International Trade Theory and Policy

DISCUSSIONS, FALL SEMESTER 2018/19
Contact information

- Leszek Wincenciak, Ph. D.  
  Macroeconomics and Trade Theory Division
- E-mail: lwincenciak@wne.uw.edu.pl
- Office hours: Monday, 10.00 – 11.30, room B306
Assessment criteria

- Obligatory attendance (2 absences allowed)
- Empirical analysis using real world data on trade and theoretical framework learned during the course (writing, 8-10 pages max) – 20%
  - Groups of 2
  - List of topics and requirements will be posted until the end of month on my website
  - Presentations in class (10 minutes) – 20%
- Final test (open questions) – 60%
- Re-take after the first exam
Outline of topics

1. Introduction, gravity model of international trade
2. Ricardian model of international trade
3. Factor specific model of international trade
4. Heckscher-Ohlin model of international trade
5. New Trade Theory
6. Empirical analysis of trade
7. Trade policy
8. Students’ presentations
9. Final test
Textbooks

- [CFJ] Caves R., J. Frankel, R. Jones, World Trade and Payments, Addison-Wesley, various editions
What is it all about?
Questions we are trying to answer

- Why countries trade?
- What do they trade?
  - Goods (what kinds of)?
  - Services?
  - Tasks \((\text{trade in tasks})\)?
  - Factors of production?
- Is trade beneficial for societies?
- Who gains, who loses? \(\rightarrow\) Income redistribution?
- Government intervention and trade policy – causes and consequences?
Why do countries trade?

The countries differ in...

- technology
- factor endowments

Prices of final goods are therefore different (comparative advantage) → reason for trade

Other reasons for trade: increasing returns to scale, product differentiation and love for variety, imperfect competition and strategic interactions

Ricardo
Heckscher-Ohlin
New trade theory

Greater differences result in more trade and greater gains from trade

Greater similarities result in more trade and greater gains from trade
What are the consequences of trade?

- Gains from trade (lower prices, greater diversity)
- Specialization
- Increasing returns to scale
- Technical progress

But also:

- Mutual dependence
- Adjustment costs (labour allocation)
- Income redistribution effects
- Environmental issues
- Labour standards and human rights
Top 10 exporters (2017 billion USD)

- China: 2,263.33 billion USD
- United States: 1,546.72 billion USD
- Germany: 1,448.3 billion USD
- Japan: 698.12 billion USD
- Netherlands: 652 billion USD
- Korea, Republic of: 573.7 billion USD
- Hong Kong, China: 550.27 billion USD
- France: 535.19 billion USD
- Italy: 506.23 billion USD
- United Kingdom: 445 billion USD
Top 10 importers (2017 billion USD)

<table>
<thead>
<tr>
<th>Country</th>
<th>Import Value (billion USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>2,409.5</td>
</tr>
<tr>
<td>China</td>
<td>1,841.89</td>
</tr>
<tr>
<td>Germany</td>
<td>1,167.03</td>
</tr>
<tr>
<td>Japan</td>
<td>671.92</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>644.06</td>
</tr>
<tr>
<td>France</td>
<td>624.72</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>589.91</td>
</tr>
<tr>
<td>Netherlands</td>
<td>574.31</td>
</tr>
<tr>
<td>South Korea</td>
<td>478.48</td>
</tr>
<tr>
<td>Italy</td>
<td>452.62</td>
</tr>
</tbody>
</table>
Some facts

- Basic force which shaped modern global trade system was the dramatic decline in the transportation cost.
- In 2015 total world trade accounted for 58% of world GDP.
- During past 30 years world trade in goods and services grew on average by 7% per annum.
- For many years the growth of world trade was doubling the growth of world GDP.
- Between 1980 and 2011, developing economies increased their share in world exports from 34 percent to 47 percent, while in world imports from 29 percent to 42 percent. Asia is the growing force in international trade.
PRE-INDUSTRIAL REVOLUTION

The village market place (craftmen, peasants and customers in the same area).
INDUSTRIAL REVOLUTION

Same country but industrial production distant from consumers.
POST-INDUSTRIAL REVOLUTION
Trade in Tasks

Various countries with fragmented production chain.
Change in geographical structure of trade

Note: North in 1980 refers to Australia, Canada, Japan, New Zealand, the United States and Western Europe. Source: HDRO calculations based on UNSD (2012).
Services become more and more important

World export volumes: Goods vs Services

Growth in volume of world exports of goods and services

Per cent change over previous year

Source: Data provided by Oxford Economics
How is Boeing produced and is this the exports of USA in 100%?

How to measure it?
How to measure trade flows?
What’s inside an iPhone?

The iPhone example (Xing and Detert, 2010)

Components: $10.75
Retail price: $500.00 (Profit margin: 64%)
Assembly: $6.50
iPhone: $179.00

JPN: $60.6
KOR: $22.96
GER: $30.15
ROW: $48.04

Apple sold 11.3 million iPhones in the US in 2009

<table>
<thead>
<tr>
<th>2009 US trade balance in iPhones (mio USD)</th>
<th>CHN</th>
<th>JPN</th>
<th>KOR</th>
<th>GER</th>
<th>ROW</th>
<th>World</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross</td>
<td>-1,901.2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>-1,901.2</td>
</tr>
<tr>
<td>Value added</td>
<td>48.1</td>
<td>-684.8</td>
<td>-259.4</td>
<td>-340.7</td>
<td>-542.9</td>
<td>-1,901.2</td>
</tr>
</tbody>
</table>
The gravity model of international trade

SIZE MATTERS!
Size matters: the gravity model

Figure 2-1
Total U.S. Trade with Major Partners, 2003
U.S. trade—measured as the sum of imports and exports—is mostly with 10 major partners.

Source: U.S. Department of Commerce.
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.
- Why does the US trade most with these European countries and not other European countries?
Size matters: the gravity model

Figure 2-2
The Size of European Economies, and the Value of Their Trade with the United States

The Gravity Model

Other things besides size that 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.
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.
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:

\[ T_{ij} = A \cdot \frac{Y_i \cdot Y_j}{D_{ij}} \]

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 \( j \)
The Gravity Model (cont.)

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

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

where \( a, b, \) and \( c \) are allowed to differ from 1.

Perhaps surprisingly, the gravity model works fairly well in predicting actual trade flows. It is also quite useful in testing other hypotheses like monetary unions, RTAs and so on…
Distance and Borders

It is much more convenient to write the relationship in log terms:

$$\log T_{ij} = \log A + a \log Y_i + b \log Y_j + c \log D_{ij}$$

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%. 
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?
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.
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.

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.
- The effect of a border is estimated at 2500 – 4000 km in distance
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.
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,…

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

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

### Table 6

**Globalization Ratio: Comparative Growth in the Volume of World Trade and GDP, 1500–2001**

(annual average compound growth rates)

<table>
<thead>
<tr>
<th></th>
<th>World Trade</th>
<th>World GDP</th>
<th>Col. 1/Col. 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1500–1820</td>
<td>0.96</td>
<td>0.32</td>
<td>3.0</td>
</tr>
<tr>
<td>1820–70</td>
<td>4.18</td>
<td>0.93</td>
<td>4.5</td>
</tr>
<tr>
<td>1870–1913</td>
<td>3.40</td>
<td>2.11</td>
<td>1.6</td>
</tr>
<tr>
<td>1913–50</td>
<td>0.90</td>
<td>1.82</td>
<td>0.5</td>
</tr>
<tr>
<td>1950–73</td>
<td>7.88</td>
<td>4.90</td>
<td>1.6</td>
</tr>
<tr>
<td>1973–2001</td>
<td>5.22</td>
<td>3.05</td>
<td>1.7</td>
</tr>
<tr>
<td>1820–2001</td>
<td>3.93</td>
<td>2.22</td>
<td>1.8</td>
</tr>
</tbody>
</table>

Changing structure of power

Share of world GDP (%), US$ 2010, nominal ER

Graph showing the share of world GDP (in %) for various countries from 1970 to 2016.
Balance of Economic Power 1AD — 2009
Great powers GDP percent share of the total GDP volume of all 8 great powers at a given moment in time

Poland’s trading partners

Source: http://ghemawat.com (Provided by Pankaj Ghemawat)