International Trade: M2 CIE

Maria Bas

Syllabus

Lesson 1: Firms in international trade

- The characteristics of internationalized firms
- Exporter premia
- Importer premia

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Lesson 1: Firms in international trade

- Determinants of firms' export decision
- Export and firm productivity

Firms' export decision and credit constraints

Financial factors and export decision: main questions

- How do credit constraints affect firms' decision to export?
- Is financial health a determinant of export market participation?
- Or Is it an outcome?

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Lesson 1: Firms in international trade

- **Suggested readings:**
- Bernard, A., Jensen, J.B., Redding, S. and P. Schott (2007), firms in International Trade, Journal of Economic Perspectives.
- Bernard, Andrew B., and J. Bradford Jensen, 1999, Exceptional Exporter Performance: cause, effect, or both? Journal of International Economics, 47(1): 125.
- Financial factors and exporting decisions: David Greenaway, Alessandra Guariglia, Richard Kneller (2007)

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Lesson 2: Import decision

- Determinants of firms' import decision
- Sourcing importing inputs and firm performance
- Imports and credit constraints

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Lesson 2: Import decision

- **Suggested readings:**
- Goldberg, P., Khandelwal, A, Pavcnik, N. and P. Topalova Imported Intermediate Inputs and Domestic Product Growth: Evidence from India, Quarterly Journal of Economics 125(4) 2010, pp. 1727-1767.
- Bas, M. and Berthou, A. (2015) "Does Input-trade Liberalization Affect Firms' Foreign Technology Choice?", World Bank Economic Review.

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Lesson 3: The role of MNF

- Motives of FDI
- Heterogeneous characteristics of MNF
- Determinants of MNF Location decisions

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Lesson 3: The role of MNF

- Sourcing decision of MNF (FDI vs outsourcing)
- Determinants of MNF sourcing decisions
- FDI spillovers (horizontal vs vertical FDI spillovers)

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Lesson 4: Firms reaction to foreign shocks

- How firms react to foreign shocks?
- Do all firms react in the same way?
- The heterogeneous effects of the global crisis 2008-2009 on firms' export patterns
- The effect of the COVID-shock on international trade.

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Lesson 4: Firms reaction to foreign shocks

- **Suggested readings:**
- Bricongne, Fontagne, Gaulier, Taglioni and Vicard, Firms and the global crisis: French exports in the turmoil, Journal of International Economics Volume 87, Issue 1, May 2012, Pages 134-146.
- Bas, Fernandes and Paunov (2021) "How resilient was trade to COVID-19? ", mimeo

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Evaluation

- **Average of two grades:**
- (1) Critical rapport of a paper (critical summary of 5 pages)
- (2) and Presentation of a critical summary of a paper (presentations on lesson 3, 4 and 5);
- 30 minutes presentation of a specific paper (20 slides max) + questions.

Lesson 1

- **Main questions**
- Trade and firms' decisions:
- Why only a few companies in a country are exporting / importing?
- Which are the characteristics of firms that export / import?
- Which are the companies that benefit the most from trade liberalization?
- Which is the impact of trade liberalization on companies' productivity and efficiency?

Lesson 1

- **Different modes of internationalization**
- Trade-off: gains vs. costs
- Export decision
- Import decision
- FDI

Lesson 1

- **Different modes of internationalization**
- Trade-off: gains vs. costs
- Export decision: fixed and variable export costs to increase market shares in foreign countries;
- Import decision: fixed and variable export costs to lower marginal costs due to foreign technology/quality;
- FDI: fixed costs: market access vs. lower production costs (wages, taxes, materials).

Firms in International Trade

- "'Firms in International Trade"' (2007), Bernard, Redding, Jensen and Schott
- Study the behavior and differences across firms that are engage in international trade for the manufacturing sector in the US.
- Exporter premia

Exporter premia

- **Exporter premia**:
- Differences in firm performance between exporters and non-exporters within the same manufacturing industry.
- Firm performance measures: employment, labor productivity (value added per worker), TFP, wages, capital per worker and skill per worker.

Exceptional export performance

- Exporter premia estimation:
- $x = \beta$ Exporter $+ I + \epsilon$
- Where x is the firm performance variable of interest
- Exporter is a dummy equal to one if the firm reports positive exports in the year.
- I are industry dummies
- Coefficient of interest is β
- Firm characteristics

Exporter premia

Table 3: Exporter Premia in U.S. Manufacturing, 2002

	Exporter Premia		
	(1)	(2)	(3)
Log Employment	1.19	0.97	.
Log Shipments	1.48	1.08	0.08
Log Value Added per Worker	0.26	0.11	0.10
Log TFP	0.02	0.03	0.05
Log Wage	0.17	0.06	0.06
Log Capital per Worker	0.32	0.12	0.04
Log Skill per Worker	0.19	0.11	0.19
Additional Covariates	None	Industry Fixed Effects	Industry Fixed Effects, Log Employment

Notes: Notes: Data are for 2002 and are from the U.S. Census of Manufactures. All results are from bivariate OLS regressions of firm characteristic in first column on a dummy variable indicating firm's export status. Columns two and three include industry fixed effects and industry fixed effects plus log firm employment, respectively, as additional controls. Total factor productivity (TFP) is computed as in Caves et al (1982). Capital and skill per worker are capital stock and non-production workers per total employment, respectively. All results are significant at the 1 percent level.

Exporter / importer premia

Table 8
Trading Premia in U.S. Manufacturing, 1997

	Exporter Premia	Importer Premia	Exporter & Importer Premia
Log Employment	1.50	1.40	1.75
Log Shipments	0.29	0.26	0.31
Log Value Added per Worker	0.23	0.23	0.25
Log TFP	0.07	0.12	0.07
Log Wage	0.29	0.23	0.33
Log Capital per Worker	0.17	0.13	0.20
Log Skill per Worker	0.04	0.06	0.03

Notes: Data are for 1997 and are for firms that appear in both the U.S. Census of Manufacturers and the LFTTD. All results are from bivariate OLS regressions of firm characteristic in first column on dummy variable noted at the top of each column as well as industry fixed effects and firm employment as additional controls. Employment regressions omit firm employment as a covariate. Total factor productivity (TFP) is computed as in Caves et al (1982). Capital and skill per worker are capital stock and non-production workers per total employment, respectively. All results are significant at the 1 percent level.

Exporter/ importer premia

Exporting and Importing by U.S. Manufacturing Firms, 1997

NAICS Industry	Percent of All Firms	Percent of Firms that Export	Percent of Firms that Import	Percent of Firms that Import & Export
311 Food Manufacturing	7	17	10	7
312 Beverage and Tobacco Product	1	28	19	13
313 Textile Mills	1	47	31	24
314 Textile Product Mills	2	19	13	9
315 Apparel Manufacturing	6	16	15	9
316 Leather and Allied Product	0	43	43	30
321 Wood Product Manufacturing	5	15	5	3
322 Paper Manufacturing	1	42	18	15
323 Printing and Related Support	13	10	3	2
324 Petroleum and Coal Products	0	32	17	14
325 Chemical Manufacturing	3	56	30	26
326 Plastics and Rubber Products	5	42	20	16
327 Nonmetallic Mineral Product	4	16	11	7
331 Primary Metal Manufacturing	1	51	23	21
332 Fabricated Metal Product	20	21	8	6
333 Machinery Manufacturing	9	47	22	19
334 Computer and Electronic Product	4	65	40	37
335 Electrical Equipment, Appliance,	2	58	35	30
336 Transportation Equipment	3	40	22	18
337 Furniture and Related Product	6	13	8	5
339 Miscellaneous Manufacturing	7	31	19	15
Aggregate Manufacturing	100	27	14	11

Notes: Data are for 1997 and are for firms that appear in both the U.S. Census of Manufacturers and the LFTTD. Column 2 summarizes the distribution of manufacturing firms across three-digit NAICS industries. Remaining columns report the percent of firms in each industry that export, import and do both.

Performance of exporting firms

- Measuring the performance of firms in the export market

Performance of exporting firms

- Measuring the performance of firms in the export market:
- The number of products exported per firm.
- The number of export destination countries.

Performance of exporting firms

Share of Exporting Firms

Number of Products	Number of Countries					
	1	2	3	4	5+	All
1	40.4	1.2	0.3	0.1	0.2	42.2
2	10.4	4.7	0.8	0.3	0.4	16.4
3	4.7	2.3	1.3	0.4	0.5	9.3
4	2.5	1.3	1.0	0.6	0.7	6.2
5+	6.0	3.0	2.7	2.3	11.9	25.9
All	64.0	12.6	6.1	3.6	13.7	100

Performance of exporting firms

Share of Export Value

Number of Products	Number of Countries					
	1	2	3	4	5+	All
1	0.20	0.06	0.02	0.02	0.07	0.4
2	0.19	0.12	0.04	0.03	0.15	0.5
3	0.19	0.07	0.05	0.03	0.19	0.5
4	0.12	0.08	0.08	0.04	0.27	0.6
5+	2.63	1.23	1.02	0.89	92.2	98.0
All	3.3	1.5	1.2	1.0	92.9	100

Performance of exporting firms

Share of Employment

Number of Products	Number of Countries					
	1	2	3	4	5+	All
1	7.0	0.0	0.0	0.0	0.0	7.1
2	1.9	2.6	0.1	0.0	0.0	4.6
3	1.3	1.0	0.8	0.0	0.2	3.3
4	0.5	0.4	0.3	0.2	0.2	1.6
5+	3.5	2.6	4.3	4.1	68.8	83.3
All	14.2	6.7	5.5	4.3	69.2	100

Trade and Firm Productivity

- Exporters are better than non-exporters over a broad spectrum of performance measures.
- An interesting issue is whether their superior performance predates their access to export markets or
- rather their performance improves as a result of their access to export markets.

Selection effect vs. learning by exporting

- The causality could run both ways:
- (1) Only more productive firms become exporters
- (2) Exporting activities improve firm efficiency ex-post

Selection effect vs. learning by exporting

- **Learning by exporting:**
- Exporters are able to beneficiate from linkages created in the foreign market with suppliers as well as acquire specific knowledge on competitors abroad.
- At the same time, exporters benefit from their knowledge of the foreign market to adopt more advanced technologies in the case of developing countries.

Selection effect vs. learning by exporting

- **Conscious self selection:**
- Since firms know that their productivity is an important determinant to enter the foreign market
- They might invest in technologies ex-ante to improve their efficiency and profitability to pay the fixed export costs.

Trade and Learning by Exporting

Bernard, Andrew B., and J. Bradford Jensen, 1999, Exceptional Exporter Performance: cause, effect, or both? Journal of International Economics, 47(1): 125.

Aim

- Explores the causality link between export activity and firm productivity
- Do firms that perform better become exporters or exporting improves firm performance?

Contribution

- Disentangles the selection effect from the learning by exporting

Trade and Learning by Exporting

Estimation strategy

- 1st step: estimation the firm export decision as a function of firm performance measures
- A linear probability models in first differences:
- $\Delta Y_{it} = \alpha_i + \alpha \Delta X_{i,t-1} + N \Delta Y_{i,t-1} + \Delta \mu_{it}$
- Y_{it} a dummy variable equal to one if the firm export in year t
- $X_{i,t-1}$ firm characteristics in $t-1$

Main results

The decision to export[a]	
	First differences
Plant-level Variables[b]	
Total employment	0.104[d]
	(0.046)
Wage	0.029[d]
	(0.026)
Non-production/total Employment	−0.024
	(0.037)
Productivity	0.012[e]
	(0.007)
Changed product since last year	0.048[c]
	(0.009)
Last changed product two years ago	0.014[d]
	(0.007)
Exported last year	0.420[c]
	(0.012)
Last exported two years ago	0.093[c]
	(0.005)
Year dummies	
Industry dummies	
State dummies	
N	81 636

Trade and Learning by Exporting

Does exporting improve performance?

- 2nd step: estimation of a growth rate regression with a dummy for continuous exporters:
- $\%\Delta X_{it} = \alpha_0 + \alpha_1 Continuous + \alpha_2 Size_{i,0} + \alpha_2 Char.s_{i,0} + \epsilon_{it}$
- Sample includes plants in the first and last years
- Continuous exporters: plants that are exporters in both years.
- $Char.s_{i,0}$ = other firm characteristics in the initial year.

Main results

Gains from continuous exporting

	1984–88	1989–92
Total employment	0.83%	1.52%
	(3.18)	(4.11)
Shipments	1.02%	1.12%
	(3.45)	(2.45)
Value-added per worker	0.61%	0.71%
	(1.42)	(1.00)
TFP	0.11%	
	(0.17)	
Average wage	0.47%	0.30%
	(3.97)	(1.62)
Non-production/total employment	0.01%	0.05%
	(0.13)	(0.47)
Production worker wage	0.50%	0.80%
	(3.06)	(2.98)
Non-production worker wage	0.15%	−0.65%
	(0.64)	(1.63)

The sample includes only those plants that export in both the first and last year. Continuous plants export in all years.

- Continuous exporters outperform firms that exit and reenter the export market in terms of employment, shipments, and production worker wages
- Productivity growth and non-production wages are slightly higher but not significantly different from zero.

Trade and Learning by Exporting

Conclusion

- Evidence on selection effects of most productive firms into the export market.
- In the years just prior to the start of exporting, future exporters are growing faster than non-exporting firms.
- Exporting increases the probability of plant survival.
- But no robust evidence of productivity growth after start exporting.

The channels of transmission: Export performance, Imported inputs and TFP

- Imported inputs, Exported Products and firms' TFP
-
- **Suggested readings:**

- Bas, M. and V. Strauss-Kahn (2014), "Does Importing More Inputs Raise Exports? Firm Level Evidence from France?, Review of World Economics, Vol. 150 (2), pp. 241-275.

The channels of transmission: Export performance, Imported inputs and TFP

- Imported inputs, Exported Products and firms' TFP
-
- **Aim**
- Using firm-level data from France study the direct and indirect mechanisms through which foreign inputs impact export activity.
- **Contribution**
- To disentangle the possible channels through which imports of intermediate goods can affect firms' export patterns

- An indirect channel through which imports of intermediate goods can affect firms' export patterns:
- **The productivity channel:**
- Imported inputs improve firm' TFP
- $->$ increasing firms' revenues to overcome the fixed export cost.

- Three possible direct channels through which imports of intermediate goods can affect firms' export patterns:
- **(1) Variety effect:** imports of **new** intermediate goods not previously available in the country
- The access to new variety inputs allows firms to produce more output with the same amount of inputs and become more efficient
- This allow firms to become more profitable and export more volumes and varieties.
- Proxy that captures the variety effect: number of new imported inputs.

- Three possible channels through which imports of intermediate goods can affect firms' export patterns:

- **(2) Technology transfer:** Importing more advance foreign technology embodied in imported intermediate goods from developed countries (DC);

- Using more advance technology raises firm productivity and profitability

- This allows new firms to afford the fixed costs of exporting to enter the export market and sell more products.

- Three possible channels through which imports of intermediate goods can affect firms' export patterns:

- **(3) Cost effect:** imports of cheaper intermediate goods from less developed countries (LDC) producing with low-cost production factors;

- Reducing costs of production allows firms to raise its variable profits

- To pay fixed export costs and sell more varieties and volume in the export market

- **Data**
- Two sources of French firm level data matched for the period 1996-2005:
- (1) Customs firm-product-country of destination of exports and origin of imports;
- (2) Firm level production data on value added, materials, labor, capital stock to compute firm TFP.

- **Data**
- Imported intermediate goods definition:
- Following Feenstra and Hanson (1996) imports from the same HS4 category as the firm's main sector of activity are final goods whereas imports from any other category are intermediate inputs.
- Sensitivity tests: using alternative measures of imported inputs using IO tables and BEC classification

- **Estimation strategy: Testing the indirect productivity channel**
- First step: TFP estimation
- A production function estimation including the number of imported varieties
- disentangling the country of origin of imported varieties
- Semi-parametric estimation of TFP.

: TFP and imported inputs

Table 5 TFP estimation OP/ACF

Dependent variable: log of the total production of firm (f) in year (t)		
	(1)	(2)
Labor	0.276***	0.283***
	(0.010)	(0.012)
Raw materials	0.517***	0.518***
	(0.007)	(0.007)
Capital	0.074***	0.076***
	(0.003)	(0.003)
Imported inputs	0.096***	
	(0.006)	
Imported inputs DC		0.095***
		(0.003)
Imported inputs LDC		0.068***
		(0.004)
Industry fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
Observations	110,811	110,811

- **Estimation strategy: disentangling the variety effect**
- Second step:
- Regressing the number of exported varieties on the number of imported varieties:
- $Log(NX) = \beta_1 NM_{it-1} + \beta_2 Z_{it} + \epsilon_{it}$

- **Endogeneity issues**

- Endogeneity between the number of imported inputs, TFP and export scope is very likely in our framework.

- To limit endogeneity: restricted sample focusing on firms that import from non-EU countries and export to the EU.

- **IV estimation**

- Instrumental variable: tariffs applied by the EU to the rest of the world and focus on French firms? imported inputs from non-European countries.

- Tariffs at the HS6 level come from the WITS database from 1996 to 2005.

Table 6 Export scope and imported inputs

Dependent variable: log of the number of exported varieties to EU of firm (f) in year (t)						
	(1) Within	(2) Within	(3) Within	(4) Within	(5) IV	(6) IV
Imported inputs ($t-1$)	0.070***	0.052***	0.051***	0.055***	0.161***	0.105***
	(0.005)	(0.005)	(0.005)	(0.006)	(0.018)	(0.021)
Size ($t-1$)		0.242***	0.239***	0.224***		0.201***
		(0.015)	(0.018)	(0.021)		(0.017)
TFP ($t-1$)		0.376***	0.491***	0.502***		0.477***
		(0.054)	(0.073)	(0.091)		(0.083)
Observations	87,477	87,477	60,107	44,541	44,541	44,541
R-squared	0.007	0.025	0.029	0.025		
Hansen statistic	.	.	.	.	0.737	0.916
p-value of Hansen	.	.	.	.	0.692	0.821

- **Estimation strategy: disentangling the technology transfer and cost effect**

- Second step:

- Testing this relationship using a panel of French firms importing intermediate goods from Developed (DC) and Less Developing countries (LDC):

- $Log(NX) = \beta_1 NM_{DC,it-1} + \beta_2 NM_{LDC,it-1} + \beta_3 Z_{it} + \epsilon_{it}$

Table 7 Export scope and imported inputs by country of origin

Dependent variable: log of the number of exported varieties to EU of firm (f) in year (t)						
	(1) Within	(2) Within	(3) Within	(4) Within	(5) IV	(6) IV
Imported inputs DC ($t-1$)	0.064***	0.047***	0.053***	0.043***	0.173***	0.123***
	(0.005)	(0.005)	(0.006)	(0.007)	(0.035)	(0.038)
Imported inputs LDC ($t-1$)	0.041***	0.032***	0.036***	0.038***	0.135***	0.098***
	(0.005)	(0.005)	(0.006)	(0.006)	(0.025)	(0.027)
Size ($t-1$)		0.239***	0.234***	0.213***		0.181***
		(0.015)	(0.018)	(0.021)		(0.020)
TFP ($t-1$)		0.373***	0.486***	0.534***		0.462***
		(0.054)	(0.073)	(0.084)		(0.088)
Observations	87,477	87,477	60,107	41,755	41,755	41,755
R-squared	0.008	0.025	0.030	0.025		
Hansen statistic	.	.	.	.	7.472	5.614
p-value of Hansen	.	.	.	.	0.113	0.230

- **Robustness tests**
- Different measures of input tariffs as IV.
- Alternative measures of intermediate goods.
- The role of multinational firms in explaining the link between imported inputs and exports.
- Correcting for potential selection effects by restricting our database to firms that are present over the whole period.
- Alternative econometric specifications:
- Tobit, Poisson and negative binomial methods which reflect the count-variable nature of our dependent variable.

: robustness tests

Dependent variable: log of the number of exported varieties of firm f in year t			
	Number of imported inputs $(t-1)$	Observations	Hansen statistics (p-value)
(1) Alternative instrument: IO tariffs	0.216***	53,424	0.880
	(0.072)		(0.644)
(2) Alternative instrument: US tariffs	0.145***	40,422	0.116
	(0.045)		(0.944)
(3) IO definition of imported inputs	0.120**	39,103	2.115
	(0.054)		(0.347)
(4) BEC definition of imported inputs	0.240**	40,574	1.482
	(0.097)		(0.224)
(5) Excluding carry-along trade	0.115***	40,396	1.902
	(0.022)		(0.593)
(6) Propensity to import	0.036***	40,208	2.938
	(0.008)		(0.401)
(7) Herfindhal index	−0.438***	42,007	2.073
	(0.141)		(0.355)
(8) Excluding multinationals	0.128**	28,677	2.995
	(0.060)		(0.392)
(9) Balanced sample	0.108**	28,665	2.623
	(0.046)		(0.453)
(10) Pooled Tobit	0.613***	150,369	.
	(0.005)		
(11) Random effects Tobit	0.198***	150,369	.
	(0.004)		
(12) Fixed effects Poisson	0.088***	102,267	.
	(0.009)		
(13) Dependent variable + 1	0.067***	150,369	
	(0.005)		

- **Conclusion**

- Empirical evidence on the direct and indirect channels via which importing more varieties of intermediate inputs increases export scope:

- (1) Imported inputs may enhance productivity and thereby help the firm to overcome export fixed costs (the indirect productivity channel);

- (2) low-priced imported inputs may boost expected export revenue (the direct-cost channel); and

- (3) importing intermediate inputs may reduce export fixed costs by providing the quality/technology required in demanding export markets (the quality/technology channel).