

Do Investment Agreements Necessarily Cause Offshoring? The Canada-Peru Case¹

Stephanie Houle

McMaster University

Canadian Economics Association

June 3, 2018

¹This project was funded by the Productivity Partnership as supported by the Social Sciences and Humanities Research Council of Canada.

The views and opinions expressed in this presentation are those of the author and do not necessarily reflect those of Statistics Canada.

Motivation

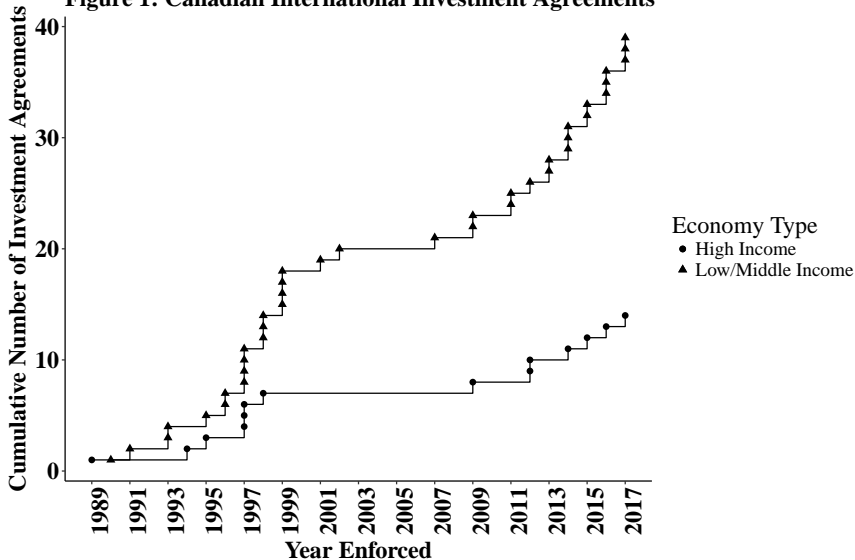
Since 1989, Canada has signed 54 International Investment Agreements. Types of agreements considered are:

1. Foreign Investment Protection Agreements (FIPA)
2. Free Trade Agreements (FTA)
3. Trade and Economic Cooperation Arrangement (TECA)

Of these 54 agreements,

- ▶ 14 with high income countries
- ▶ 40 with middle and low income countries

Figure 1: Canadian International Investment Agreements



Source: UNCTAD Division on Investment and Enterprise

Motivation

Why emerging economies differ:

- ▶ Primarily receive Foreign Direct Investment (FDI) from developed countries - Antrás and Yeaple (2014, Handbook of International Economics)
- ▶ Have contrasting legal systems and institutions

Explanations for firm FDI:

- ▶ Lower input costs - Antrás and Helpman (2004, Journal of Political Economy)
- ▶ Lower costs of selling to new markets - Helpman, Melitz and Yeaple (2004, American Economic Review)

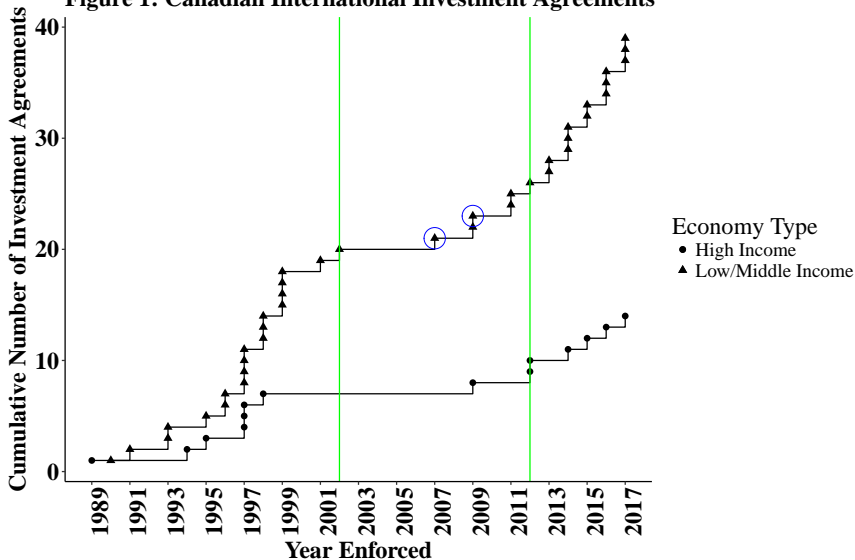
Research Question

Focus on the Canada-Peru FIPA of 2007:

- ▶ Did it increase Canadian FDI in Peru?
→ CANSIM tables on Canadian FDI (1987-2016)

- ▶ Did it increase Canadian offshoring?
→ Confidential Statistics Canada firm-level data (2002-2012)

Figure 1: Canadian International Investment Agreements



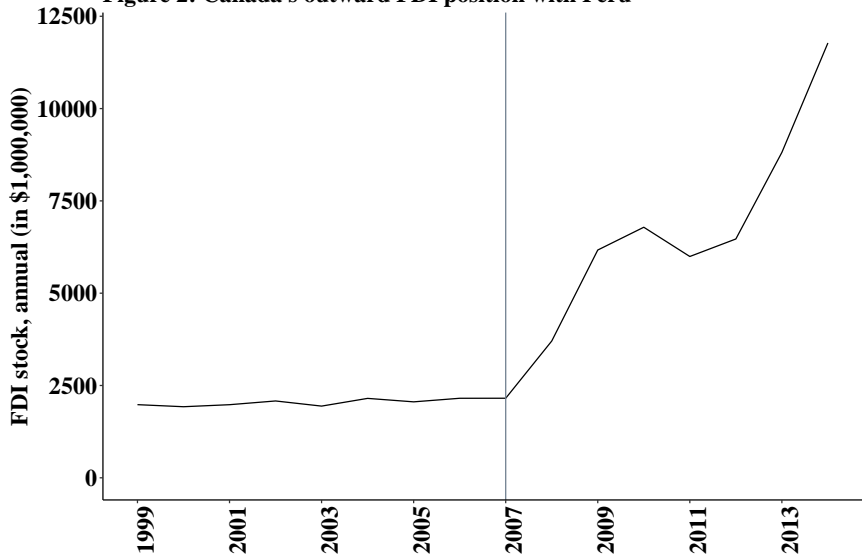
Source: UNCTAD Division on Investment and Enterprise

List of Canadian IIAs

Preview of Results

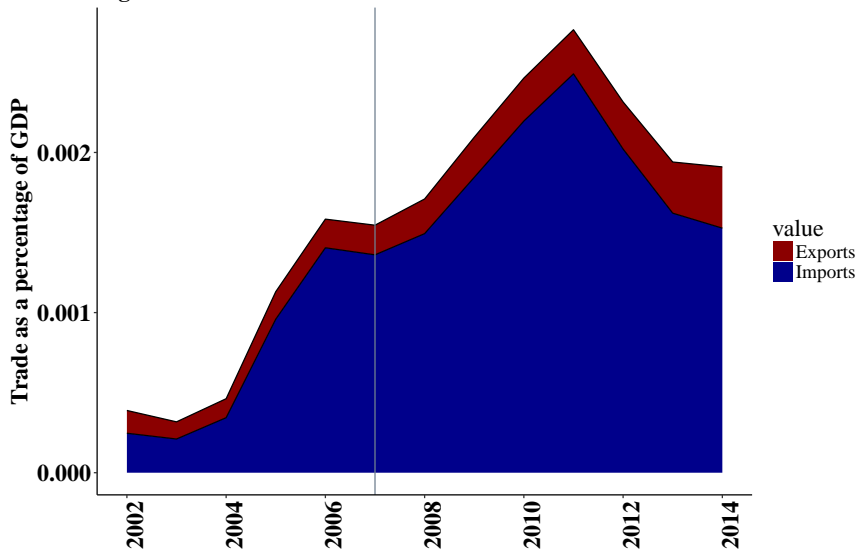
- ▶ 3-fold increase in FDI to Peru within 3 years of Canada-Peru FIPA
- ▶ Little or no associated increase in offshoring
- ▶ No significant change in Canadian employment for Canadian firms investing in Peru

Figure 2: Canada's outward FDI position with Peru



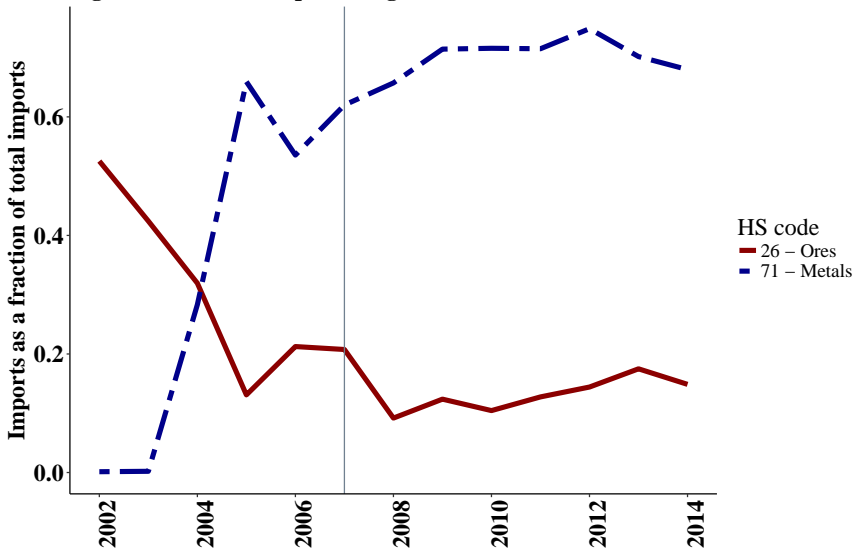
Source: CANSIM Table 376-0051 provided by Statistics Canada [1999-2014]

Figure 3: Canada's Trade with Peru



Source: UN Comtrade data provided by World Integrated Trade Solution, 2002–2014

Figure 4: Main HS import categories



Summary from the Aggregate Data

- ▶ Aggregate Canadian FDI in Peru increased
- ▶ Aggregate value of Canadian imports from Peru increased
 - ▶ Raw ore as a share of imports fell
 - ▶ Metal as a share of imports increased

⇒ Hence aggregate data seems to indicate investment agreement increased offshoring

- ▶ But I will show that firm microdata does not support this view

Details

Models

Microdata

Firm-Level Data

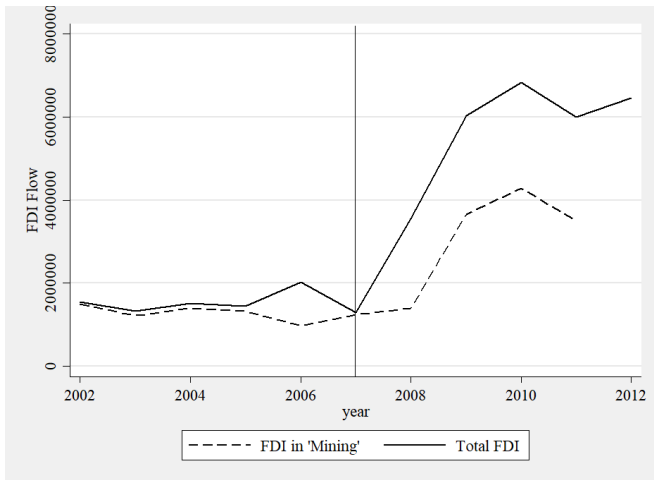
3 data sets from 2002 to 2012 are combined:

- ▶ National Accounts Longitudinal Microdata File - *Firm Sales, Individual Labour Units, NAICS*
- ▶ Canadian Direct Investment Abroad - *Firm investment in non-resident (FDI flow), NAICS*
- ▶ Raw Import data for research purposes - *Firm imports classified by Harmonized System 6 digit category*

Can identify firms that are both importing from and investing in Peru (i.e. dual firms).

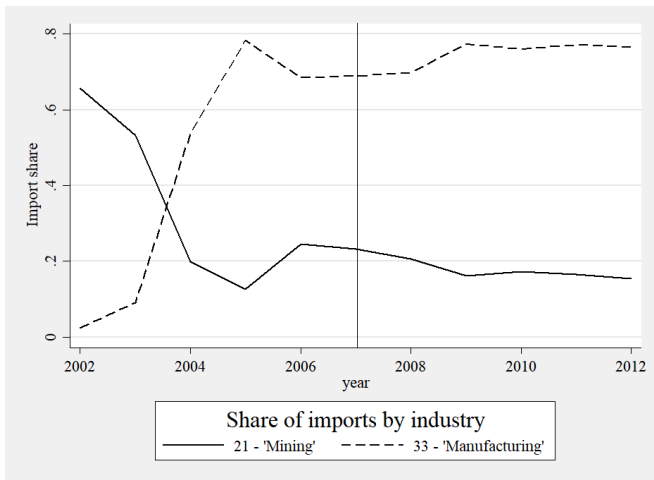
⇒ Use dual firms to identify offshoring

Figure 6: Composition of FDI



Source: Author's calculation on CDIA data set (Statistics Canada), 2002-2012

Figure 7: Composition of imports from Peru



Source: Author's calculation on Raw Import microdata (Statistics Canada), 2002-2012

Offshoring

- ▶ Only 14 dual firms in all 11 years of the sample
 - ▶ Majority of their FDI reported from *mining* industry (NAICS code 21)
 - ▶ None of their imports from *manufacturing* (NAICS code 33)
- ▶ Hence firms that increased FDI were not the same firms that increased imports
- ▶ No further analysis could be reported (such as productivity level) without breaching confidentiality

Employment Regression

$$\ln Empl_{i,t} = \alpha + \beta_1 \ln FDI_{i,t} + \beta_2 D_{07} + \beta_3 (\ln FDI_{i,t} * D_{07}) + \epsilon_{i,t}$$

- ▶ *Empl* Individual Labour Units
- ▶ *FDI* firm investment flow
- ▶ D_{07} dummy variable indicating year ≥ 2007

Results

Robustness Checks on Employment include:

- ▶ Include control variables for exchange and tariff rates in a Semiparametric specifications
- ▶ Share of employment and share of FDI
- ▶ Different cutoff years (2006 and 2008)

Result:

- ▶ Still no significant change in employment for Canadian firms investing in Peru.

Results

- ▶ The Canada-Peru FIPA was associated with a 3-fold increase in FDI to Peru
- ▶ Most of investment into mining sector
- ▶ Essentially none of the dual firms were both investing and importing in manufacturing sector \Rightarrow No offshoring
- ▶ No significant change in Canadian employment for Canadian firms investing in Peru

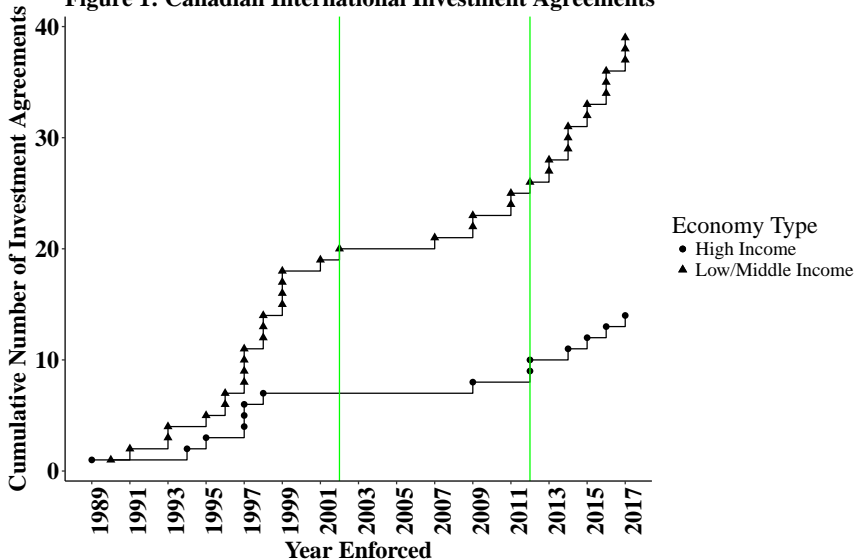
Discussion

- ▶ While Peru's wage is lower and FIPA lowered fixed cost of operating, no offshoring observed
 - ▶ Mining is not headquarter intensive sector
 - ▶ Peru is more of a natural resource intensive economy
- ▶ Perhaps Canadian firms used Peru as an export platform to serve nearby markets

Future Work

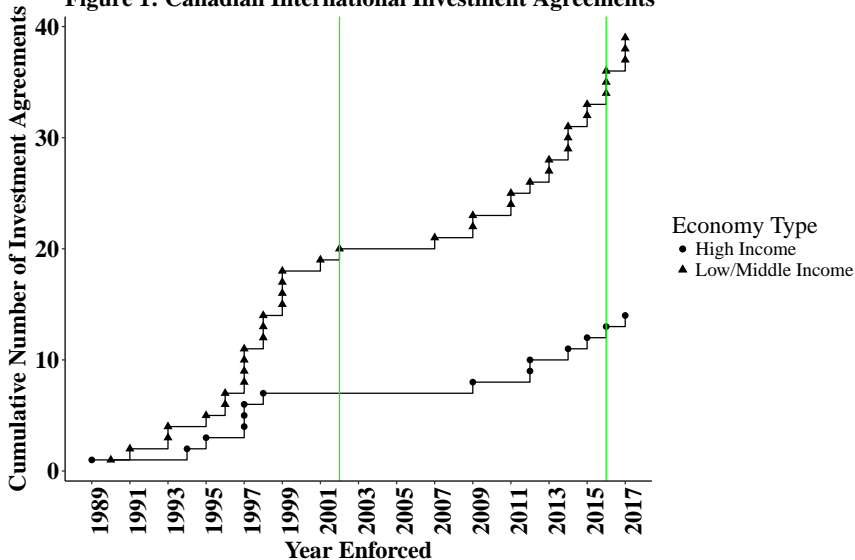
- ▶ Investigate a larger sample of countries of recent agreements Canada has signed as soon as data released
- ▶ Antras and Helpman (2004): Results suggest offshoring varies with firm productivity
- ▶ This hypothesis can be tested using this larger sample

Figure 1: Canadian International Investment Agreements



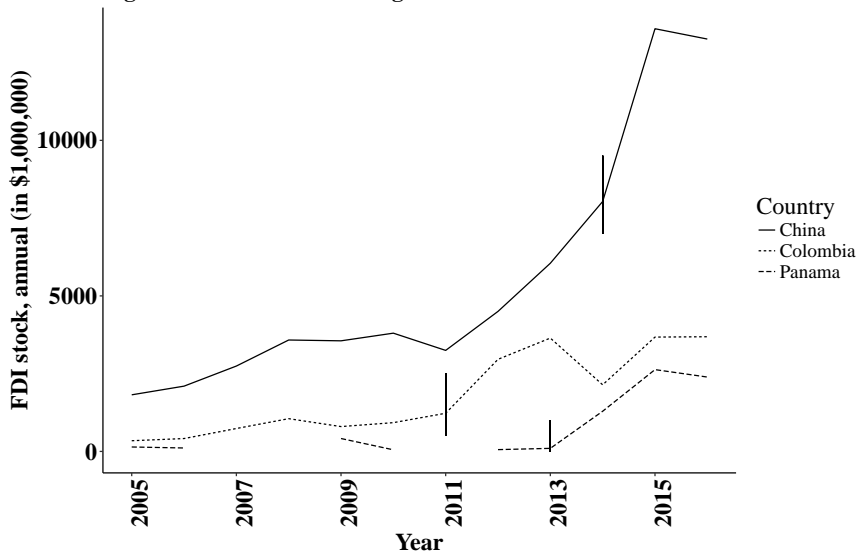
Source: UNCTAD Division on Investment and Enterprise

Figure 1: Canadian International Investment Agreements



Source: UNCTAD Division on Investment and Enterprise

Figure 8: New Investment Agreements



Source: CANSIM Table 376-0051 Statistics Canada, 2005-2016

Thank you!

List of Agreements

Country	Year.Enforced	Type	Agreement
US	1989	High Income	FTA
Poland	1990	Middle Income	FIPA
Russia	1991	Middle Income	FIPA
Argentina	1993	Middle Income	FIPA
Hungary	1993	Middle Income	FIPA
NAFTA	1994	High Income	FTA
Australia	1995	High Income	TECA
Ukraine	1995	Middle Income	FIPA
Philippines	1996	Middle Income	FIPA
Trinidad and Tobago	1996	Middle Income	FIPA
Barbados	1997	Middle Income	FIPA
Chile	1997	Middle Income	FTA
Ecuador	1997	Middle Income	FIPA
Egypt	1997	Middle Income	FIPA
Israel	1997	High Income	FTA
Norway	1997	High Income	TECA
Switzerland	1997	High Income	TECA
Iceland	1998	High Income	TECA
Panama	1998	Middle Income	FIPA
Thailand	1998	Middle Income	FIPA
Venezuela	1998	Middle Income	FIPA
Armenia	1999	Low Income	FIPA
Costa Rica	1999	Middle Income	FIPA
Lebanon	1999	Middle Income	FIPA
Uruguay	1999	Middle Income	FIPA
Croatia	2001	Middle Income	FIPA
Costa Rica	2002	Middle Income	FTA
Peru	2007	Middle Income	FIPA
EFTA	2009	High Income	FTA
Jordan	2009	Middle Income	FIPA
content...			

List of Agreements (con't)

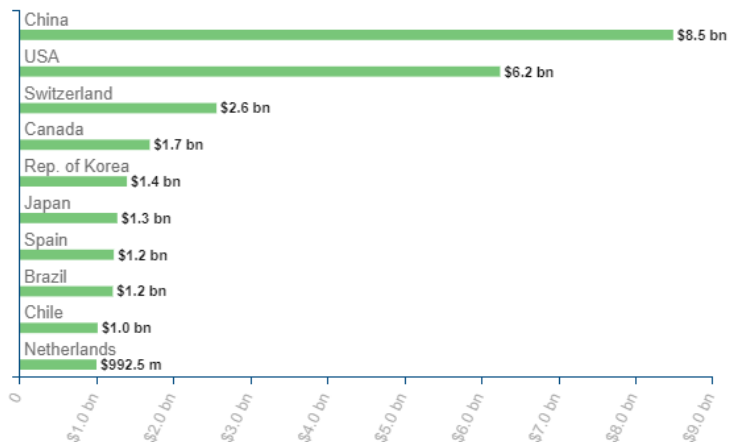
Country	Year.Enforced	Type	Agreement
Peru	2009	Middle Income	FTA
Colombia	2011	Middle Income	FTA
Romania	2011	Middle Income	FIPA
Czech Republic	2012	High Income	FIPA
Jordan	2012	Middle Income	FTA
Slovak Republic	2012	High Income	FIPA
Panama	2013	Middle Income	FTA
Tanzania	2013	Low Income	FIPA
Benin	2014	Low Income	FIPA
China	2014	Middle Income	FIPA
Honduras	2014	Middle Income	FTA
Kuwait	2014	High Income	FIPA
Cote d'Ivoire	2015	Middle Income	FIPA
Serbia	2015	Middle Income	FIPA
South Korea	2015	High Income	FTA
Cameroon	2016	Middle Income	FIPA
Hong Kong	2016	High Income	FIPA
Mali	2016	Low Income	FIPA
Senegal	2016	Low Income	FIPA
Burkina Faso	2017	Low Income	FIPA
EU	2017	High Income	FTA
Guinea	2017	Low Income	FIPA
Mongolia	2017	Middle Income	FIPA

Back

Codes List

- ▶ North American Industry Classification System (NAICS)
 - ▶ 21 – Mining, quarrying, and oil and gas extraction
 - ▶ 31-33 – Manufacturing
- ▶ Harmonized Classification System (HS)
 - ▶ 26 – Ores, slag and ash
 - ▶ 71 – Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad with precious metal and articles thereof; imitation jewellery; coin
- ▶ ILU measures every individual who appears on the T4 file. They are counted as one ILU if this was their only employer. If an individual received more than one T4 slip, the micro-data files are split between firms on the basis of their share of wages in different firms.

Peru Top Export Countries



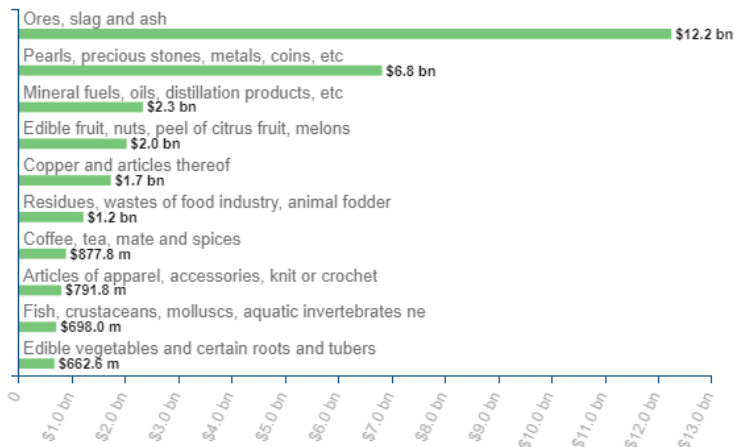
Peru - Top-10 export markets for goods in 2016

International Trade in Goods and Services based on UN Comtrade data

Developed by the Department for International Trade and the Department for Business, Energy and Industrial Strategy in the I

<https://comtrade.un.org/labs/dit-trade-vis/?reporter=604&type=C&year=2016&flow=2>

Peru Top Export Goods



Peru - Top-10 exports of goods to the world in 2016

International Trade in Goods and Services based on UN Comtrade data

Developed by the Department for International Trade and the Department for Business, Energy and Industrial Strategy in the I

<https://comtrade.un.org/labs/dit-trade-vis/?reporter=604&type=C&year=2016&flow=2>

Canada-Peru Agreements

- ▶ FIPA

- ▶ signed on November 14, 2006
- ▶ put into force on June 20, 2007

- ▶ FTA

- ▶ signed in May 29, 2008
- ▶ brought into force on August 1, 2009

FDI Models

- ▶ Vertical FDI (Offshoring)

Antras and Helpman (2004) - Heterogeneous firms can source inputs domestically or abroad

Antras and Helpman (2008) - Incorporates contractual frictions

- ▶ Horizontal FDI

Helpman et al. (2004) - Heterogeneous firms sell domestically, export, or use foreign subsidiaries

Antras and Helpman Model

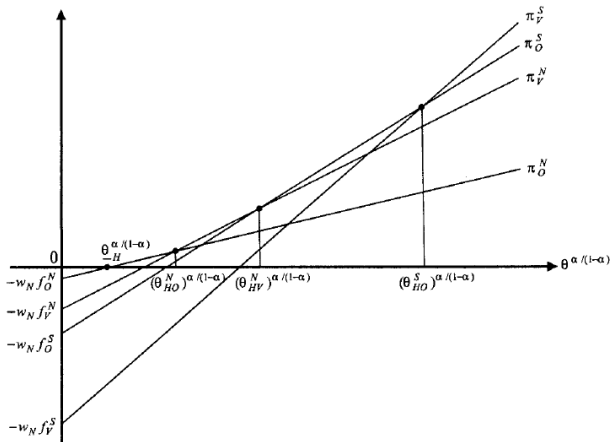
Antras and Helpman (2004) develop a North-South model with heterogeneous firms where:

- ▶ Final goods producers are in the North
- ▶ Wages in the North are higher
- ▶ Fixed cost of producing in the South is higher

because of contracting costs

- ▶ The least productive firms will source their inputs domestically
- ▶ The moderately productive firms will outsource the production of inputs to the South using contracts
- ▶ The most productive firms will produce inputs in South ← Vertical FDI

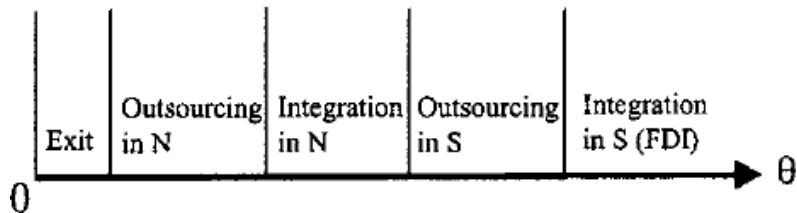
Figure 4: Offshoring decision according to productivity



Source: Antras and Helpman (2004)

Antras and Helpman Model

Figure 5: Offshoring decision according to productivity



Source: Antras and Helpman (2004)

Antras and Helpman Model

Degree of offshoring depends on:

- ▶ Wage gap between the North and the South
- ▶ Trading costs of intermediate inputs
- ▶ Degree of productivity dispersion within a sector
- ▶ Intensity of headquarter services
- ▶ Fixed cost of offshoring

Testable hypothesis: Investment Agreement lowers fixed cost, offshoring will increase [Back](#)

Related empirical work

Determinants of FDI using US data:

- ▶ Industry-level: Antras (2003) and Yeaple (2006)
- ▶ Firm-level:
 - ▶ Cross-sectional: Helpman et al. (2004), Nunn and Trefler (2013)
 - ▶ Panel Analysis: Trefler (2004), Brainard and Riker (1997)

Employment Results

VARIABLES	lnEmpl	lnEmpl
lnFDI	-0.136	0.0121
.	(0.0992)	(0.116)
D07	-1.491	-2.098
.	(1.154)	(1.213)
lnFDI*D07	0.161	0.216
.	(0.13)	(0.159)
MIN	.	-5.611***
.	.	(1.373)
MIN*lnFDI	.	0.129
.	.	(0.163)
MIN*lnFDI*D07	.	-0.0642
.	.	(0.217)
MIN*D07	.	0.853
.	.	(1.897)
Constant	6.339***	7.499***
.	(0.843)	(0.876)
Observations 224		

Antras, P. (2003). Firms, contracts, and trade structure. *Quarterly Journal of Economics* 118 (4), 1375-1418.

Antras, P. and Helpman, E. (2004). Global sourcing. *Journal of Political Economy* 112, 552-580.

Antras, P. and Helpman, E. (2008). *The Organization of Firms in a Global Economy.*, chapter Contractual Frictions and Global Sourcing. Harvard University Press.

Brainard, S. L. and Riker, D. A. (1997). U.s. multinationals and competition from low wage countries. *NBER Working Paper* 5959.

Helpman, E., Melitz, M. J., and Yeaple, S. R. (2004). Exports versus fdi with heterogenous firms. *American Economic Review* 94 (1), 300-316.

Nunn, N. and Trefler, D. (2013). Incomplete contracts and the boundaries of the multinational firm. *Journal of Economic Behavior and Organization* 94, 330-344.

Trefler, D. (2004). The long and short of the canada-u.s. free trade agreement. *American Economic Review* 94, 870-895.

Yeaple, S. R. (2006). Offshoring, foreign direct investment, and the structure of u.s. trade. *Journal of the European Economic Association*