

Extensive and Intensive Trade: What Role does Currency Invoicing Play?

Sabbatical Project

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Background Information

- Exporting firms must choose a currency in which to denominate their price.
 - Importing country's currency = Local Currency Pricing (LCP) or Pricing-to-Market
 - Exporting country's currency = Producer Currency Pricing (PCP)
 - A third country's currency = Vehicle Currency Pricing (VCP)
- Margin of Trade
 - Extensive: Does you export product k to country y ?
 - Intensive: How many exports of product k to country y ?

Data Description

- Universe of Italian imports and exports external to the European Union in 2003-2013 disaggregated at the 10-digit Harmonized Service level
- Country of origin or destination, respectively for imports and exports, value, weight, invoicing currency and reference exchange rate
- Aggregated if occurring within same bi-monthly period, same 10 digit HS code, same reference exchange rate, same trading partner, same invoicing currency
- 14+ million observations

Two Stages

- Stage 1
 - Estimating the currency denomination of trade by Country/Good/Year Pairs
 - Using actual observations of trade to predict possible trade currency invoicing
 - If there's no extensive trade, we need to predict currency invoicing
- Stage 2 (**been done, newish to literature**)
 - Estimating Intensive with **Total Value** (if trade actually occurs)
 - Estimating Extensive as Dichotomous variable
 - Estimating Extensive and Intensive? with **Transactions** (regardless if trade occurs)
- Focus on PCP (Euro-denominated Exports)
 - Italian exports are usually either PCP (Euro) or VCP (USD)
 - Correlation coefficient between PCP% and VCP% = $-.9635$

Stage 1

- More than 90% of trade in a single invoicing currency?
 - 71.7% are more than 90% PCP
 - 85% are majority PCP
 - 6.6% are more than 90% VCP
 - 0.2% are more than 90% LCP
- Is the invoicing currency a dichotomous or continuous decision?
 - Individual transactions are dichotomous
 - Trade flows could be continuous
 - Data suggests a binary approach: either Mostly PCP OR other

First Stage:

PCP

OLS v Probit

- XB Correlation with PCP %?
 - .4059 for OLS
 - .4174 for Probit
- XB Correlation with Mostly PCP?
 - .3472 for OLS
 - .3697 for Probit
- Using PCP Probability estimate without Distance and GDP
 - Little loss in R-sq
 - Avoids potential issues with 2nd stage

	OLS PCP %	Probit Mostly PCP	Probit Mostly PCP
Rauch: Reference Price	0.0113*** (0.00220)	0.0349*** (0.0132)	0.0360*** (0.0132)
Rauch: Differentiated Distance	0.0202*** (0.00114) -7.51e-07*** (2.69e-07)	0.129*** (0.00692) -9.45e-06*** (1.67e-06)	0.128*** (0.00692)
GDP	-1.98e-15*** (6.98e-16)	2.55e-14*** (4.08e-15)	
GDP growth	-6.17e-05** (2.44e-05)	-0.000497** (0.000202)	-0.000395** (0.000198)
GDP per capita	-3.23e-07*** (3.15e-08)	-4.26e-07** (2.15e-07)	-7.85e-07*** (2.10e-07)
Herfindhal-Hirschman Index	-0.0696*** (0.00371)	-0.314*** (0.0214)	-0.307*** (0.0214)
Import Market Penetration Index	-0.000697*** (5.54e-05)	-0.00323*** (0.000347)	-0.00156*** (0.000278)
Insurance/Financial Service Imports	-0.000101 (9.93e-05)	-0.00139** (0.000613)	-0.00135** (0.000613)
Constant	0.999*** (0.0125)	2.132*** (0.0717)	2.127*** (0.0717)
Region Dummies	Yes	Yes	Yes
Good Dummies	2-digit	2-digit	2-digit
Year Dummies	Yes	Yes	Yes
Observations	444,496	444,496	444,496
R-squared	0.165	0.1497	0.1495

Second Stage:

Intensive and Extensive

- 10% increase in PCP probability?
- 15% decrease in Total Value
 - 17% decrease in Transactions
 - Decreased likelihood of exporting

	Intensive Log (Total Value)	Intensive & Extensive Log (Transactions)	Extensive OLS Exported Good?	Extensive Logit Exported Good
PCP Probability	-1.498*** (0.116)	-1.765*** (0.0616)	-0.455*** (0.0126)	-0.420*** (0.123)
Distance	-0.00122*** (0.000118)	-0.000334*** (6.12e-05)	-0.000112*** (1.11e-05)	-0.000420*** (8.49e-05)
GDP	1.53e-13*** (1.96e-14)	8.76e-14*** (1.11e-14)	8.08e-15*** (2.49e-15)	9.26e-14*** (3.41e-14)
GDP growth	0.00618*** (0.00141)	0.00214*** (0.000760)	7.26e-05 (0.000150)	0.00153 (0.00131)
GDP per capita	1.45e-05*** (3.03e-06)	5.69e-06*** (1.65e-06)	1.36e-06*** (3.05e-07)	6.01e-06** (2.61e-06)
Herfindahl-Hirschman Index	0.0588 (0.0642)	0.0103 (0.0340)	-0.0392*** (0.00490)	-0.0556 (0.0519)
Import Market Penetration Index	0.00267* (0.00157)	-0.00223*** (0.000843)	-0.000481*** (0.000142)	-0.00458*** (0.00157)
Insurance/Financial Service Imports	0.00211 (0.00141)	0.00213*** (0.000708)	0.000669*** (0.000149)	0.00278* (0.00145)
Lagged Transactions	0.000143*** (7.79e-06)	0.000164*** (8.14e-06)	-1.75e-05*** (7.80e-07)	0.531*** (0.0140)
Country Dummies?	Yes	Yes	Yes	Yes
Year Dummies?	Yes	Yes	Yes	Yes
Good Dummies?	4 digit	4 digit	4 digit	3 digit
Observations	358,253	358,253	766,920	766,920
R-squared	0.586	0.713	0.553	0.594

Results

- Euro denominated Italian exports appears to reduce both the extensive and intensive margin of trade.
- Why?
 - Does invoicing currency really impact trade flows so heavily?
 - Is this a trade diversion effect?
 - How much of the effect is hysteresis?