Preview

• World trade patterns

• US trade patterns
  – Largest trading partners of the United States

• Gravity model:
  – Influence of an economy’s size on trade
  – Distance, barriers, borders and other trade impediments

• Globalization: then and now
  – Changing composition of trade

• Service outsourcing
World Trade Patterns

- Prior to the Great Recession of 2008-9, world GDP growth tended around 3-4% and growth in world merchandise trade tended around 6-8%.
- Both world GDP and trade contracted sharply in 2009, then rebounded in 2010.
- 2012-2016, growth in world GDP and growth in trade have been slow relative to historical averages.
World Trade Patterns

Chart 3.1:
Growth in volume of world merchandise trade and real GDP, 2005-2015
(percentage change)

Source: WTO Secretariat for trade figures, International Monetary Fund and Secretariat calculations for GDP.
Who Trades with Whom?

• More than 30% of world output is sold across national borders.

• The 5 largest trading partners with the U.S. in 2012 were Canada, China, Mexico, Japan, and Germany. China edged out Canada in 2015.

• The largest 15 trading partners with the U.S. accounted for 69% of the value of U.S. trade in 2012.
Fig. 2-1: Total U.S. Trade with Major Partners, 2012

Source: U.S. Department of Commerce.
Total U.S. Trade with Major Partners, 2012-2015
### Who Trades with Whom? US 2008

<table>
<thead>
<tr>
<th>Partner Country</th>
<th>Imports</th>
<th>Exports</th>
<th>Trade Balance</th>
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### Who Trades with Whom? US 2009

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<td>Trade Volume</td>
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## Who Trades with Whom? US 2012

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<td>Germany</td>
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### Who Trades with Whom? US 2015

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<tbody>
<tr>
<td>China</td>
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<td>296</td>
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<tr>
<td>Germany</td>
<td>125</td>
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<td>175B</td>
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</table>
US Trade Patterns

US Trade Balance in Goods and Services

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US Trade Patterns

- US trade was essentially balanced up until 1976, ran moderate deficits 1977-1997, then large deficits 1998-2008.

- Great Recession shrunk US imports by more than US exports.
  - Trade deficit shrunk in 2009.
  - Has worsened a bit since then but not nearly as large now as in 2006-2008.

- YTD 2016 (to November), US exports down 4%, US imports down 3%. Both fell in 2015.
US Trade Patterns

US Imports and Exports of Goods and Services
## US Trade by Industry 2011

<table>
<thead>
<tr>
<th>Industry</th>
<th>Imports</th>
<th>Exports</th>
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<th>Trade Volume</th>
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<tbody>
<tr>
<td>Electronic products</td>
<td>401</td>
<td>165</td>
<td>-236</td>
<td>566B</td>
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<tr>
<td>Transportation equipment</td>
<td>307</td>
<td>258</td>
<td>-49</td>
<td>565B</td>
</tr>
<tr>
<td>Energy-related products</td>
<td>431</td>
<td>134</td>
<td>-297</td>
<td>565B</td>
</tr>
<tr>
<td>Chemicals and related products</td>
<td>254</td>
<td>214</td>
<td>-40</td>
<td>468B</td>
</tr>
<tr>
<td>Minerals and metals</td>
<td>193</td>
<td>141</td>
<td>-52</td>
<td>334B</td>
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</table>
US Exports by State 1997-2010
Who Trades with Whom? TX Exports

- Total Texas exports $248B (16.5% of all US exports), highest of all states (California 165B, New York 83B) in 2015 (has been the biggest exporter ever since 2002).
- Texas exports fell at a slower rate than the US as a whole in 2009 and recovered faster in 2010.
- If Texas were a nation, would rank among top 20 exporting countries (FRBD 2007).
- Top destinations for Texas exports: Mexico (93B), Canada (26B) and China (12B).
Who Trades with Whom? TX
Exports

- Compared to US, Texas exports a larger share of its output, depends on exports for more of its jobs, sends more sophisticated products overseas and employs higher-skilled workers in export-related jobs (FRBD 2007).

- Texas lags California and US in diversification across countries (FRBD 2007).
Size Matters: The Gravity Model

• 3 of the top 10 trading partners with the U.S. in 2012 were also the 3 largest European economies: Germany, the United Kingdom, and France.

• Why does the United States trade more with these European countries than with others?
  – These countries have the largest gross domestic product (GDP), the value of goods and services produced in an economy, in Europe.
  – Each European country’s share of U.S. trade with Europe is roughly equal to its share of European GDP.
Fig. 2-2: The Size of European Economies, and the Value of Their Trade with the United States

Size Matters: The Gravity Model (cont.)

• 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 they are able to buy more imports.

• Trade between any two countries is larger, the larger is either country.
Size Matters: The Gravity Model (cont.)

• The gravity model assumes that 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 \( j \)

• Or more generally

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

where \( a, b, \) and \( c \) are allowed to differ from 1.
Using the Gravity Model: Looking for Anomalies

• A gravity model fits the data on U.S. trade with European countries well but not perfectly.

• The Netherlands, Belgium and Ireland trade much more with the United States than predicted by a gravity model.
  – Ireland has strong cultural affinity due to common language and history of migration.
  – The Netherlands and Belgium have transport cost advantages due to their location.
Impediments to Trade: Distance, Barriers, and Borders

Other things besides size matter for trade:

1. *Distance* between markets influences transportation costs and therefore the cost of imports and exports.

2. *Cultural affinity*: close cultural ties, such as a common language, usually lead to strong economic ties.

3. *Geography*: ocean harbors and a lack of mountain barriers make transportation and trade easier.

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, often different currencies need to be exchanged, and perhaps monetary costs like tariffs reduce trade.
Impediments to Trade: Distance, Barriers, and Borders (cont.)

• 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%.

• 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 U.S. 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 U.S., the amount of trade between the U.S. and its northern and southern neighbors as a fraction of GDP is larger than between the U.S. and European countries.
  – Canada’s economy is roughly the same size as Spain’s (around 10% of EU GDP) but Canada trades as much with the United States as does all of Europe.
Fig. 2-3: Economic Size and Trade with the United States

Impediments to Trade: Distance, Barriers, and Borders (cont.)

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

• Data shows that there is much more trade between pairs of Canadian provinces than between Canadian provinces and U.S. states, even when holding distance constant.

• Estimates indicate that the U.S.-Canadian border deters trade as much as if the countries were 1,500-2,500 miles apart.
Fig. 2-4: Canadian Provinces and U.S. States that Trade with British Columbia

**Canadian Provinces**
0. British Columbia
1. Alberta
2. Saskatchewan
3. Manitoba
4. Ontario
5. Quebec
6. New Brunswick

**U.S. States**
1. Washington
2. Montana
3. California
4. Ohio
5. New York
6. Maine

*Source: Statistics Canada, U.S. Department of Commerce.*
Table 2-1: Trade with British Columbia, as Percent of GDP, 2009

<table>
<thead>
<tr>
<th>Canadian Province</th>
<th>Trade as Percent of GDP</th>
<th>Trade as Percent of GDP</th>
<th>U.S. State at Similar Distance from British Columbia</th>
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<tbody>
<tr>
<td>Alberta</td>
<td>6.9</td>
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<td>Washington</td>
</tr>
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<td>Saskatchewan</td>
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<td>1.0</td>
<td>Montana</td>
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<td>Manitoba</td>
<td>2.0</td>
<td>0.3</td>
<td>California</td>
</tr>
<tr>
<td>Ontario</td>
<td>1.9</td>
<td>0.2</td>
<td>Ohio</td>
</tr>
<tr>
<td>Quebec</td>
<td>1.4</td>
<td>0.1</td>
<td>New York</td>
</tr>
<tr>
<td>New Brunswick</td>
<td>2.3</td>
<td>0.2</td>
<td>Maine</td>
</tr>
</tbody>
</table>

Source: Statistics Canada, US Department of Commerce
The Changing Pattern of World Trade: Has the World Gotten Smaller?

• The negative effect of distance on trade according to the gravity models is significant, but has grown smaller over time due to modern transportation and communication.

• Technologies that have increased trade:
  - Wheels, sails, compasses, railroads, telegraph, steam power, automobiles, telephones, airplanes, computers, fax machines, Internet, fiber optics, personal digital assistants, GPS satellites...
• Political factors, such as wars, can change trade patterns much more than innovations in transportation and communication.

• World trade grew rapidly from 1870 to 1913.
  - Then it suffered a sharp decline due to the two world wars and the Great Depression.
  - It started to recover around 1945 but did not recover fully until around 1970.

• Since 1970, world trade as a fraction of world GDP has achieved unprecedented heights.
  - Vertical disintegration of production has contributed to the rise in the value of world trade through extensive cross-shipping of components.
Fig. 2-5: The Fall and Rise of World Trade

Source: UN Monthly Bulletin of Statistics, World Trade Organization
What Do We Trade?

• What kinds of products do nations trade now, and how does this composition compare to trade in the past?

• Today, most (about 53%) of the volume of trade is in *manufactured products* such as automobiles, computers, and clothing.
  
  – *Services* such as shipping, insurance, legal fees, and spending by tourists account for about 20% of the volume of trade.
  
  – *Mineral products* (ex., petroleum, coal, copper) remain an important part of world trade at 19%
  
  – *Agricultural products* are a relatively small (8%) part of trade.
Fig. 2-6: The Composition of World Trade, 2011

Manufactures 53%  
Fuels and mining products 19%  
Services 20%  
Agricultural products 8%

Source: World Trade Organization.
What Do We 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 U.S. 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.
Table 2-2: Manufactured Goods as a Percent of Merchandise Trade

<table>
<thead>
<tr>
<th></th>
<th>United Kingdom</th>
<th>United States</th>
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<tr>
<td></td>
<td>Exports</td>
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<td>1910</td>
<td>75.4</td>
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<td>2011</td>
<td>72.1</td>
<td>69.1</td>
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</table>

What Do We Trade? (cont.)

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

• More than 90 percent of the exports of China, the largest developing country and a rapidly growing force in world trade, consist of manufactured goods.
Fig. 2-7: The Changing Composition of Developing-Country Exports

Service Outsourcing

- **Service outsourcing (or offshoring)** occurs when a firm that provides services moves its operations to a foreign location.
  - Service outsourcing can occur for services that can be transmitted electronically.
    - A firm may move its customer service centers whose telephone calls can be transmitted electronically to a foreign location.
  - Other services may not lend themselves to being performed remotely.
Service Outsourcing (cont.)

- Service outsourcing is currently not a significant part of trade.
  - Some jobs are “tradable” and thus have the potential to be outsourced.
  - Most jobs (about 60%) need to be done close to the customer, making them nontradable.
Fig. 2-8: Tradable Industries’ Share of Employment

Summary

1. The 5 largest trading partners with the U.S. are Canada, China, Mexico, Japan, and Germany.

2. The largest economies in the EU undertake the largest fraction of the total trade between the EU and the U.S.

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.
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.