

EC 791 - International Trade

Multinational Firms: an Introduction

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Introduction

Multinational firms are firms that have operations in multiple countries.

A multinational firm is composed by **headquarters** in the home country, and **foreign affiliates** in other countries.¹

These notes introduce the research on multinational production with three papers:

- Bernard, Jensen and Schott (2009): facts about the role/features of MN firms in the U.S. economy;
- Helpman (2006) JEL: survey of the literature on FDI and organization of firms;
- Antràs and Rossi-Hansberg (2009) ARE: survey of the most recent literature on trade and organization of firms.

¹For U.S.-based multinationals, the % of ownership of foreign affiliates varies from 6% (to be reported as a foreign affiliate in the BEA data) to total ownership.

Multinational Production: a Classification

Multinational production is often associated to **Foreign Direct Investment (FDI)**, through which the firm acquires assets to produce in a foreign country.

FDI can be:

- **horizontal**: when the firm's foreign facility is designed to serve the foreign market where is located;
- **vertical**: when the firm's foreign facility is designed to produce intermediate goods for the firm's own production process (to be shipped back to the headquarters in the home country);
- **export platform**: when the firm's foreign facility is designed to serve third countries' markets.

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The establishment of a foreign facility can happen through:

- **greenfield investment**: when the firm "builds" the foreign plant;
- **merger/aquisition (M&A)**: when the firm "buys" a pre-existing plant.

Multinational Production: a Classification (cont.)

Concepts related (somehow mistakenly) to multinational production are **offshoring** and **outsourcing**.

- **Offshoring** refers to all those activities that the firm performs abroad, either through foreign affiliates (MP) or through unrelated parties (no MP).
- **Outsourcing** refers to all those activities that the firm gets done through unrelated suppliers, either domestically or abroad (no MP).

	Domestic production	Offshoring
Integrated production	Domestic integration	Vertical FDI
Outsourcing	Domestic outsourcing	Foreign outsourcing

- **Intrafirm trade** refers to international trade between a multinational's headquarters and its foreign affiliates.

Bernard, Jensen and Schott (2009)

Introduction

BJS 09

- MN firms
- Intrafirm Trade

Helpman 06

ARH 09

Roadmap

LFTTD (Linked-Longitudinal Firm Trade Transaction Database) allows to distinguish between **arm's length** and **related-party (intrafirm)** trade.

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Define and study **Most Globally Engaged (MGE)** firms: firms that both import and export, and do part of both intrafirm.

MGE firms:

- Account for about 80% of U.S. trade;
- Employ 18% of the U.S. workforce;
- Pay higher wages and undertake more innovation than non-MGE firms;
- Have higher survival rates than all other firms;
- Are more likely to trade with low-income countries, especially intra-firm.

BJS09: Multinational Firms

- In the year 2000, only 1.1% of firms were multinational firms.
- Most MN firms are in the manufacturing sector, tend to be multi-product firms, and have a large number of trading partners:
 - 91% (75%) of intrafirm exports (imports) in manufacturing, mining and agriculture.
 - firms trading 10+ products account for 98% of intrafirm trade.
 - firms trading with 10+ countries account for 92% (84%) of intrafirm exports (imports).
- MN firms employ 27.4% of U.S. workforce, and account for 1/3 of total job creation 1993-2000.
- MGE firms are the most likely to trade with low-income countries:
 - 28% of MGE firms trade with at least one low-income country (compared to 4% for other firms).
 - Most intrafirm trade is with high-income countries, but the share of intra-firm trade with low-income countries is rising.

BJS09: Intrafirm Trade

Introduction

BJS 09

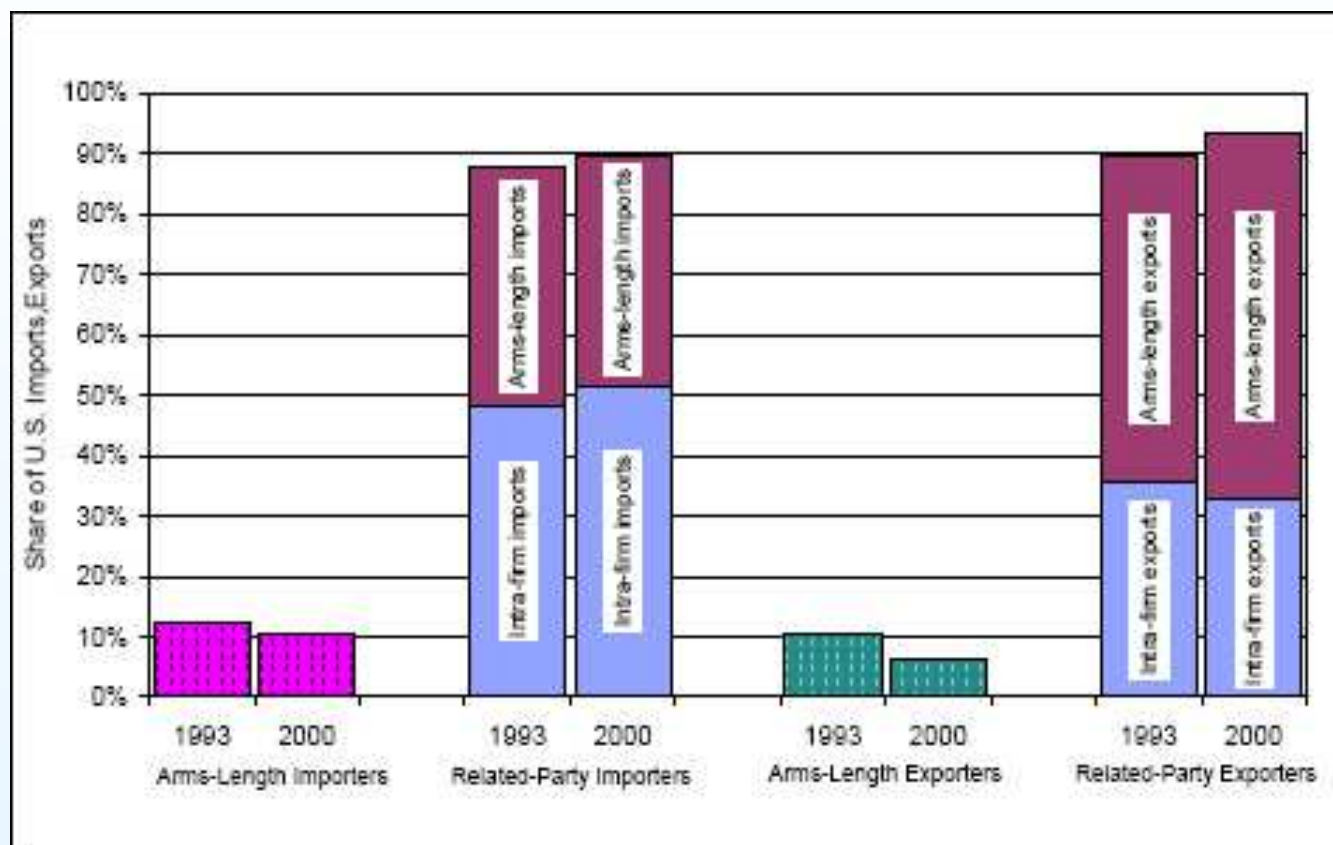
• MN firms

• Intrafirm Trade

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Roadmap



- About 90% of U.S. imports and exports flow through MN firms, and MN share of total trade increased over time (2% growth for imports, 4% for export).
- Intrafirm share of MN trade is about 50% for imports, 30% for exports.

Helpman (2006) JEL

Survey of the literature on the **international organization of production**.

Motivating facts:

- fast growth in trade and (even faster) growth in FDI in the 1990s;
- foreign affiliates of MN firms account for 35% of world trade and 11% of world GDP;
- growing trade in intermediate inputs, both at arm's length and intrafirm;
- growth in international vertical specialization – fragmentation of production;
- growth of outsourcing (both domestic and offshore).

Research in the field needs to be able to explain different sourcing strategies of multinational firms.

Organizational Choices

This strand of the literature attempts to answer a new set of questions:

- How do firms choose to sell in foreign markets via **exports** or via **horizontal FDI**?
 -
- How do firms choose between **integrated production** and **outsourcing**?
 -
- What determines the **location choice** of outsourced/integrated activities? (*i.e.*, the choice of **offshoring** *versus* domestic production)
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- How do firms choose to sell in foreign markets via **exports** or via **horizontal FDI**?
 - Helpman, Melitz and Yeaple (2004)
- How do firms choose between **integrated production** and **outsourcing**?
 - Grossman and Helpman (2002), Antràs (2003), Antràs and Helpman (2004) , Garetto (2013)
- What determines the **location choice** of outsourced/integrated activities? (*i.e.*, the choice of **offshoring** *versus* domestic production)
 - Antràs (2003), Antràs and Helpman (2004) , Grossman and Helpman (2005), Garetto (2013)

Export *versus* FDI

Fact: exporters have a 39% labor productivity advantage over non-exporters, and MN firms have a 15% labor productivity advantage over exporters.

Helpman, Melitz and Yeaple (2004): extend the Melitz' model to consider BOTH exports and FDI.



Sorting by productivity into status: MN firms are the most productive, followed by exporters, then by domestic firms.

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Proximity-concentration trade-off:

- **Horizontal FDI** \Rightarrow a firm gives up the concentration of production (the foreign plant is a duplicate of the domestic one), but achieves proximity to the foreign market with the foreign production facility.
- **Export** \Rightarrow production is concentrated in one (domestic) plant, but the firm gives up proximity between the producing plant and the foreign market.

(Notice: HMY 04 do not take a stand on the **ownership structure**.)

Input Sourcing

Facts: recent growth of domestic and international outsourcing, intrafirm trade in inputs.

How do firms source intermediates they use for production of final goods?

1. integration *versus* outsourcing;
2. domestic production *versus* offshoring;

These questions have been addressed using:

1.
 - (a) the **incomplete contracts** approach to the theory of the firm: Antràs (2003), Antràs and Helpman (2004);
 - (b) imperfect competition and differences between **arm's length and intrafirm prices**: Garetto (2013);
2. various trade models: factor content, Melitz-type, Ricardian.

Input Sourcing (cont.)

- **Antràs (2003):**

- Outsourcing prevails in labor-intensive sectors and when trading with labor-abundant countries.
- Integration prevails in capital-intensive (headquarters intensive) sectors and when trading with capital-abundant countries.



North-North intrafirm trade.

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- **Antràs and Helpman (2004):** given a ranking in the costs of domestic/foreign outsourcing/integration, predict sorting of firms with different productivities in the 4 options.

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- **Antràs and Helpman (2004):** given a ranking in the costs of domestic/foreign outsourcing/integration, predict sorting of firms with different productivities in the 4 options.
- **Garetto (2013):** given trade costs and market structure, derive optimal prices of outsourcing and optimal sourcing strategies in a Ricardian framework.

Antràs and Rossi-Hansberg (2009) ARE

Introduction

BJS 09

Helpman 06

ARH 09

- Summary
- Fragmentation
- Matching
- Firm Boundaries
- Other

Roadmap

Survey of the most recent literature on **organizations and trade**.

Main idea: classical trade theory takes the production function as given – the mapping from factors to final goods is exogenous. In reality, this mapping is the product of **organizational decisions**.

Antràs and Rossi-Hansberg (2009) ARE

Introduction

BJS 09

Helpman 06

ARH 09

● **Summary**

● Fragmentation

● Matching

● Firm Boundaries

● Other

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The literature on organizations and trade develops theories in which firms choose **which inputs** to use and **how to combine** them. These decisions include:

- the choice of **integration** *versus* **outsourcing**;
- **location choices** and choices regarding the extent of **fragmentation** of the production chain;
- the choice of **which type of factors** to employ.

Antràs and Rossi-Hansberg (2009) ARE (cont.)

Introduction

BJS 09

Helpman 06

ARH 09

● Summary

● Fragmentation

● Matching

● Firm Boundaries

● Other

Roadmap

Survey four “subsets” of theories:

1. Fragmentation of production and offshoring.
2. Matching and factor heterogeneity.
3. Contractual frictions and firms boundaries.
4. Contractual frictions and other organizational choices.

Fragmentation of Production and Offshoring

Introduction

BJS 09

Helpman 06

ARH 09

- Summary
- **Fragmentation**
- Matching
- Firm Boundaries
- Other

Roadmap

In otherwise neoclassical models, start from the idea that the production process can be “decomposed” in smaller units \Rightarrow “multistage” nature of production.

Fragmentation of Production and Offshoring

Introduction

BJS 09

Helpman 06

ARH 09

- Summary
- **Fragmentation**
- Matching
- Firm Boundaries
- Other

Roadmap

In otherwise neoclassical models, start from the idea that the production process can be “decomposed” in smaller units \Rightarrow “multistage” nature of production.

This becomes important for international economics when the different stages are performed in different countries.

Fragmentation of Production and Offshoring

Introduction

BJS 09

Helpman 06

ARH 09

- Summary
- **Fragmentation**
- Matching
- Firm Boundaries
- Other

Roadmap

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References:

- “classical” literature on **vertical specialization**: Yi (2003), Hummels, Ishii and Yi (2001).
- Grossman and Rossi-Hansberg (2008) on the **endogenous structure of offshoring**.
- Rodríguez-Clare (2010) on the **effects of offshoring on growth**.

Notice: all these papers take the set of tasks as given.

Introduction

BJS 09

Helpman 06

ARH 09

- Summary
- Fragmentation
- **Matching**
- Firm Boundaries
- Other

Roadmap

Matching and Factor Heterogeneity

This strand of the literature endogenizes the decision of **which types of factors to use**.

The distribution of factors in the population of a country affects organizational choices if – for example – production technologies exhibit **skill complementarity**: the matching of workers of different skill levels can affect the pattern of **comparative advantage** across countries.

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References:

- Grossman and Maggi (2000): one-to-one matching.
- Antràs, Garicano and Rossi-Hansberg (2006): formation of multi-agent “teams”; differences in the skill distribution across countries may induce the formation of “international teams”, which in turn affect production and wages across countries.

Contractual Frictions and Firms Boundaries

Introduction

BJS 09

Helpman 06

ARH 09

- Summary
- Fragmentation
- Matching
- Firm Boundaries
- Other

Roadmap

These theories emphasize the role of incomplete contracts in the decision of **integration** *versus* **outsourcing**.

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Introduction

BJS 09

Helpman 06

ARH 09

- Summary
- Fragmentation
- Matching
- Firm Boundaries
- Other

Roadmap

These theories emphasize the role of incomplete contracts in the decision of **integration** *versus* **outsourcing**.

- Grossman and Helpman (2002): the relationship between a final good producer and a supplier is characterized by a potential hold-up problem: the supplier must undertake a relationship-specific investment, which:
 - gives incentives to the final good producer to offer an ex-post low remuneration;
 - in turn gives incentives to the supplier to undertake a lower-than-optimal investment.

When this problem is severe, internalization may be optimal.

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Introduction

BJS 09

Helpman 06

ARH 09

- Summary
- Fragmentation
- Matching
- Firm Boundaries
- Other

Roadmap

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When this problem is severe, internalization may be optimal.

- Antràs (2003) and Antràs and Helpman (2004) apply this view to international trade models: vertical integration does not solve the hold-up problem, but gives more contracting power to the final good producer.

Contractual Frictions and Other Organizational Choices

Introduction

BJS 09

Helpman 06

ARH 09

- Summary
- Fragmentation
- Matching
- Firm Boundaries
- Other

Roadmap

It is possible that contractual frictions also directly affect the **location choice**: incomplete contracts can be a **source of comparative advantage**.

Contractual Frictions and Other Organizational Choices

Introduction

BJS 09

Helpman 06

ARH 09

- Summary
- Fragmentation
- Matching
- Firm Boundaries
- Other

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References:

- Acemoglu, Antràs and Helpman (2007): greater contract incompleteness leads to the adoption of less advanced technologies.
- Costinot (2007): the contractual environment affects the division of labor and aggregate productivity.
- Antràs and Staiger (2008): trade policy under incomplete contracts.

Introduction

BJS 09

Helpman 06

ARH 09

Roadmap

Roadmap

1. “Classical” theory of MN firm: Helpman (1984, 1985).
2. Export versus FDI: the proximity-concentration trade-off.
3. Quantitative models of MP.
4. Vertical specialization and the fragmentation of production.
5. Trade and the incomplete contracts theory of the firm.
6. Offshoring and outsourcing.