International Trade II

Problem Set

Gravity Equation: Empirics

The effect of currency unions on trade

The objective of this problem set is to study the effects of currency unions on trade. The data folder contains five files: DOTS1960_2005.dta, pwt.dta, RTA.dta, CU.dta, and dist_cepii.dta. The first contains bilateral trade values by origin and destination countries, every 5 years over the period 1960-2005. The second contains country level data such as population and GDP. The third and fourth files contain information on regional trade agreements and currency unions, i.e. whether the two countries are engaged in a trade agreement and in a currency union in year t. The last file contains information on time-invariant variables which might affect trade costs between countries. More information on data sources, as well as two papers related to the effect of currency unions on trade and to gravity equations, can be found in the documentation folder.

Rose summarizes the findings of his 2000 paper (attached) as: "the surprising and interesting finding was that currency union seemed to have a strong and robust effect on trade. Even using the standard linear gravity model that accounts for most variation in trade patterns, my point estimate was that the coefficient for a currency union dummy variable (which is unity when a pair of countries share a common currency and zero otherwise) has a point estimate of around 1.21. This implies that members of currency unions traded over three times as much as otherwise similar pairs of countries ceteris paribus, since $\exp(1.21)>3$." Rose (2004).

a. Comment on the above Rose's (2004) quotation. (0.25 point)

b. What are the mechanisms through which a currency union may affect trade? What are the reasons to expect a large / small effect? (0.5 point)

c. Using the data provided, construct the gravity dataset. It should include: the exporter and importer countries identifiers, the year, the value of bilateral trade, exporters' and importers' size, time-invariant trade costs proxies (such as distance, common language, etc.), RTA and CU dummies. Summarize the data. Count the number of countries and the number of years. (0.25 point)

d. How has the share of countries and trade belonging to RTAs and CUs evolved over the period? (0.5 point)

e. Estimate the currency union effect: (in all estimations, include year dummies and cluster the standard errors by country-pair) (0.5 points)

(a) Using a traditional gravity equation with only GDPs and distance. If the gravity equation is derived from a Krugman (1980) model, what coefficient do we expect on GDPs?

(b) Adding the CU and RTA variables.

(c) Adding the other proxies for trade costs

(e) Using importer and exporter fixed effects.

f. Comment the different results obtained in question 5 and and compare them with the effect found by Rose. What is the "gold medal mistake"? (explain carefully) Are country fixed effects a good remedy? What are the main advantages and drawbacks of country fixed effects? (0.5 point)

g. Read Baldwin and Taglioni's paper. Identify and explain the silver and bronze medal mistakes of Rose's estimation strategy. (0.5 point)

h. Run different regressions for each years of the sample using country fixed effects. Is the use of country fixed effects more appropriate in this context? Compare your results with the previous question and comment briefly. (0.5 point)

i. Baldwin (2006): "The size of this common-currency effect was just far too large to be believed and the profession's assault on this claim began even before he

presented it at the October 1999 Economic Policy Panel (...)." There were three main themes in these critiques: (0.5 point)

- Reverse causality (countries naturally trading a lot with each other enter currency unions)

- Omitted variables (omitting variables that are pro-trade and correlated with the CU dummy biases the estimate upwards)

- Model misspecification.

(1) Which of these problems can be (at least partly) solved through the use of country-pair fixed effects? Try with this database, and comment on the strengths / weaknesses of this strategy in this particular case.

(2) Which potential omitted variables can bias the results? Do you think that endogenous sample selection can bias the coefficient on currency unions?

j. Use the commands reg2hdfe and reg3hdfe to run regressions controlling for (estimations might take some time to run): (0.5 point)

(1) Importer $\times$ year and exporter $\times$ year fixed effects.

(2) Importer $\times$ year, exporter $\times$ year fixed effects and dyadic (country-pair) fixed effects.

Don't forget to include only the variables for which we can actually identify the coefficients (the one which are not perfectly collinear with the fixed effects). Comment on the rationale for using these specifications and on the results.

k. Do small countries' trade benefit more or less from being part of a currency unions? (0.25 points)

l. List and explain two problems associated with the use of a log-linearized gravity equation. Use a Poisson estimator to estimate the gravity equation (focus on the version with country-pair fixed effects and year dummies). (0.5 point)

m. Quantifying the effect of currency unions on trade was considered important in late 90s / early 2000s because it was informative of the potential effects of the Euro on trade. Investigate the effect of the Euro on trade using this dataset. Use the econometric specification(s) that you find the most convincing. (0.75 point)