

Who Trades What with Whom

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Intermediaries in International Trade: Direct and Indirect Modes of Export

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New Perspectives

- This talk draws on several recent papers:
 - “Multi-Product Firms and Trade Liberalization”, *working paper, Sept 2010*
 - Andrew B. Bernard, Stephen J. Redding and Peter K. Schott
 - “The Margins of U.S. Trade”, *AER*, May 2009
 - Andrew B. Bernard, J. Bradford Jensen, Stephen J. Redding and Peter K. Schott
 - “Wholesalers and Retailers in U.S. Trade”, *AER*, May 2010
 - Andrew B. Bernard, J. Bradford Jensen, Stephen J. Redding and Peter K. Schott

New Perspectives

- This conference focuses on the role of heterogeneous firms in foreign trade and investment.
- This talk focuses which firms are trading
- Exports respond differently to trade costs, country characteristics and large economic shocks depending on who is trading.
- In the aggregate this matters for trade and welfare.

Original Perspectives

- Countries trade (Ricardo, H-O)
 - Endowments and industry characteristics matter for aggregate flows
- Two-way flows in trade (Krugman, Ethier, Helpman-Krugman)
 - Product heterogeneity/variety matters
 - Firms exist but are symmetric so firm identity is not important
 - Increasing returns in production

A Recent New Perspective

- Firms trade
 - Exporters and non-exporters in the same industry
 - Firm heterogeneity exists and is related to export status
- Firms make and export a single product and send it “abroad”
- Export status matters
 - Trade status is correlated with firm performance
 - Exporters are ex ante more productive
- The extensive margin of trade matters
 - Selection offers new potential gains from trade

A More Recent New Perspective

- Firms make and export a single product and send it to one **or more** markets (e.g Eaton, Kortum and Kramarz)
- Firms trade with countries
 - Single destination exporters coexist with multiple destination exporters
- Another extensive margin of trade (destinations)
 - # of destinations is correlated with firm performance
 - Bigger exporters serve more markets (and ship more to each market)

The Most Recent Perspective

- Firms make multiple products and export some or all of them to one or more markets
- Multi-product firms dominate production and exports
 - Not every product is shipped to every country
- Another extensive margin of trade (products)
 - # of products is correlated with firm performance
 - Bigger exporters export more products to more markets

The Next Perspective

- Deeper understanding of export dynamics
 - The long run and short run look quite different

Cross-Country Trade Flows - US (BRS, 2010)

$$x_c = f_c p_c \frac{o_c}{f_c p_c} \left(\frac{1}{o_c} \sum_p \sum_f x_{cpf} \right)$$

$$\ln Z_c = \gamma + \delta \ln \text{distance}_c + \lambda \ln \text{GDP}_c + \varepsilon_c$$

	$\ln(\text{Value}_c)$	$\ln(\text{Firms}_c)$	$\ln(\text{Products}_c)$	$\ln(\text{Density}_c)$	$\ln(\text{Intensive}_c)$
$\ln(\text{Distance}_c)$	-1.37 0.17	-1.17 0.15	-1.10 0.15	0.84 0.13	0.05 0.10
$\ln(\text{GDP}_c)$	1.01 0.04	0.71 0.03	0.55 0.03	-0.48 0.03	0.23 0.02
Constant	7.82 1.83	0.52 1.59	3.48 1.55	-2.20 1.37	6.03 1.07
Observations	175	175	175	175	175
R ²	0.82	0.76	0.68	0.66	0.37

Short-run Dynamics (BJRS 2009)

Export Growth (\$Billion)

		1993- 1994	1994- 1995	1995- 1996	1996- 1997	1997- 1998	1998- 1999	1999- 2000	2000- 2001	2001- 2002	2002- 2003
Exporter Entry and Exit	Exporter Births	6	8	14	8	9	12	11	40	10	9
	Exporter Deaths	-6	-6	-9	-13	-9	-12	-11	-15	-47	-8
	Net Entry	0	2	5	-5	0	0	0	26	-38	1
Product- Country Switching	New Product-Country	48	62	62	65	62	72	79	55	65	73
	Retired Product-Country	-47	-47	-55	-57	-64	-56	-69	-76	-55	-59
	Net Extensive	1	15	8	8	-2	16	10	-21	10	14
Intensive Margin	Product-Country Increases	90	126	112	121	111	156	150	106	147	148
	Product-Country Decreases	-75	-66	-101	-107	-122	-107	-120	-170	-106	-112
	Net Intensive Margin	15	60	11	14	-11	49	30	-64	42	36
Total Change in Exports		16	77	24	17	-13	65	41	-60	14	50
Percent of Annual Growth Due to											
% Net entry and exit		2	2	22	-29	-2	-1	1	-42	-265	2
% Net add and drop		7	20	32	47	15	25	26	35	71	27
% Net intensive margin		91	78	46	82	87	76	74	107	294	71

- Mean net contribution of entry/exit: -31 percent
- Mean net contribution of add/drop: 31 percent
- Mean net contribution of intensive: 101 percent

Extensive margins likely less influential here than in cross section because entrants/adds are small relative to incumbents

Medium-run Dynamics (BJRS 2009)

Export Growth (\$Billion)

		1993- 1998	1998- 2003	1993- 2003
Exporter Entry and Exit	Exporter Births	60	131	166
	Exporter Deaths	-38	-108	-112
	Net Entry	22	24	55
Product- Country Switching	New Product-Country	127	138	181
	Retired Product-Country	-92	-103	-85
	Net Extensive	35	35	96
Intensive Margin	Product-Country Increases	144	158	142
	Product-Country Decreases	-80	-107	-62
	Net Intensive Margin	64	51	80
Total Change in Exports		121	110	231
Percent of Annual Growth Due to				
% Net entry and exit		18	21	24
% Net add and drop		29	32	42
% Net intensive margin		53	46	35

Note: Contribution of intensive margin to export growth is relatively less important in longer differences

The Next Perspective

- Deeper understanding of export dynamics
 - The long run and short run look quite different
- More complete picture of who is trading
 - Direct versus indirect exporting

Intermediaries in International Trade

Intermediaries in International Trade

- What is the role of intermediaries in trade, in economy more generally?
- Trade models typically assume producers in one country trade directly with final consumers in another.
- Trade can involve long chains of potentially independent actors, with goods moving through wholesale and retail networks that affect both the magnitude and nature of trade frictions and therefore trade patterns and welfare gains from trade.

Intermediaries in International Trade

- How important are intermediaries in aggregate trade?
- Why do they exist?
- What do they look like?
- What country and product characteristics determine the choice between direct and indirect modes of exporting?

Related Literature

- Empirics
 - Bernard, Jensen, and Schott (2009) [US]; Blum, Claro and Horstmann (2009) [Chile]; Ahn, Khandelwal, and Wei (2010) [China]; Akerman (2010) [Sweden]; Bernard, Jensen, Redding, and Schott (2010) [US]
- Theory
 - Petropoulou (2007)
 - Blum, Claro and Horstmann (2009)
 - Ahn, Khandelwal, and Wei (2010); Akerman (2010)

Wholesalers and Retailers

- Wholesale and retail firms account for 23% of US firms and 25% of US employment in 2000 (BJS 2009)
- Wholesale/Intermediary firms account for:
 - 10% of exports and 23% of imports in the US
 - 35% of imports in Chile (Blum, Claro and Horstmann, 2009)
 - 20% of exports in China (Ahn, Khandelwal, and Wei 2010)
 - 11% of exports and 37% of imports in Italy

Pure Intermediaries

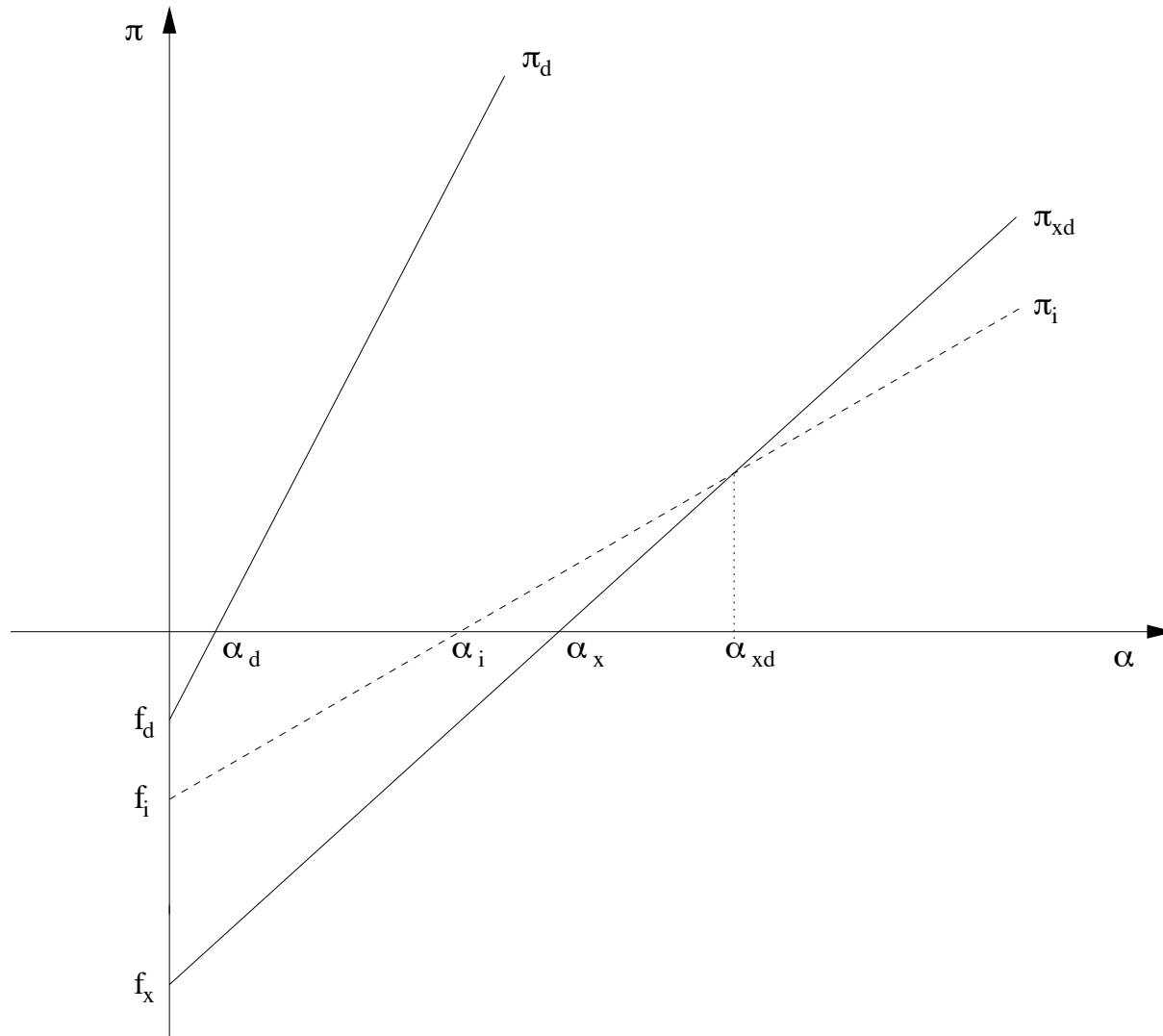
- “Technology”-based model (Ahn et al, Akerman)
 - Domestic single-product firms can either export directly or indirectly
 - Producers and intermediaries are distinct firms.
 - Intermediation technology offers the potential to lower the fixed costs of exporting by spreading the country/industry component across varieties.

Pure Intermediaries

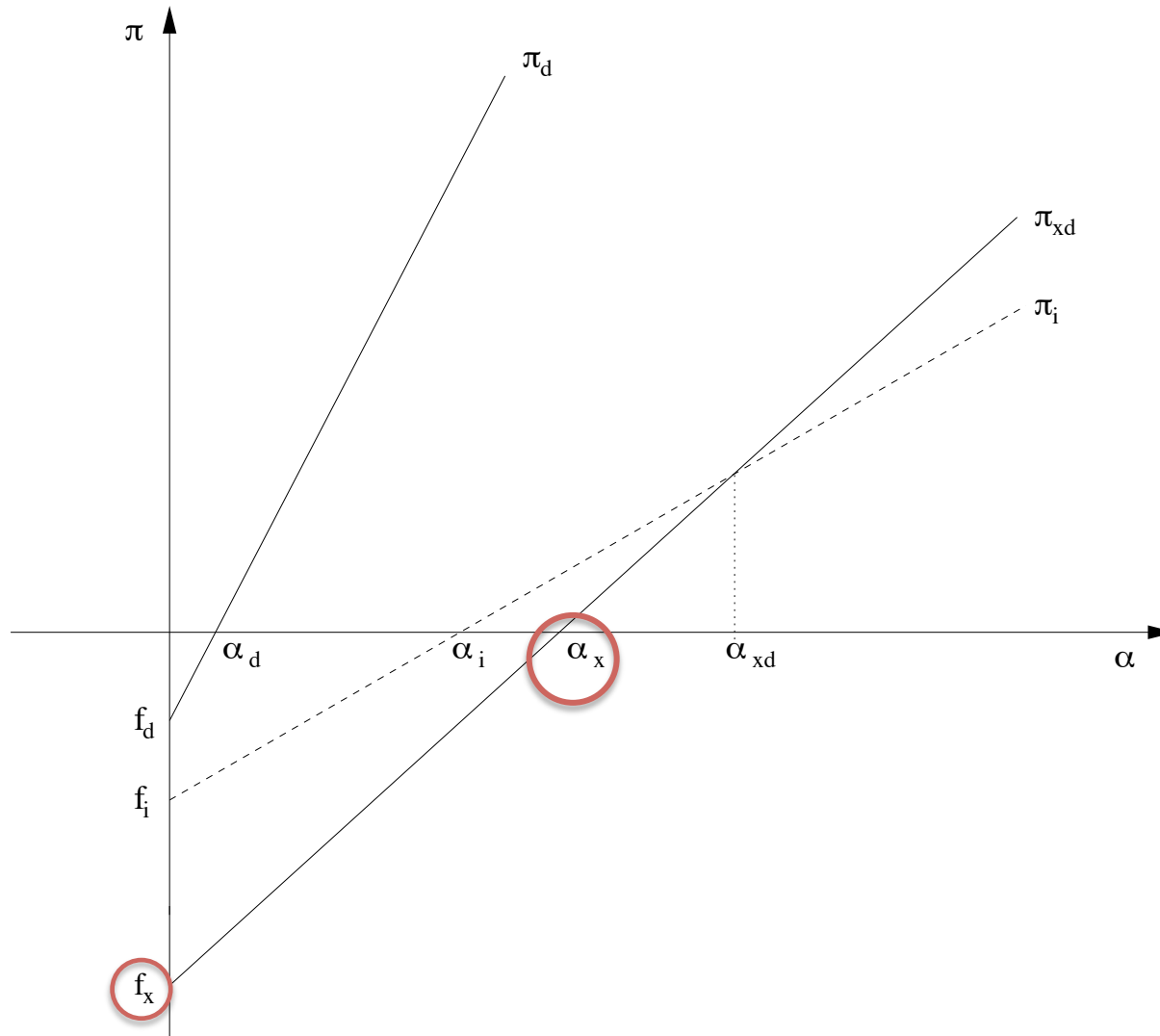
- Fixed costs of exporting
 - Country component – common to all products
 - Industry component – common to all countries
 - Product-country component – specific to the product and country
 - for example

$$f = f_c + f_j + f_{kc}$$

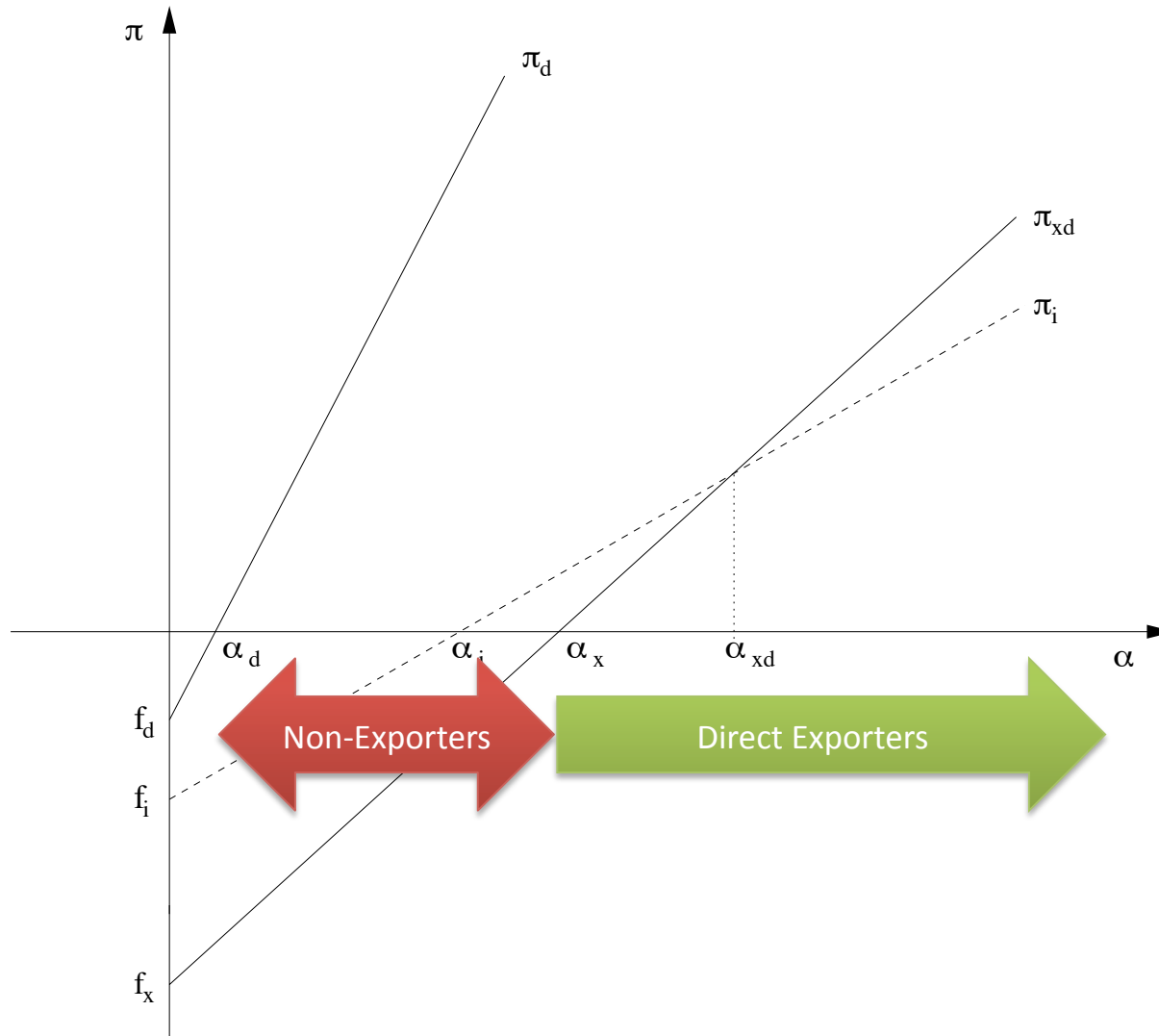
Pure Intermediaries



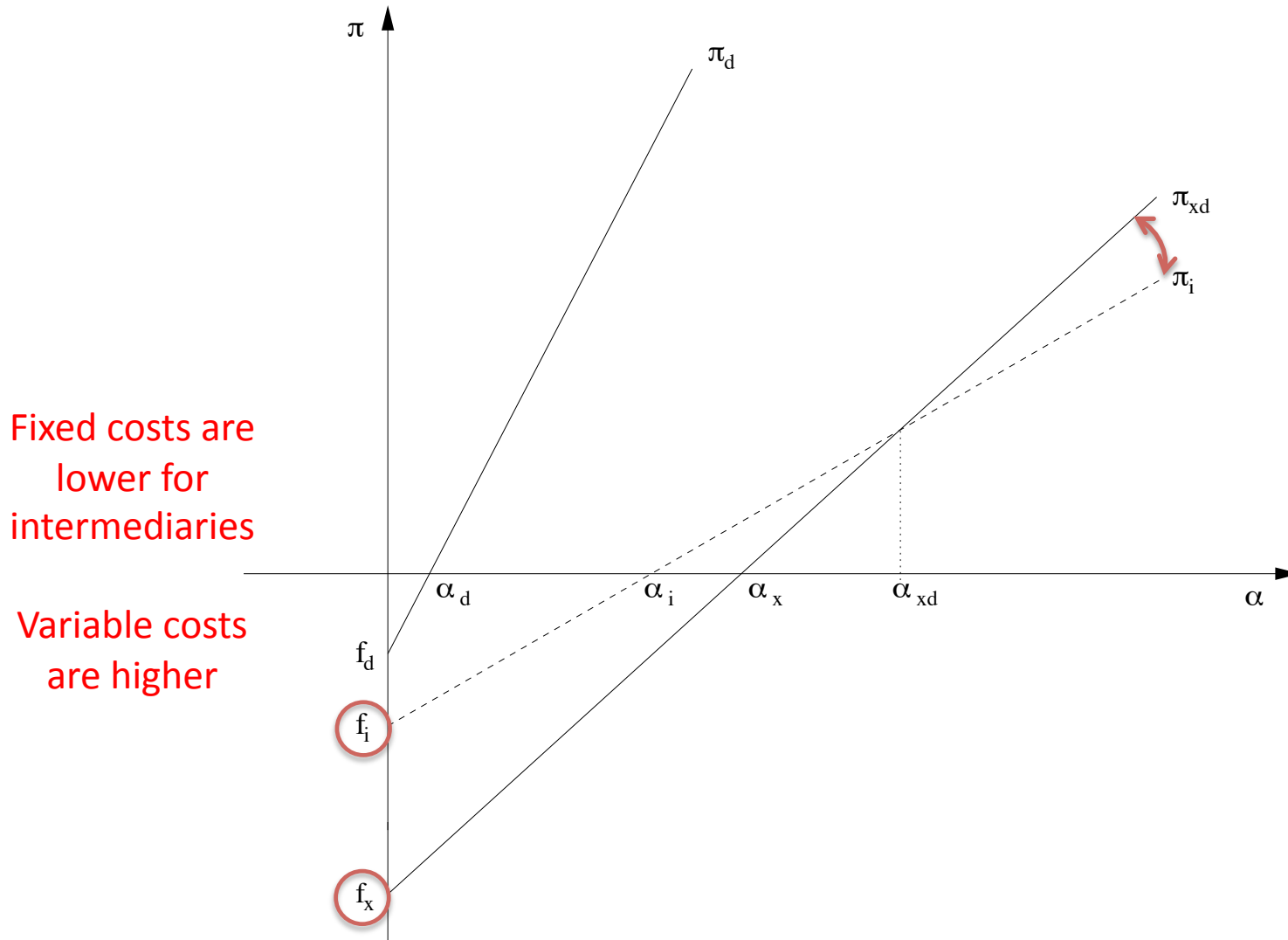
Pure Intermediaries



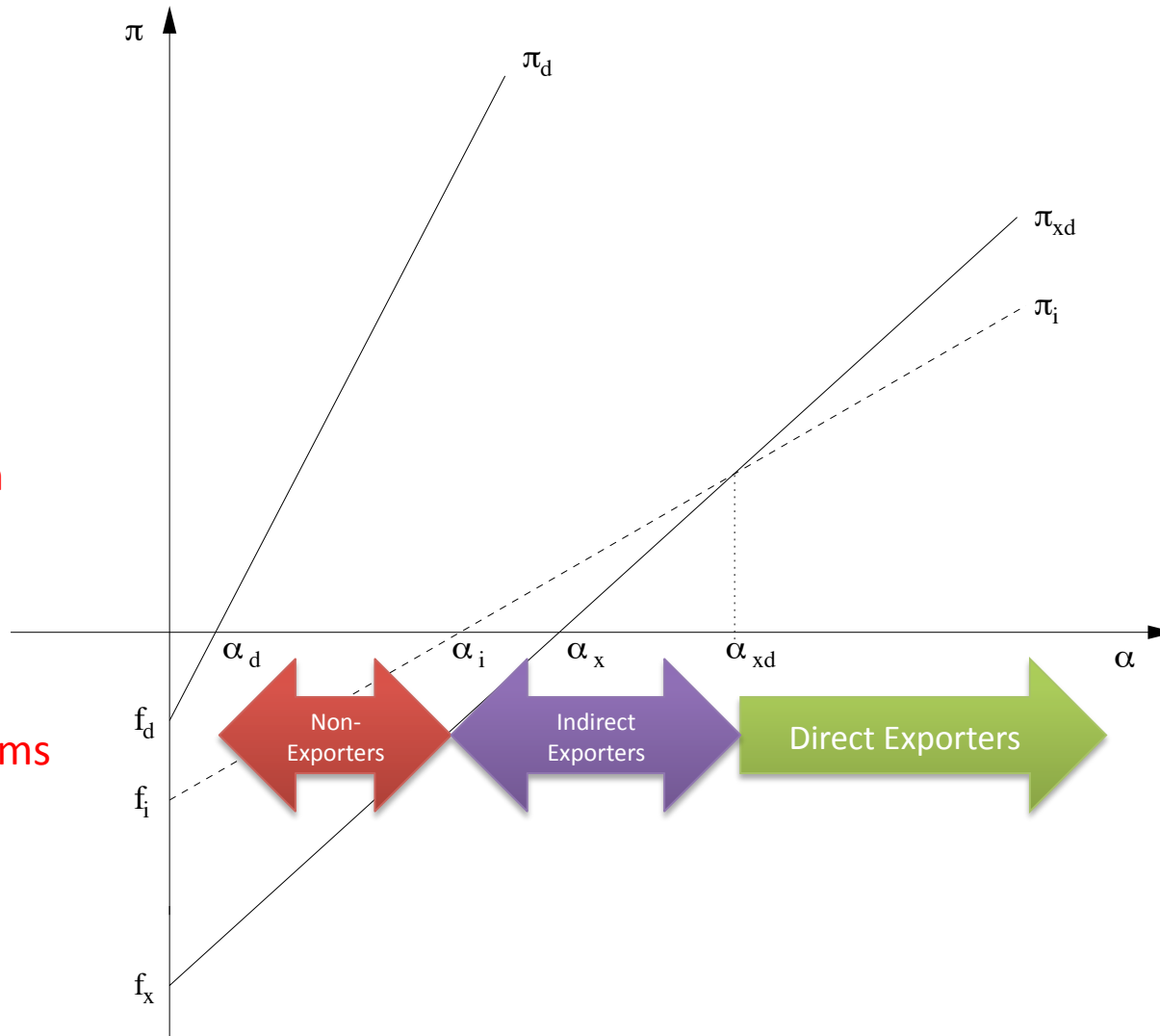
Pure Intermediaries



Pure Intermediaries



Pure Intermediaries



More firms can access foreign markets.

Intermediate productivity firms are indirect exporters.

Pure Intermediaries

- More firms choose the intermediation technology when:
 - The idiosyncratic (product/firm-specific) part of fixed exporting costs is low
 - The general (market/industry-specific) part of fixed exporting costs is high
 - The additional variable costs are lower
 - Products with lower markups (Akerman, 2010)

Italian Data

- **Statistiche del Commercio Estero (COE)**
 - All cross-border transactions, 1998-2003
 - Exports by firm by country
 - No data on product-level exports (yet)
- **Archivio Statistico Imprese Attive (ASIA)**
 - Main activity of firm, employment, sales
 - Manufacturers and Wholesalers
 - Defined according to their primary NACE 3digit industry

Country Data

- GDP – World Bank Development Indicators
- Distance – CEPII
- Governance – World Bank governance dataset
- Costs of Exporting – World Bank Doing Business
- Tariffs – WITS

Differences Between Export Types

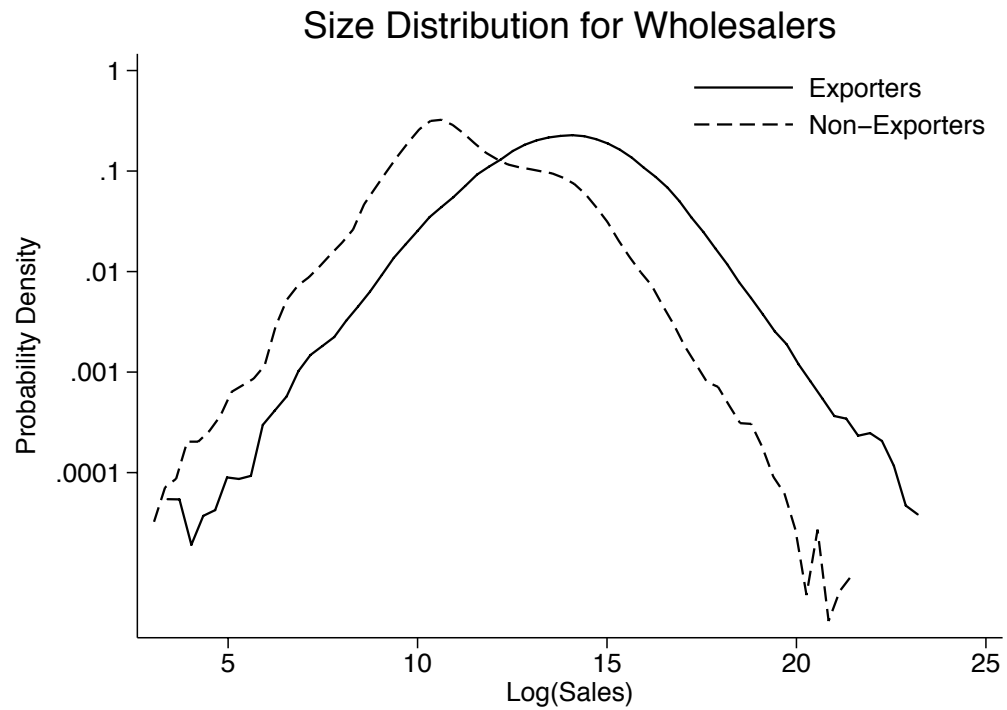
- Sales, Employment

$$\ln X_{fi} = c + D_f^W + D_f^X + D_f^W D_f^X + \varepsilon_{fi}$$

Dependent Variable	D ^W	D ^X	D ^W *D ^X	Observations	R-squared
Ln(Sales)	-0.094 (0.004)	2.599 (0.006)	-0.006 (0.010)	985719	0.23
Ln (Employees)	-0.520 (0.002)	1.415 (0.003)	-0.422 (0.005)	1022424	0.29
Ln (Sales/Employees)	0.435 (0.003)	1.174 (0.004)	0.399 (0.007)	985710	0.15

Manufacturers are larger in terms of sales, much larger in terms of employment.
 Exporters are larger – both manufacturers and wholesalers
 Sales per employee are higher at wholesalers, especially for exporters

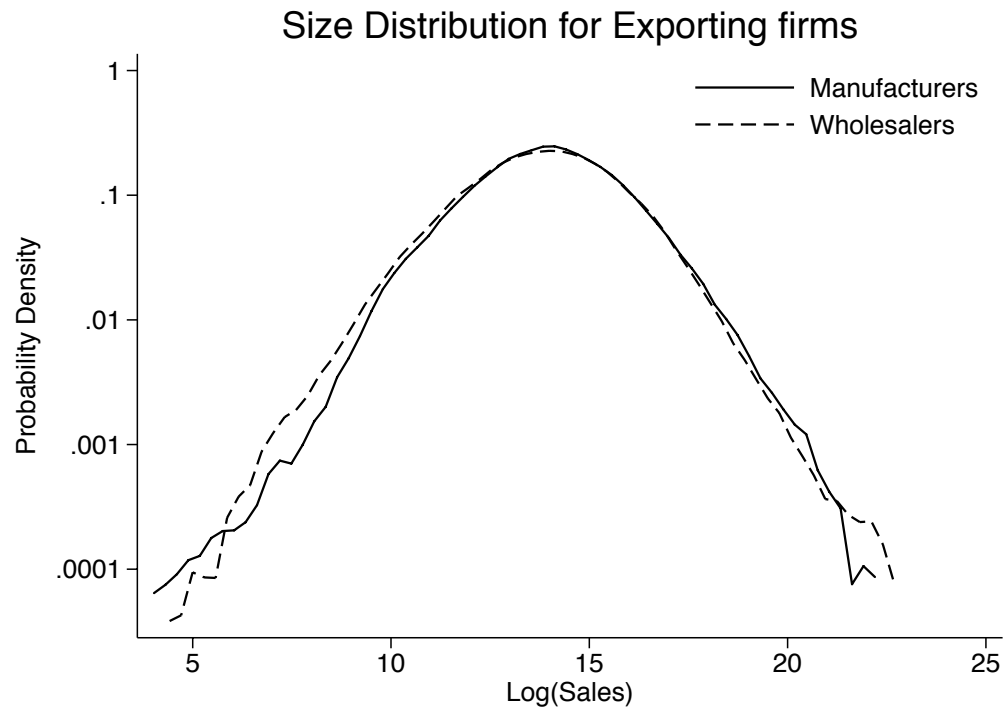
Exporters versus Non-exporters



Direct versus Indirect



Direct versus Indirect



Direct versus Indirect



Differences Between Export Types

- Industries, Countries

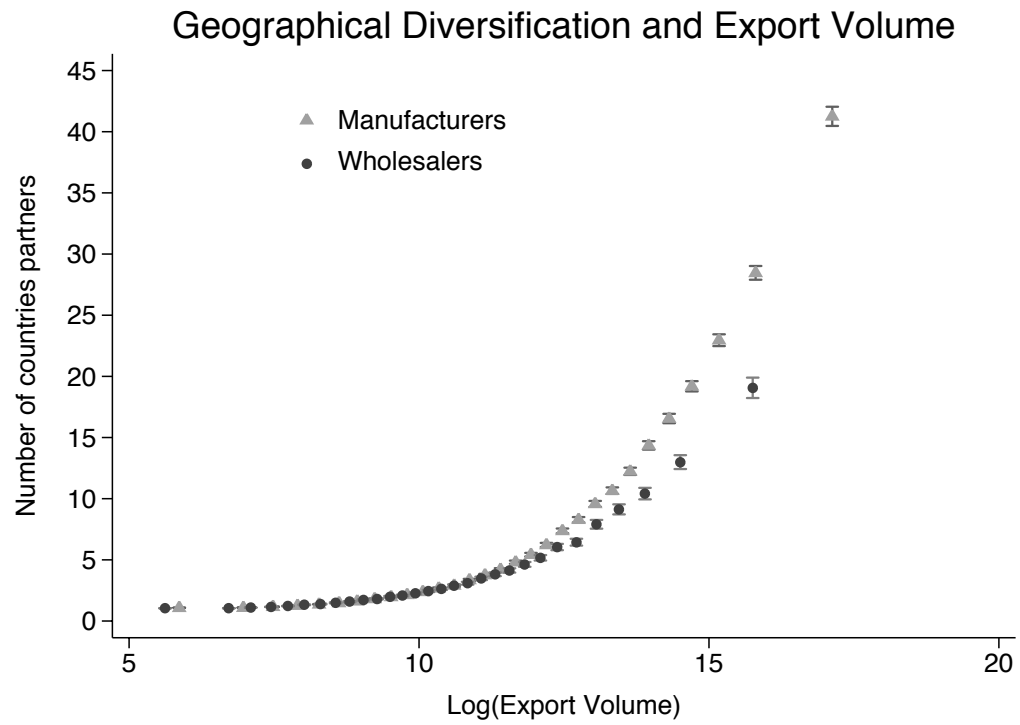
$$\#C_f = c + D_f^W + \ln \text{Size}_f + \varepsilon_f$$

$$\#I_f = c + D_f^W + \ln \text{Size}_f + \varepsilon_f$$

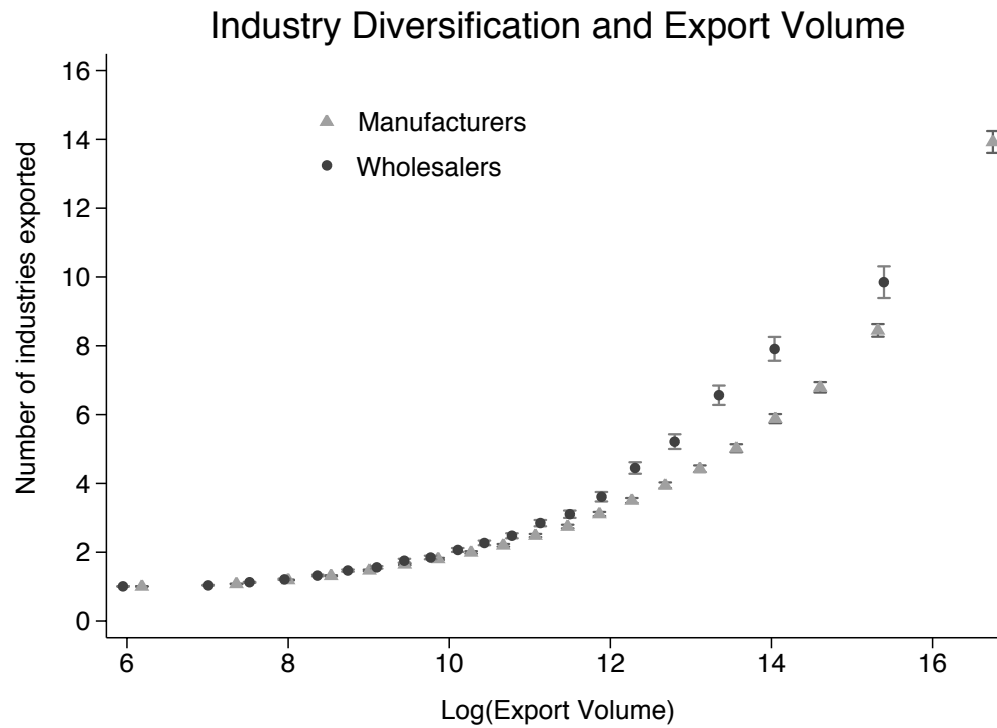
<u>Exporting firms</u>			
Industry diversification		Geographic Diversification	
	D^W		D^W
NIE	-0.565 (0.026)	NCE	-3.871 (0.057)
NIE(empl)	0.837 (0.026)	NIE(empl)	-0.131 (0.053)
NIE(sales)	0.353 (0.023)	NIE(sales)	-1.522 (0.045)

Manufacturers export to more countries
Wholesalers export in more industries

Destinations



Industries



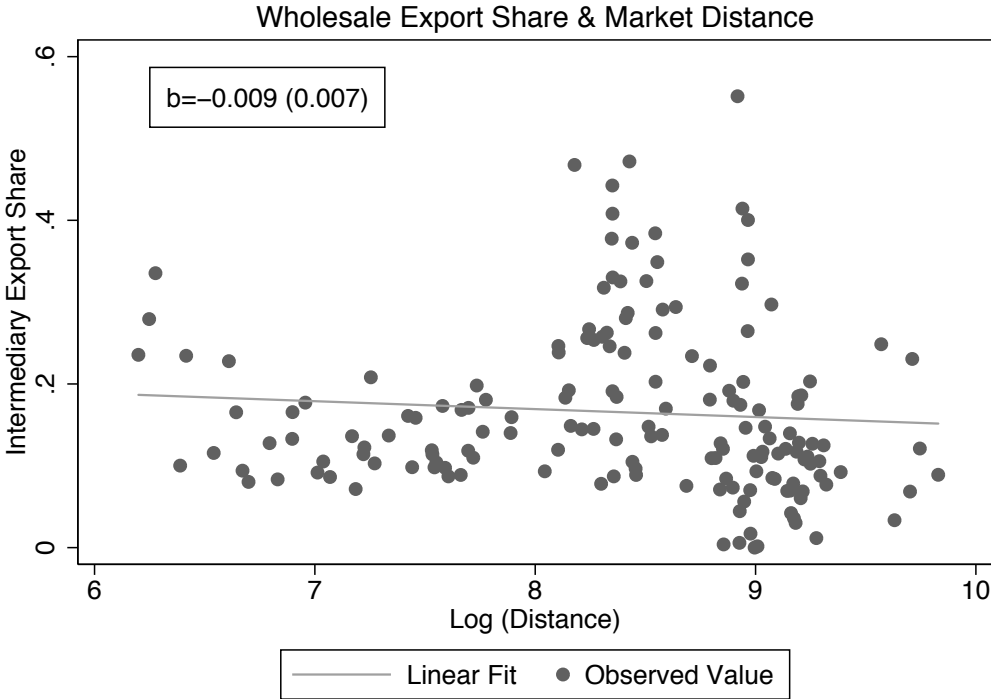
Intermediary Share in Exports

- Indirect exporters have different characteristics than direct exporters
- Do they differ in terms of the markets they serve?
- Market characteristics:
 - Size
 - Distance
 - Fixed export costs
 - Variable export costs

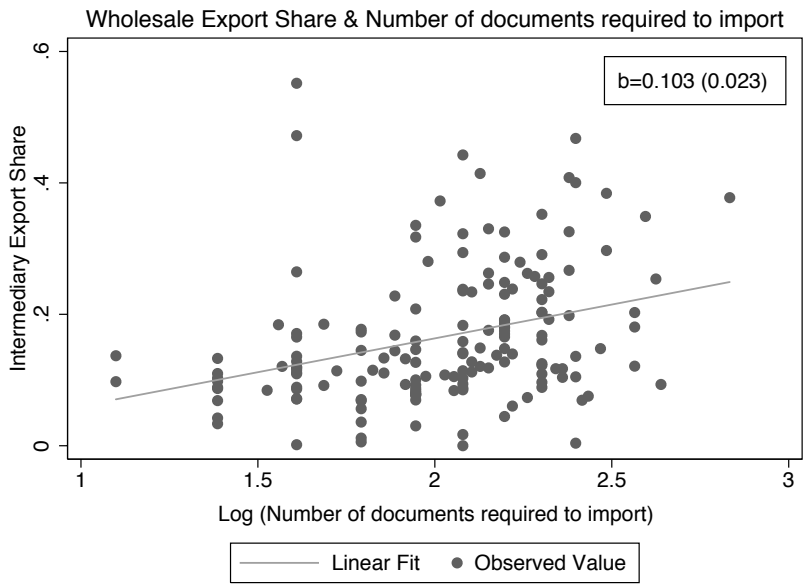
Direct versus Indirect



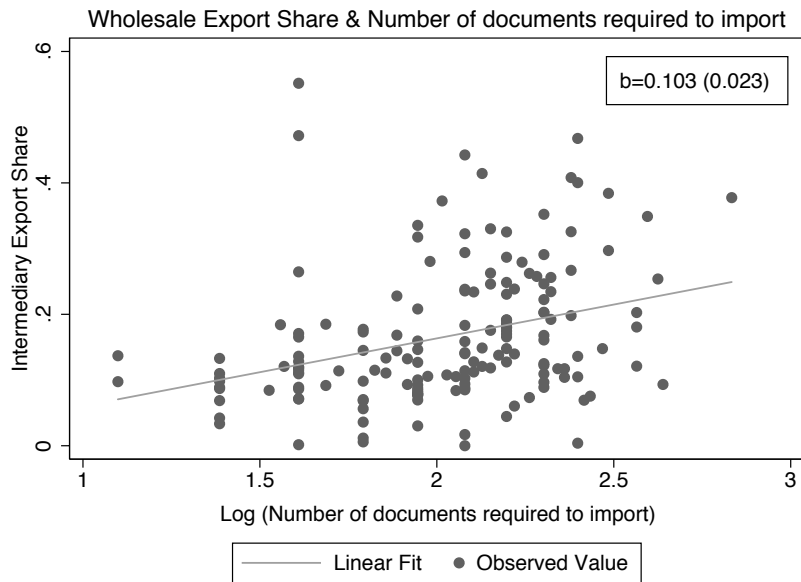
Direct versus Indirect



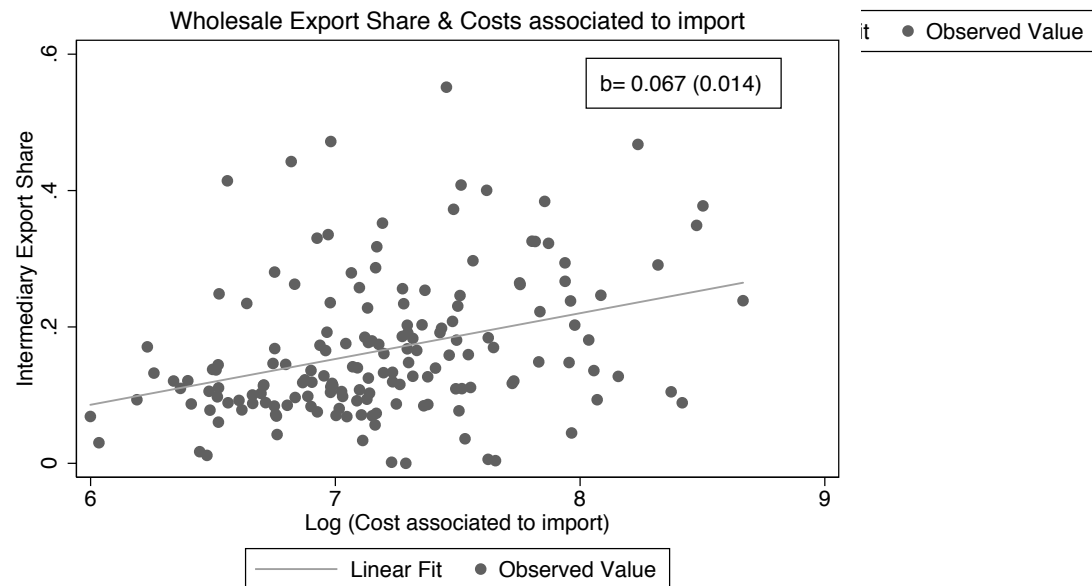
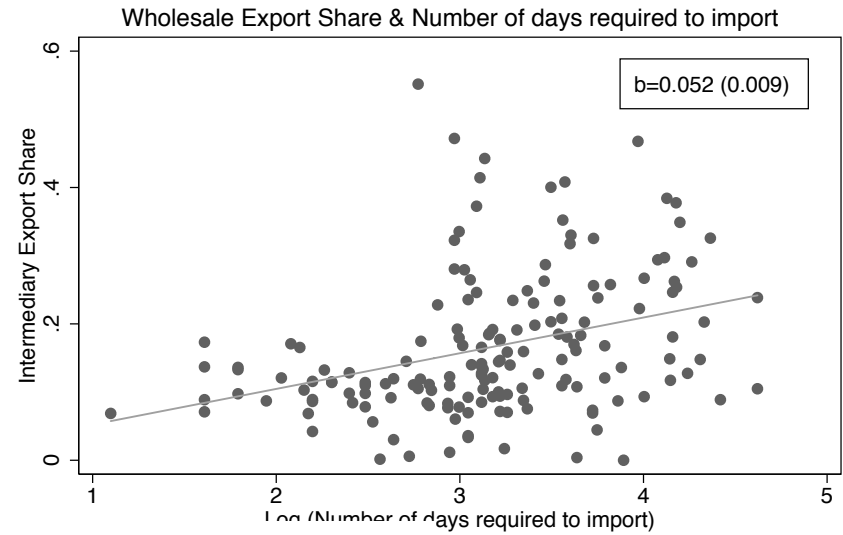
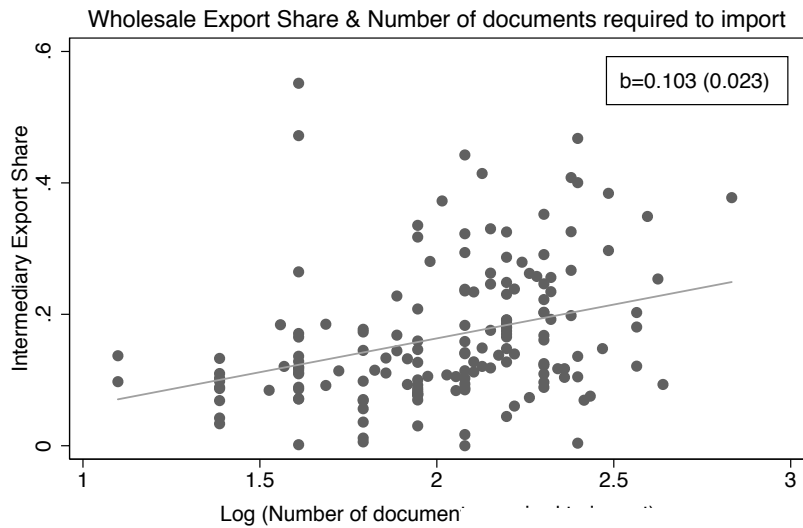
Direct versus Indirect



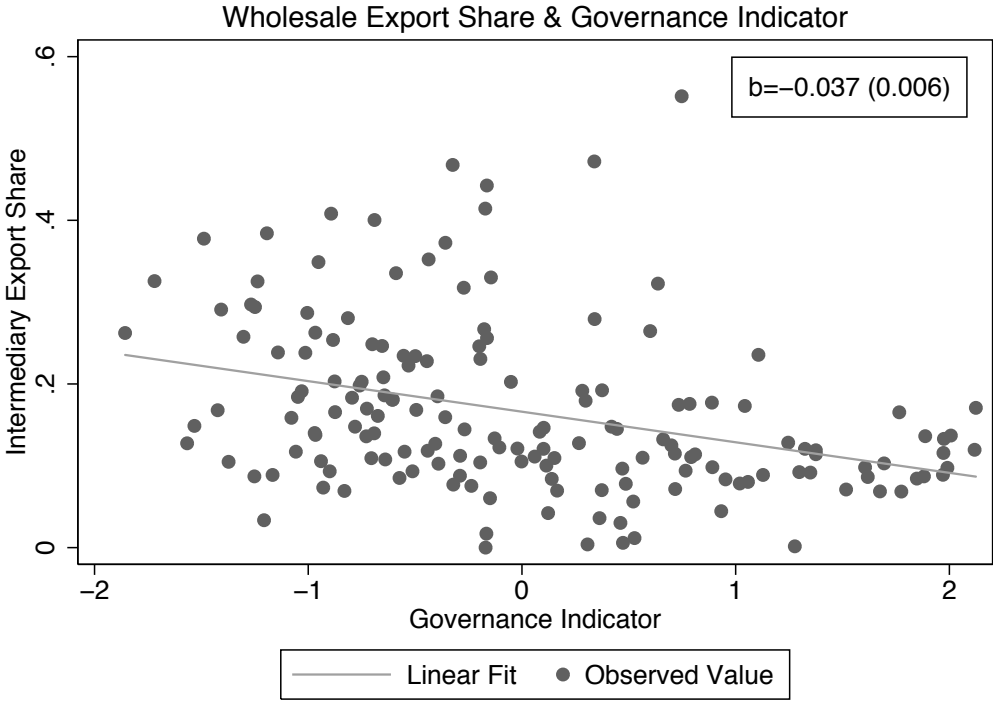
Direct versus Indirect



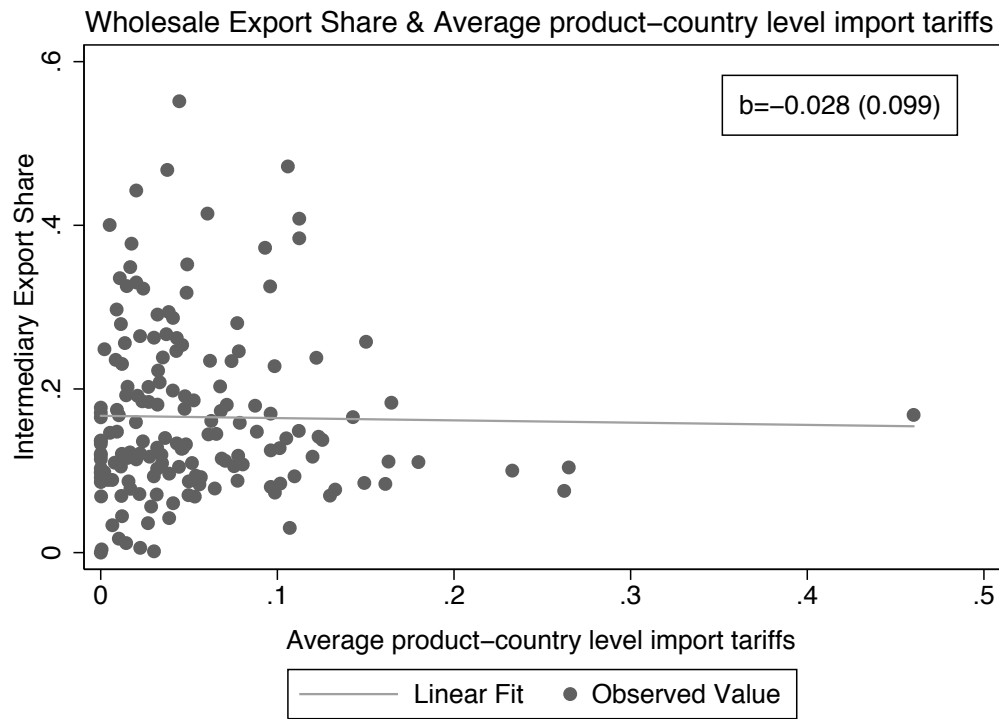
Direct versus Indirect



Direct versus Indirect



Direct versus Indirect



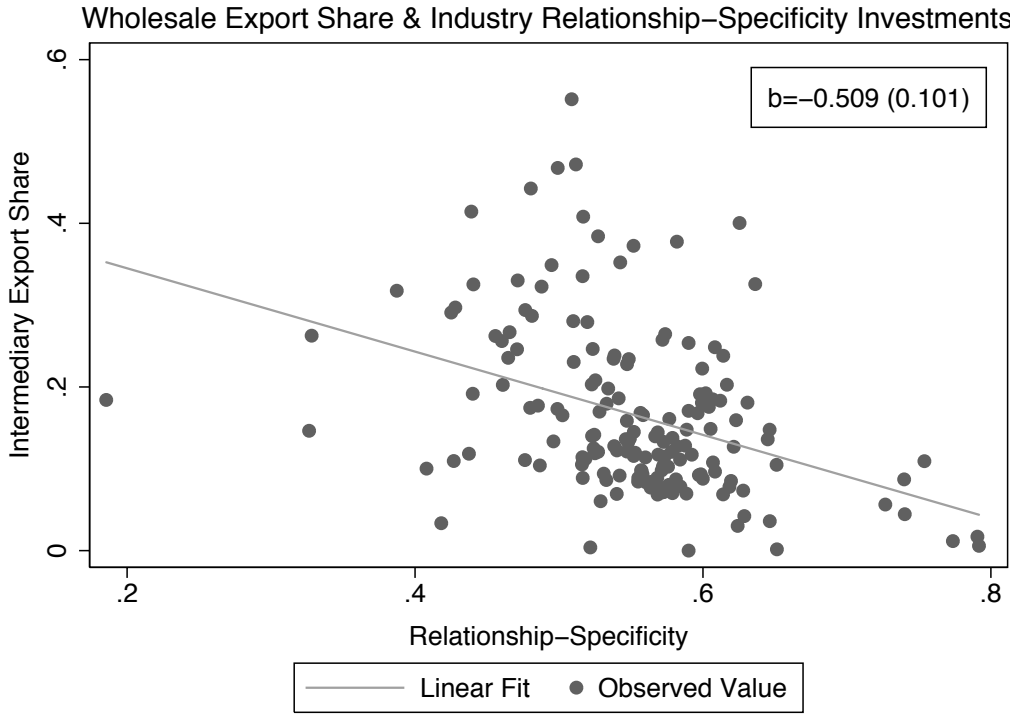
Market Characteristics

- Indirect exporters are more likely to serve:
 - Smaller markets
 - Markets with high fixed costs of exporting
 - Markets with weaker governance structures
- Variable trade costs do not seem to matter for direct versus indirect exports

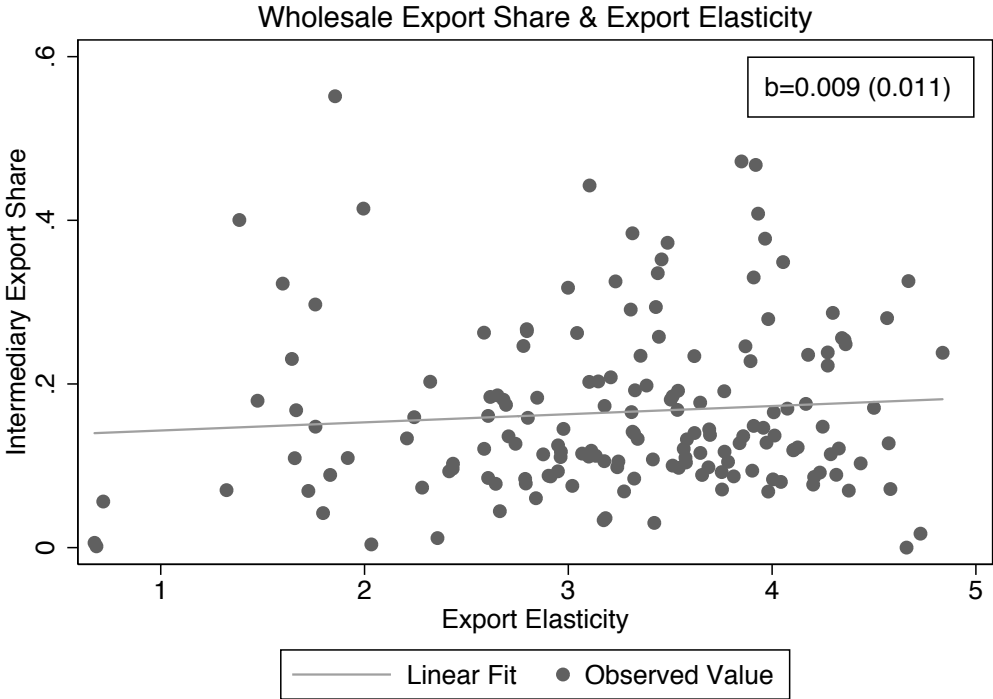
Intermediary Share in Exports

- Do they differ in terms of the products they export?
- Product characteristics*:
 - Relationship specificity (Nunn)
 - Elasticity (Broda- Weinstein)

Direct versus Indirect



Direct versus Indirect



Aggregate Exports and Country Characteristics

- Modified country-level gravity regression
 - GDP, distance, fixed cost measures, tariff
 - Full set of interactions with wholesale dummy

$$\ln X_c^i = (1 + \delta_w) [c + \beta Z_c] + \varepsilon_c$$

Aggregate Exports and Country Characteristics

Table 5

	Total Exports
Intermediary Dummy	1.315 (0.974)
Log (GDP)	0.860 (0.042)
* Intermediary Dummy	-0.035 (0.045)
Log (Distance)	-1.026 (0.069)
* Intermediary Dummy	-0.277 (0.062)
Market Costs	-0.510 (0.099)
* Intermediary Dummy	0.133 (0.073)
Governance Indicator	-0.033 (0.112)
* Intermediary Dummy	-0.237 (0.117)
Tariff	0.015 (0.012)
* Intermediary Dummy	0.000 (0.008)

Exports by Wholesalers

- Fall faster with distance
- Fall less with rising country fixed costs
- Rise less with improved country governance

Firm Exports and Country Characteristics

- Modified firm-level gravity regression
 - GDP, distance, fixed cost measures, tariff
 - Full set of interactions with wholesale dummy

$$\ln X_{fc} = (1 + \delta_w) [c + \beta Z_c] + \varepsilon_c$$

Firm Exports and Country Characteristics

Table 9

Firm Exports	
Log (GDP)	0.388 (0.026)
* Intermediary Dummy	-0.158 (0.015)
Log (Distance)	-0.341 (0.040)
* Intermediary Dummy	0.103 (0.022)
Market Costs	0.102 (0.072)
* Intermediary Dummy	0.058 (0.035)
Governance Indicator	0.059 (0.055)
* Intermediary Dummy	-0.084 (0.033)
Tariff	-0.008 (0.005)
* Intermediary Dummy	0.001 (0.002)

Wholesaler exports

- rise less with market size
- fall less with distance
- Increase in country fixed costs
- Rise less with improved country governance

Conclusions – Intermediaries in Trade

- Our understanding of “exporters” is still developing rapidly
- Trading firms exhibit substantial heterogeneity in terms of firm characteristics and product/country mix
- The work on intermediaries points out that there are multiple ways to access foreign markets.
- The results highlight the need to understand issues of the decision to produce both the good and the services associated with trade.
- This is clearly a small first step in developing our understanding of trade by intermediaries.

Who Trades What With Whom

- If we want to understand the short and long-run responses of trade flows to aggregate shocks and policy, we must understand who is trading
- Small but growing body of evidence of the importance of the joint determination of firm-type, product mix and source/destination country
- The way forward is not easy
 - Data requirements are severe
 - Both theory and empirics must address complicated, endogenous decisions
- However, the policy and welfare implications are potentially large