

New Perspectives on Global Value Chains

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National Bank of Belgium Conference

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Road Map

- ① Brief Introduction to Global Value Chains
- ② Brief Overview of Recent Work of Mine
- ③ Some Avenues for Future Work
- ④ Thoughts on Deglobalization

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WARNING: Some of the material relates to technical matters... but I will only cover it at a high level

Background

- Humans have traded at long distances since time immemorial (see Barjamovic et al., QJE, 2019)
- At a broad level, we understand why since (at least) 1817

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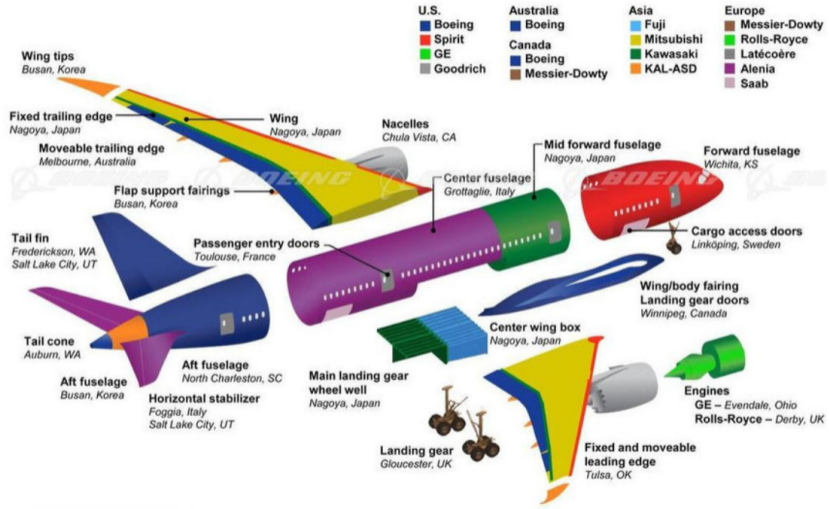
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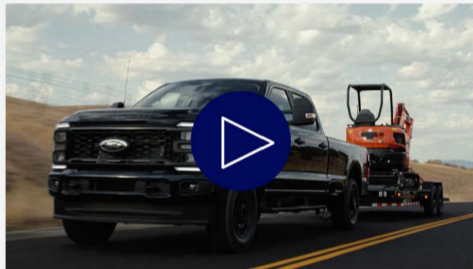
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- At a broad level, we understand why since (at least) 1817
- But modern workhorse models in the trade field abstract from salient features of the modern world economy
- Since (roughly) the early 1980s, a combination of forces (technology, policy, politics) led to a fast [globalization of production processes across borders](#)

Global Value Chains: Spiders and Snakes

A Spider: Boeing's Dreamliner



Another Spider: Ford F-150

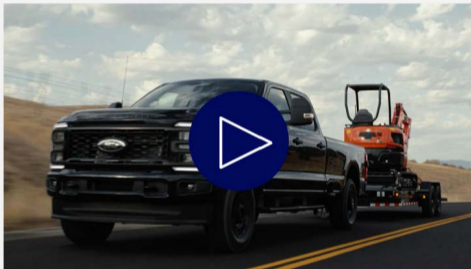


100% COMMITTED TO BEING 100% ASSEMBLED IN AMERICA*

Ford F-Series® are 100% assembled in America, including in states like Michigan, Kentucky and Ohio.

*Of foreign and domestic parts

Another Spider: Ford F-150



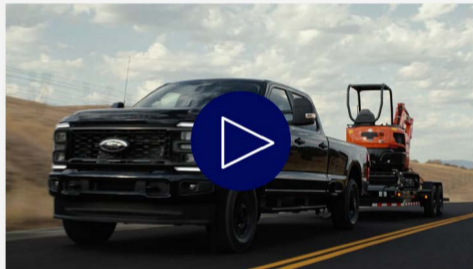
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- Only about 40% of Ford vehicles are assembled in the US

A Snake: Manufacturing of Semiconductors

Beyond Borders: Semiconductors are a Uniquely Global Industry

Typical semiconductor production process spans multiple countries:

4+ Countries, 4+ States, 3+ trips around the world, 100 days production time



A New Perspective on International Trade Flows

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- Can we treat these slices as independently determined from other related slices?
 - ▶ Not just GE or industry equilibrium interdependencies

Very Active Area of Research (see my 2022 Handbook Chapter with Chor)

- Much progress on the **empirical** front (but still significant challenges/limitations)
 - ▶ Macro measurement (Input-Output Analysis)
 - ▶ Micro measurement (Firm-Level Studies)

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- **Policy** analysis still in its infancy

Unifying Themes of My Recent Work on GVCs

- I have largely focused on **firm-level studies** in line with the 21th century trade literature
 - ▶ Aggregate trade flows = sum of trade decisions by heterogeneous producers
 - ▶ Seminal work of Melitz (2003) on exporting

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- What **novel** lessons can be learn from analyzing, estimating and quantifying **multi-country** models of GVCs?

Some Recent Work of Mine

- **Spiders**: Antràs, Fort and Tintelnot (AER, 2017)
- **Snakes**: Antràs and de Gortari (ECMA, 2020)
- **“Snikers”**: Antràs, Fadeev, Fort and Tintelnot (REStat, 2024)
- **Trade Policy**: Antràs, Fort, Gutiérrez and Tintelnot (JPE:Macro, 2024)
- **Role of Production Length and Interest Rates**: Antràs (WP, 2023)

Theoretical Challenges And Some Progress

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- Import entry decisions are thus **interdependent** across markets
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- Interdependencies across markets also complicate firm's intensive margin decisions

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 - ▶ **Firm-level** rather than plant-level export strategies (entry decisions are **complements**)

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- Regardless, assembly and export strategies are now combinatorial optimization problems each of dimensionality 2^J

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- Even under constant returns to scale, firms face a J^N combinatorial problem for each destination of consumption

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- Finally, straightforward to aggregate firm-level decisions for macro counterfactuals

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- Aggregate gains from trade (and negative real income implications of trade wars) are significantly higher in a world with GVCs than in traditional models
 - ▶ Autarky means giving up on use of **any** foreign value added (not just foreign consumer goods)
- Import tariffs on intermediate inputs are less desirable than on final goods (rationale for observed tariff escalation)
 - ▶ Note: increasing returns to scale are essential for this result (\neq Diamond-Mirrlees)

Empirical Challenges And Some Progress

How Do We Measure Global Value Chains?

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- **Solution #2:** merge datasets (but still at a very primitive stage)

Example of Solution #1: Antràs, Fort and Tintelnot (AER, 2017)

Focus on Data from the US

- 2007 data from the U.S. Census Bureau
 - ▶ Economic Censuses
 - ▶ Import transactions data
- Sample is all manufacturing firms (around 250,000 firms)
 - ▶ Include firms with non-manufacturing activity
 - ▶ 23% of employment and 38% of sales
 - ▶ 65% of (non-mining) imports
 - ▶ A quarter of these firms imports
- Structural Estimation
 - ▶ Limit analysis to countries with 200+ U.S. importers
 - ▶ 66 countries and the U.S.

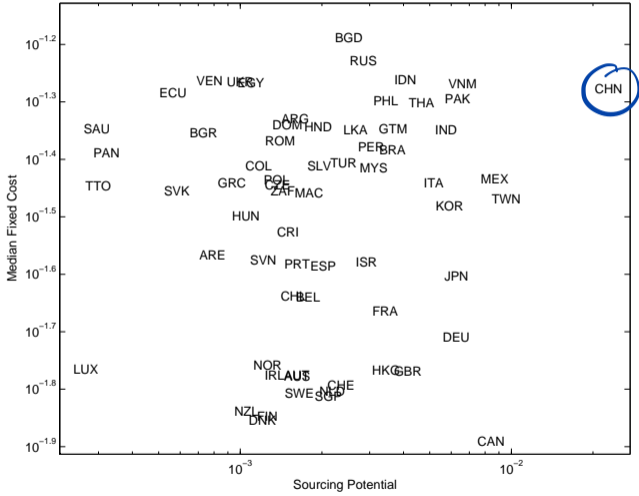
Some Firm-level Import Statistics

- Number of imported products (HS10) per source country and number of source countries per imported product

	Products Per Country			Countries Per Product		
	Firm-level			Firm-level		
	Mean	Median	Max	Mean	Median	Max
Mean	2.78	2.18	7.21	1.11	1.00	1.61
Median	2.00	2.00	2.00	1.03	1.00	1.00
95%tile	8.23	5.00	25.00	1.78	1.00	4.00

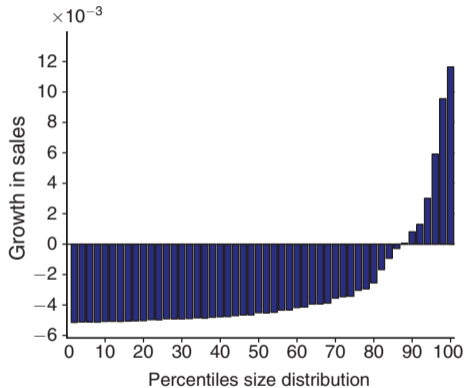
- How diversified were sourcing strategies in 2007? Not much!
- But some large importers are quite diversified (Chung, Harvard PhD thesis 2017)

Structural Estimation: Sourcing Potential vs. Fixed Cost Estimates



Counterfactual: China Shock

Panel A. Baseline



Panel B. Fixed sourcing strategies

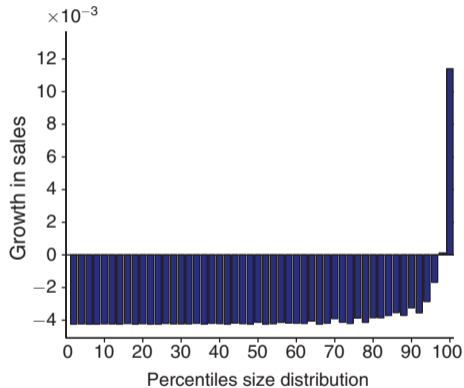


FIGURE 5. CHANGES IN THE SIZE OF FIRMS

Example of Solution #2: Antràs, Fadeev, Fort and Tintelnot (2024)

Newly linked 2007 US Census-BEA data

- Data from the [US Census Bureau](#)
 - ▶ Longitudinal Business Database: universe of private, non-farm employer establishments
 - ▶ All Economic Censuses: establishment sales
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- [Bureau of Economic Analysis](#) data on foreign direct investment
 - ▶ BEA US Direct Investment Abroad (outward FDI, BE-11)
 - ▶ BEA Foreign Direct Investment in the United States (inward FDI, BE-12)

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- Combine data via EINs and name and address matching
 - ▶ Census generally maps more EINs and activity to a unique firm
 - ▶ Use COS to distinguish US versus majority-owned foreign firms

New firm definitions using the combined data

- US MNE:
 - ▶ US firm with majority-owned foreign affiliates
 - ▶ We focus on firms with majority-owned foreign **manufacturing** affiliates (*FMA*s)

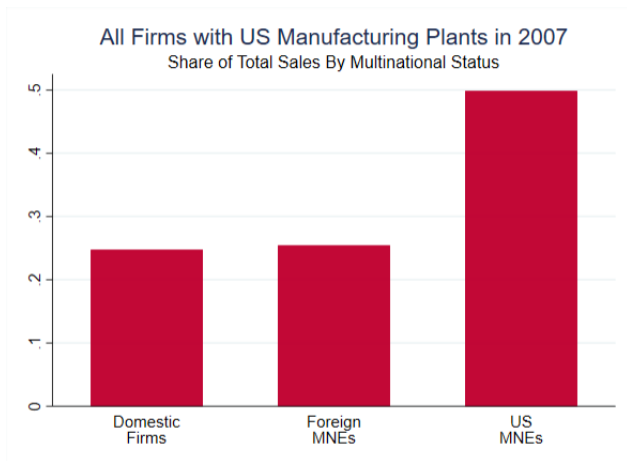
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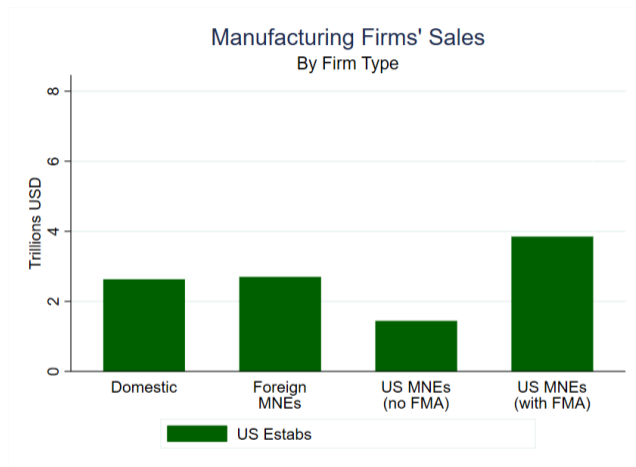
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- We focus on firms with one or more manufacturing plants in the United States

Multinational enterprises (MNEs) dominate aggregate activity



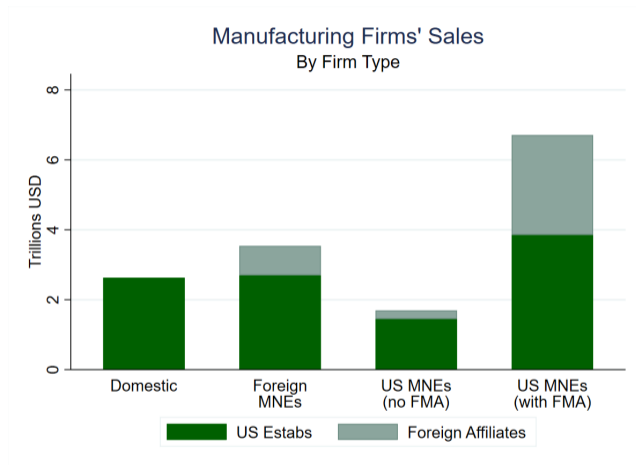
- Only 1,550 out of 246,000 firms with US manufacturing are US multinationals
 - ▶ but they account for 50% of US manufacturing sales, and foreign MNEs another 25%

Total sales by firms with US manufacturing plants by firm type



- US MNEs with foreign manuf affiliates (FMAs) are 1,200 firms (out of 1,550)

Total sales by firms with US manufacturing plants by firm type



- These FMAs produce **almost as much** abroad as their parents in the US
 - ▶ In fact, US MNEs' foreign affiliate sales are **four times larger** than their US exports

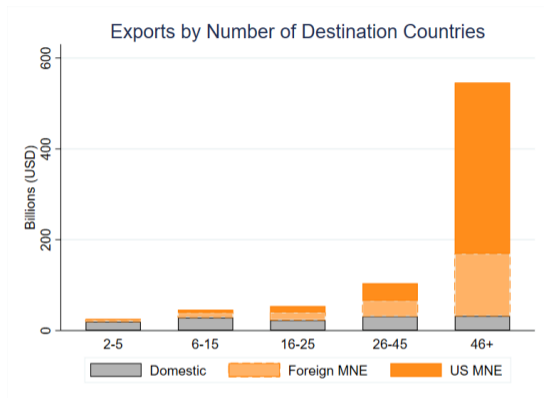
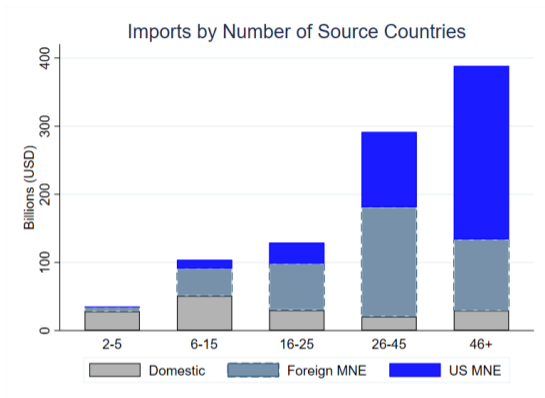
MNE dominate trade by US manufacturers

Firm Type	Panel A: Import Statistics				Panel B: Export Statistics			
	Share of Aggregate		No. of Countries		Share of Aggregate		No. of Countries	
	Importers	Imports	Avg	Median	Exporters	Exports	Avg	Median
Domestic	0.48	0.17	4	3	0.52	0.18	8	4
Foreign MNEs	0.03	0.40	12	8	0.03	0.27	19	10
US MNEs	0.02	0.43	21	17	0.02	0.54	40	35

Panel A presents the share of US importers and import value, and the average and median number of countries from which firms import by firm type. Panel B presents comparable statistics for US exports. Sample is all firms with US manufacturing plants that import from 2+ countries (left panel) or export to 2+ countries (right panel).

- MNEs account for 83% of US imports and 82% of exports by US manufacturers

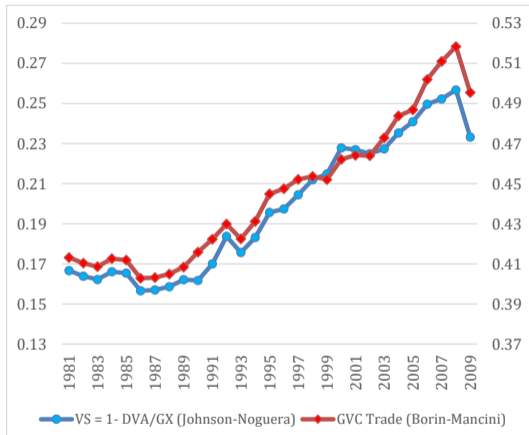
US trade flows by traders' extensive margin of countries



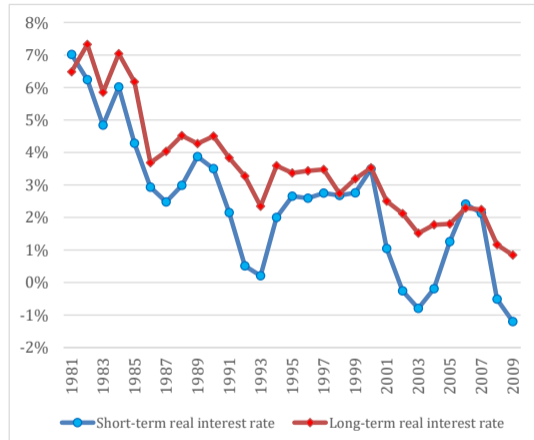
- MNEs have larger extensive and intensive margins of trade, even controlling for US size
- US MNEs more likely to import & export to countries in regions in which they have affiliates (rationale in AFFT, 2023)

Interest Rates and Global Value Chains: Antràs (2023)

Two Salient Trends in World Economy



Rising GVC Participation



Declining Real Interest Rates

The Paper in One Slide

- How do interest rates shape international specialization and GVCs?

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 - ③ What are the roles and effects of **trade credit** and **trade finance**?

Conclusions and Thoughts on the Deglobalization

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