about country lending or borrowing and almost always assume that a country's trade balance is zero.

The Main Building Blocks of International Trade Models

- Factors of production are substantially more mobile within countries than among countries.
- We usually assume that factors of production cannot move across countries.
- This leads to important differences in factor abundance across countries.
- Production technologies may be specific to countries.
- Production technologies are tied to human capital or government institutions.
- These differences in factor availability and technologies are large relative to differences in consumer tastes across countries.
- ... so, we will often assume that consumers have the same tastes across countries.