

Global Value Chains: Spiders and Snakes

Encuentro del 10º Aniversario del WIE

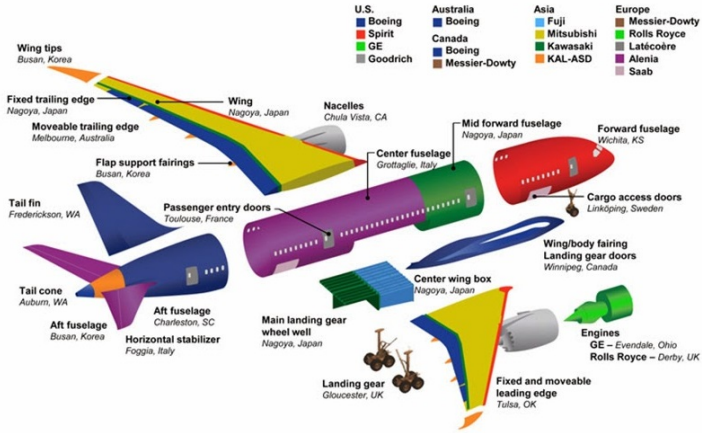
Pol Antràs

Harvard University

27 de Noviembre de 2018

A Spider: Boeing's Dreamliner

Global Partners Bring the 787 Together



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A Snake: Manufacturing a Chip



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A Hybrid (“Sniker”): Ford Fiesta



Spiders and Snakes

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- Does it matter that about $2/3$ of world trade is in intermediate inputs instead of final goods?
- Does it matter that trade relationships are often initiated by importers seeking to procure inputs from foreign suppliers?
- Does it matter that trade within global value chains (GVCs) is often sequential in nature?
- Do we need new models?

Road Map

- Today I want to highlight some novel features that arise when analyzing and estimating **multi-country global sourcing models**

❶ **Spiders:** Overview of Antràs, Fort and Tintelnot (2017)

❷ **Snakes:** Overview of Antràs and de Gortari (2017)

❸ **“Snikers”:** A Taste of On-Going Work

Spiders: Antràs, Fort and Tintelnot (2017)

The Margins of Trade

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- **Fact #2:** Superior performance (size, labor productivity, TFP) of firms with more complex sourcing strategies (importing from more countries)
- Similar facts on the export side motivated today's workhorse models of trade (c.f., Melitz, 2003)

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 - Easy to handle various margins of trade
- But importing inputs naturally affects the marginal cost of the firm!
- Import entry decisions are thus **interdependent** across markets
- Interdependencies across markets complicate the firm's decision
 - Which countries should a firm invest in importing from?
 - From which particular country should each input be bought?
 - How much of each input should be purchased?

Main Contributions of Antràs, Fort and Tintelnot (2017)

- Develop a quantifiable multi-country sourcing model
 - Characterization of intensive and extensive margins of global sourcing
 - Eaton-Kortum (2002) and multi-country Melitz (2003) are special cases

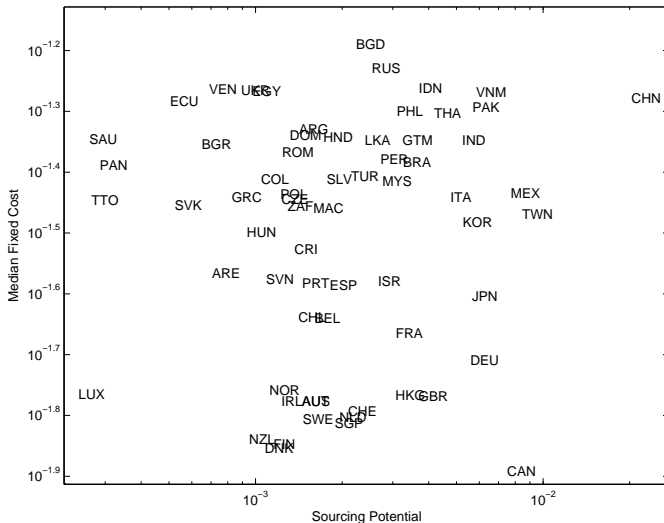
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- Study effects of shocks to global sourcing
 - Distinguish net vs. gross changes in sourcing / employment
 - Reduced-form evidence consistent with these predictions

Sourcing Potential vs. Fixed Cost Estimates



Estimates of the China Shock on Firm Sourcing

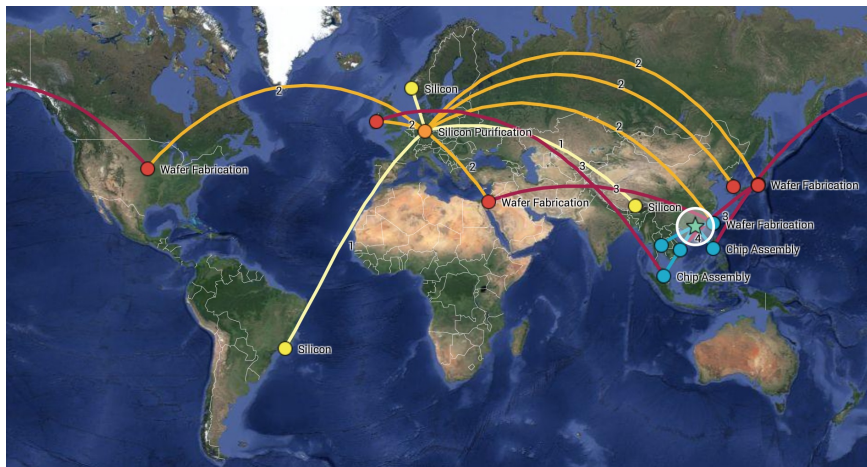
Dependent variable is change from 1997 to 2007 in firm n :

	Domestic inputs	No. of countries	Foreign inputs	Domestic inputs	No. of countries	Foreign inputs
	OLS			IV		
China, DHS	0.084*** (0.012)	0.255*** (0.007)	0.360*** (0.013)	0.934*** (0.258)	0.553*** (0.080)	0.654*** (0.197)
Constant	0.069*** (0.023)	0.144*** (0.013)	0.315*** (0.026)	-0.064 (0.047)	0.097*** (0.017)	0.269*** (0.044)
Adj. R ²	0.00	0.11	0.05			
N	127,400	127,400	127,400	127,400	127,400	127,400
First Stage Statistics	Coeff (se) 2.691*** (0.504)			KP Fstat 28.51		

Notes: All variables are changes or growth rates from 1997 to 2007. Standard errors are in parentheses and clustered by 439 NAICS industries. N rounded for disclosure avoidance.

Snakes: Antràs and de Gortari (2017)

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- Connection with logistics literature

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- ③ Show how to map our model to world Input-Output tables
- ④ Structurally estimate the model and perform counterfactuals

Application: GVCs and Development

- Gains from international specialization much larger with GVCs



“Snikers”: Antràs, Fadeev, Fort and Tintelnot

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- **To do:** estimate model by merging U.S. Census data and BEA data on inward and outward MNE operations

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- Both for **Spiders** and for **Snakes**, and for hybrids of the two
- Frameworks deliver novel qualitative insights, but can also be used to quantitatively assess the implications of the rise of GVCs
- I view this work as a stepping stone for a future analysis of the role of **man-made** trade barriers in GVCs
 - Should countries use policies to place themselves in particularly appealing segments of global value chains?
 - What is the optimal shape of those policies?