Graduate Trade (II): ECON 8433

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Plan

Week	Topic
Week 1	Introduction to Structural Gravity Equation
Week 2	Calibration and Estimation
Week 3	Mapping Models to the Data
Week 4	Designing Counterfactual Experiments in General Equilibrium
Week 5	Presentations (I) and Catch-up
Week 6	Heterogeneous Firms (I)
Week 7	Heterogeneous Firms (II)
Week 8	Ricardian Models
Week 9	Multi-Sector Models
Week 10	Global Value Chains
Week 11	Presentations (II) and Catch-up
Week 12	Extensions: Demand Side
Week 13	Extensions: Supply Side
Week 14	Extensions: Migration and Geography
Week 15	Presentations (III) and Catch-up

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Tetrad Method

You had to estimate the following equation:

$$\frac{\pi_{ij}}{\pi_{jj}} = e^{exp_i + \ln sc_{ij} + ac_i - imp_j} + \epsilon_{ij}$$

Theoretically you know that there are $S \times 1$ constraints:

$$exp_i = imp_j \quad \text{for} \quad \{i, j\},$$

which should potentially allow us to estimate ac_i and exp_i!

Tetrad Method

There are two possible strategies:

1. Impose the constraint directly into estimation
2. Make sure that the constraint holds ex post

Tetrad Method

To impose the constraint directly into estimation, note that:

$$exp_i = imp_j \quad \text{for} \quad \{i, j\},$$

and that in the gravity equation:

$$exp_i - imp_j$$

To make sure that the constraint holds, we simply create a new variable:

$$\xi_{ij} = exp_i - imp_j,$$

where exp_i and imp_j are the usual exporter- and importer-fixed effects. Then estimate:

$$\frac{\pi_{ij}}{\pi_{jj}} = e^{\xi_{ij} + \ln sc_{ij} + ac_i - imp_j} + \epsilon_{ij}$$

Tetrad Method

We can also incorporate the constraint ex post. For that, we can run:

$$\frac{\pi_{ij}}{\pi_{jj}} = e^{exp_i + \ln sc_{ij} - imp_j} + \epsilon_{ij}$$

It is important to realize that now:

$$exp_i = ac_i + imp_i$$

Tetrad Method

When you use tetrads, exclude intra-trade flows due to the following:

- Dependent variable: $\frac{\pi_{ij}}{\pi_{ii}} = 1$
- Independent variable: $e^{exp_i + 0 - imp_i} = 1$

Hence, observations on intra-trade do not provide any information for estimation by construction! You can also think about it as the immediate result of the Walras Law.

How to come up with a good research question?

Question

Your question must be interesting to:

1. You
2. Non economists
3. Non-trade economists
4. Trade economists

Question

You should also make sure that your question is feasible:

1. Data is (potentially) available
2. Possible to get results before the end of the semester
3. You think you'll be able to come up with (use) a suitable model

It is a good idea to come to my office hours and discuss (1), (2), and (3).
Sign-up sheet for Sept. 21-23 is up.
https://docs.google.com/spreadsheets/d/1bO8pBjVWRYPNJBk9LAho_HOKO8JZKdZZSyRQV9bagAA/edit?usp=sharing

Data

- I will introduce you to several important data sources
- You need to realize that the list is far from complete
- Explore new data sets for your research ideas

International Trade Data

In this class, our main source for the data on international is:

- World Input-Output Database (WIOD)

There are clear advantages:

- Final and intermediate trade
- You observe international (and domestic) trade flows across different industries
- Can easily be merged with other datasets

There are also disadvantages:

- Limited sample of countries
- Some data are imputed

Data on country-specific variables

WIOD also has a separate data set that covers country-industry-specific variables (Socio Economic Accounts):

- Employment
  - High-skilled
  - Medium-skilled
  - Low-skilled
- Capital stocks
- Gross output
- Value added
- Compensation
- Price indices

Data on country-specific variables

We may also use GGDC Productivity Level Database:

- Productivity level
- Relative prices

OECD Structural Analysis Database:

- Innovation
- Technology
- Consumer policy
- National Accounting

Bilateral Frictions

CEPII database provides measures of many geographical/historical/institutional frictions:

- Bilateral distance between countries
- Time difference between origin and destination
- Dummy for origin and destination ever in colonial relationship
- Dummy for common official or primary language
- Dummy if origin and destination share common legal origins
- Religious proximity
- Dummy for common currency
- Etc...

Example

- I will show you an example of a very simple research question
- This is slightly below the lowest bound of what is acceptable for a project in this class
- I will spend 30 minutes to answer this question
- You have 3 months

Research Question

What is the role of NAFTA for trade and welfare in the US, Canada and Mexico?

- Estimate the effect of NAFTA on trade costs
- Fully calibrate the underlying model
- Calculate what would happen to trade flows and welfare in the US, Canada and Mexico if NAFTA did not exist
- Present the results using graphs and tables

You can download the data (CANVAS *NAFTA_data.7z*).

Assignment

What you should have

You should have the following data ready (CANVAS *stata_full_data.7z*):

- 40 exporters, 40 importers
- At least 1995-2009
- 35 sectors classified as in WIOD
- Bilateral data from CEPII
- Country-specific data from WIOD SOC (at least employment)

Pick your question

1. Is the world becoming flatter?

   Many believe that the effect of distance on trade fades overtime. Can you check and quantitatively assess this claim?

2. Brexit

   Quantitatively assess the implications of BREXIT for the UK and the EU.

3. Free Trade Agreements

   How do FTA affect trade and welfare?

4. Investing in Language

   Many developing countries invest in educational language programs. When is such an investment justified?

5. Your own question

Assignment

- Each group should prepare a 5-10 min. presentation to present on Monday
- Don't be afraid to be wrong. This is the place to practice.