

International Trade

Exercise #1: Distances and Borders matter

UNIL - HEC MScE
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Goal

- Investigate how physical distance and political/administrative fragmentations impact trade
 - Estimate the impact of distance on trade
 - Estimate “border effects”
 - First approach to gravity equations

Empirical strategy

- Identification bases on trade flow between North American regions:
 - Canadian provinces
 - US states
- Estimation of the marginal effect of physical distance on trade
- Estimation of Border effects:
 - Comparing trade flows that occur within countries to flows crossing the US-Canada border
 - Comparing intra-regional flows with inter-regional flows

Material

- Trade flows between 40 regions (including intra-flows)

Table 1: US-Canada regions

1. Alabama *	17. Kentucky *	33. North Carolina *	49. Wisconsin *
2. Alaska	18. Louisiana *	34. North Dakota *	50. Wyoming
3. Arizona *	19. Maine *	35. Ohio *	51. Dist. of Col.
4. Arkansas	20. Maryland *	36. Oklahoma	52. Alberta *
5. California	21. Massachusetts*	37. Oregon	53. British Columbia *
6. Colorado	22. Michigan *	38. Pennsylvania *	54. Manitoba *
7. Connecticut	23. Minnesota *	39. Rhode Island	55. New Brunswick *
8. Delaware	24. Mississippi	40. South Carolina	56. Newfoundland *
9. Florida *	25. Missouri *	41. South Dakota	57. NW Territories
10. Georgia *	26. Montana *	42. Tennessee *	58. Nova Scotia *
11. Hawaii	27. Nebraska	43. Texas *	59. Ontario *
12. Idaho *	28. Nevada	44. Utah	60. Prince Edward Island*
13. Illinois*	29. New Hampshire *	45. Vermont *	61. Quebec *
14. Indiana *	30. New Jersey *	46. Virginia *	62. Saskatchewan *
15. Iowa	31. New Mexico	47. Washington *	63. Yukon Territory
16. Kansas	32. New York *	48. West Virginia	

Note: The star indicates the 40 states and provinces in the sample.

Material

- Trade flows between 40 regions (including intra-flows)
- Geographic info:
 - “Great circle” distances between capital cities
 - Surface of each region to compute intra-regional distances
- GDP

Material

- Trade flows between 40 regions (including intra-flows) for 1993
 - Less than 1600 (=40 X 40) observations because some couples of regions do not trade at all
- Geographic info:
 - “Great circle” distances between capital cities
 - Surface of each region to compute intra-regional distances
- GDP (for 1993)

Data - Details

- Trade:
 - File: *trade-uscan93.txt*
 - Variables:
 - trade "Trade value (millions Canadian \$)"
 - exp "Exporting region"
 - imp "Importing region"
 - can_im "Dummy = 1 if imp is canadian"
 - can_ex "Dummy = 1 if exp is canadian"
- Geographic info:
 - Files: *dist-uscan.txt* and *Surfaces.txt*
 - Distances in km and surfaces in km²
- GDP:
 - Files: *gdp-uscan93.txt*
 - gdp "GDP in millions of Canadian dollars in 1993"

Data building

1. Merge all data to obtain a squared matrix of trade flows
 - a. Dimension: 40 exporters X 40 importers
 - b. Variables:
 - Exporter
 - Importer
 - Dummy for intra-national flow
 - Dummy for intra-regional flow
 - Distance
 - GDP exporter
 - GDP importer
 - Trade
 - Global GDP = Sum of GDP of the 40 regions

Data building

1. Merge all data to obtain a squared matrix of trade flows
 - This step requires to generate observation for all trade flows that are equal to zero
 - “Internal distance” is proxied by

$$InternalDist_i = \frac{2}{3} \sqrt{\frac{Surface_i}{\pi}}$$

Method

1. Produce one or several graphs to show
 - The impact of distance on trade
 - The impact of national and regional borders
 - A difficulty is to neutralize the size effect (bigger regions should import and export more, *ceteris paribus*)
 - Trick: Compute simple benchmark = “Frictionless trade”:
 - In absence of trade friction, if a country c makes $x\%$ of world GDP, any country c' in the world should spend $x\%$ of its own GDP to goods produced in country c

Method

2. Estimate econometrically the marginal impact of distance and national and regional borders

- Control for GDP
- Try to control for the presence of zero trade flows
- Discuss the results

Output

- Work by groups of 1 or 2 students (the same for all the semester)
- Find a name for your group
- Use your favorite econometric software (but Stata is preferred)
- Send me:
 - Your program files (with comments of all steps)
 - A short notice presenting the results and corresponding comments
- Name your files as follows:
 - “Session1Prog-groupname”
 - “Session1Doc-groupname”
- Prepare yourself to present your results in class

Deadline

October 6th