

**Chapter 2**

World Trade:  
An Overview

With revisions for ANU

Econ 3103/3013/8015

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Slides prepared by Thomas Bishop

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### Preview

- The largest trading partners of the US
- Gravity model:
  - ◆ influence of an economy's size on trade
  - ◆ distance and other factors that influence trade
- Borders and trade agreements
- Globalization, then and now
- Changing composition of trade
- Multinational corporations and outsourcing

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### Who Trades with Whom?

- The 5 largest trading partners with the US in 2003 were Canada, Mexico, China, Japan and Germany.
- The total value imports from and exports to Canada in 2003 was almost \$400 billion dollars.
- The largest 10 trading partners with the US accounted for 68% of the value of US trade in 2003.

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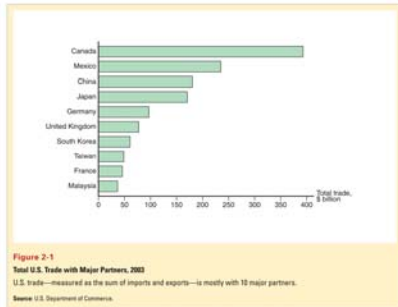
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## Who Trades with Whom? (cont.)



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## Size Matters: The Gravity Model

- 3 of the top 10 trading partners with the US in 2003 were also the 3 largest European economies: Germany, UK and France.
- These countries have the largest **gross domestic product (GDP)** in Europe.
  - ◆ GDP measures the value of goods and services produced in an economy.
- Why does the US trade most with these European countries and not other European countries?

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## Size Matters: The Gravity Model (cont.)

- In fact, the size of an economy is directly related to the volume of imports and exports.
  - ◆ Larger economies produce more goods and services, so they have more to sell in the export market.
  - ◆ Larger economies generate more income from the goods and services sold, so people are able to buy more imports.

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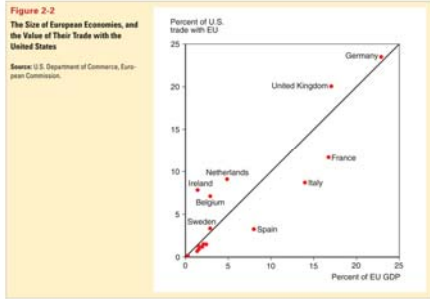
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## Size Matters: The Gravity Model (cont.)



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## The Gravity Model

Other things besides size matter for trade:

1. **Distance** between markets influences transportation costs and therefore the cost of imports and exports.
  - Distance may also influence personal contact and communication, which may influence trade.
2. **Cultural affinity**: if two countries have cultural ties, it is likely that they also have strong economic ties.
3. **Geography**: ocean harbors and a lack of mountain barriers make transportation and trade easier.

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## The Gravity Model (cont.)

4. **Multinational corporations**: corporations spread across different nations import and export many goods between their divisions.
5. **Borders**: crossing borders involves formalities that take time and perhaps monetary costs like tariffs.
  - These implicit and explicit costs reduce trade.
  - The existence of borders may also indicate the existence of different languages (see 2) or different currencies, either of which may impede trade more.

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## The Gravity Model (cont.)

- In its basic form, the gravity model assumes that only size and distance are important for trade in the following way:

$$T_{ij} = A \times Y_i \times Y_j / D_{ij}$$

- where

$T_{ij}$  is the value of trade between country  $i$  and country  $j$

$A$  is a constant

$Y_i$  the GDP of country  $i$

$Y_j$  is the GDP of country  $j$

$D_{ij}$  is the distance between country  $i$  and country  $j$

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## The Gravity Model (cont.)

- In a slightly more general form, the gravity model that is commonly estimated is

$$T_{ij} = A \times Y_i^a \times Y_j^b / D_{ij}^c$$

where  $a$ ,  $b$ , and  $c$  are allowed to differ from 1.

- Perhaps surprisingly, the gravity model works fairly well in predicting actual trade flows, as the figure above representing US–EU trade flows suggested.

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## Distance and Borders

- Estimates of the effect of distance from the gravity model predict that a 1% increase in the distance between countries is associated with a decrease in the volume of trade of 0.7% to 1%.

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## Distance and Borders (cont.)

- Besides distance, borders increase the cost and time needed to trade.
- *Trade agreements* between countries are intended to reduce the formalities and tariffs needed to cross borders, and therefore to increase trade.
- The gravity model can assess the effect of trade agreements on trade: does a trade agreement lead to significantly more trade among its partners than one would otherwise predict given their GDPs and distances from one another?

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## Distance and Borders (cont.)

- The US has signed a free trade agreement with Mexico and Canada in 1994, the North American Free Trade Agreement (NAFTA).
- Because of NAFTA and because Mexico and Canada are close to the US, the amount of trade between the US and its northern and southern neighbors as a fraction of GDP is larger than between the US and European countries.

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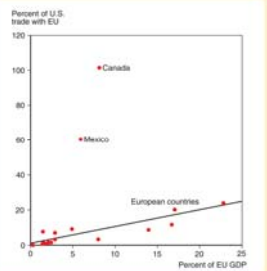
## Distance and Borders (cont.)

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.



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## Distance and Borders (cont.)

- Yet even with a free trade agreement between the US and Canada, which use a common language, the border between these countries still seems to be associated with a reduction in trade.

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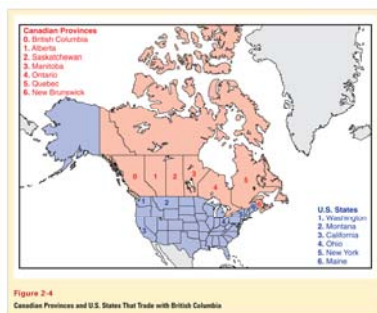
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## Distance and Borders (cont.)



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## Distance and Borders (cont.)

**TABLE 2-3 Trade with British Columbia, as Percent of GDP, 1996**

Canadian Province	Trade as Percent of GDP	Trade as Percent of GDP	U.S. State at Similar Distance from British Columbia
Alberta	6.9	2.6	Washington
Saskatchewan	2.4	1.0	Montana
Manitoba	2.0	0.3	California
Ontario	1.9	0.2	Ohio
Quebec	1.4	0.1	New York
New Brunswick	2.3	0.2	Maine

**Source:** Howard J. Wall, "Gravity Model Specification and the Effects of the U.S.-Canadian Border," Federal Reserve Bank of St. Louis Working Paper 2000-024A, 2000.

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## Has the World Become “Smaller”?

- The negative effect of distance on trade according to the gravity models is significant, but it has grown smaller over time due to modern transportation and communication.
  - ◆ Wheels, sails, compasses, railroads, telegraph, steam power, automobiles, telephones, airplanes, computers, fax machines, internet, fiber optics,... are technologies that have increased trade.
- But history has shown that political factors, such as wars, can change trade patterns much more than innovations in transportation and communication.

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## Has the World Become “Smaller”? (cont.)

- There were two waves of globalization.
  - ◆ 1840–1914: economies relied on steam power, railroads, telegraph, telephones. Globalization was interrupted and reversed by wars and depression.
  - ◆ 1945–present: economies rely on telephones, airplanes, computers, internet, fiber optics,...

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## Has the World Become “Smaller”? (cont.)

- Only in the last few decades has international trade become more important to the British economy than it was in 1910.
- Even today, international trade is less important for the US than it was to the UK before 1910.

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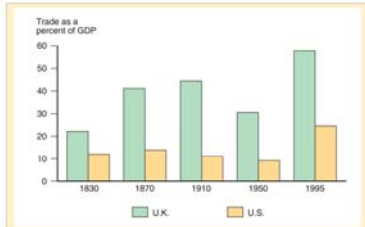
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## Has the World Become “Smaller”? (cont.)



**Figure 2-5**  
The Rise, Fall, and Rise of International Trade Since 1830

Source: Richard E. Baldwin and Philippe Martin, "Two Waves of Globalization: Superficial Similarities, Fundamental Differences," in *Harvest Sectors, etc., Globalization and Labor* (Tübingen: Mohr, 1998).

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## Changing Composition of Trade

- What kinds of products do nations currently trade, and how does this composition compare to trade in the past?
- Today, most of the volume of trade is in *manufactured products* such as automobiles, computers, clothing and machinery.
  - ◆ *Services* such as shipping, insurance, legal fees and spending by tourists account for 20% of the volume of trade.
  - ◆ *Mineral products* (e.g., petroleum, coal, copper) and *agricultural products* are a relatively small part of trade.

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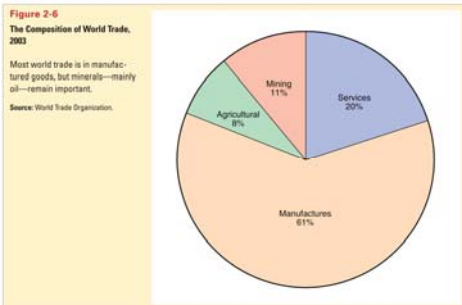
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## Changing Composition of Trade (cont.)



**Figure 2-6**  
The Composition of World Trade, 2003

Most world trade is in manufactured goods, but minerals—mainly oil—remain important.

Source: World Trade Organization.

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### Changing Composition of Trade (cont.)

- In the past, a large fraction of the volume of trade came from agricultural and mineral products.
  - ◆ In 1910, Britain mainly imported agricultural and mineral products, although manufactured products still represented most of the volume of exports.
  - ◆ In 1910, the US mainly imported and exported agricultural products and mineral products.
  - ◆ In 2002, manufactured products made up most of the volume of imports and exports for both countries.

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### Changing Composition of Trade (cont.)

**TABLE 2-4** Manufactured Goods as Percent of Merchandise Trade

	United Kingdom		United States	
	Exports	Imports	Exports	Imports
1910	75.4	24.5	47.5	40.7
2002	82.6	80.4	82.1	77.8

Source: 1910 data from Simon Kuznets, *Modern Economic Growth: Rate, Structure, and Speed*. New Haven: Yale Univ. Press, 1966. 2002 data from World Trade Organization.

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### Changing Composition of Trade (cont.)

- Developing countries, or low and middle-income countries, have also changed the composition of their trade.
  - ◆ In 2001, about 65% of exports from developing countries were manufactured products, and only 10% of exports were agricultural products.
  - ◆ In 1960, about 58% of exports from developing countries were agricultural products and only 12% of exports were manufactured products.

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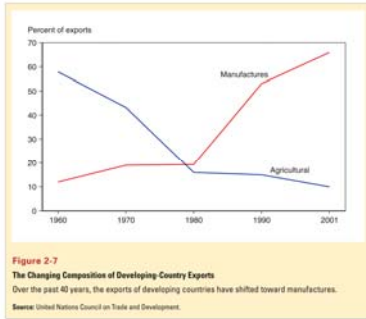
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## Changing Composition of Trade (cont.)



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## Multinational Corporations and Outsourcing

- Before 1945, multinational corporations played a small role world trade.
- But today about one third of all US exports and 42% of all US imports are sales from one division of a multinational corporation to another.

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## Multinational Corporations and Outsourcing (cont.)

- **Outsourcing** occurs when a firm moves business operations out of the domestic country.
  - ◆ The operations could be run by a subsidiary of a multinational corporation.
  - ◆ Or they could be subcontracted to a foreign firm.
- Outsourcing of either type increases the amount of trade.

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## Summary

1. The 5 largest trading partners with the US are Canada, Mexico, China, Japan and Germany.
2. The largest economies in the EU undertake the largest fraction of the total trade between the EU and the US.
3. The gravity model predicts that the volume of trade is directly related to the GDP of each trading partner and is inversely related to the distance between them.

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## Summary (cont.)

4. Besides size and distance; culture, geography, multinational corporations and the existence of borders influence trade.
5. Modern transportation and communication have increased trade, but political factors have influenced trade more in history.
6. Today, most trade is in manufactured goods, while historically agricultural and mineral products made up most of trade.

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**TABLE 2-1** Hypothetical World Spending Shares and GDP

Country	Percentage Share of World Spending	GDP (\$ trillion)
A	40	4
B	40	4
C	10	1
D	10	1

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**TABLE 2-2 Values of Exports (\$ trillion)**

To:	A	B	C	D
A	—	1.6	0.4	0.4
B	1.6	—	0.4	0.4
C	0.4	0.4	—	0.1
D	0.4	0.4	0.1	—

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