International Economics I

Lecture Set 7: Vertical FDI

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Multinationals and Vertical FDI

- multinationals (MNCs) do not see FDI only as a substitute of trade!
- vertical FDI: firms move part of the production process to another country
- costs & benefits of vertical FDI:
  - fixed cost of setting a subsidiary abroad
  - lower variable production cost
    - exploit comparative advantage
- we extend Melitz model to analyze the choice of vertical FDI

Multinationals and Vertical FDI: Costs

- same set-up with heterogeneous firms, but different technology:
- production requires
  - "headquarters" tasks (e.g., R& D, marketing, design, etc.)
    - can be performed only in the headquarters in the North with local labor (wage $w_N = 1$)
  - production tasks
    - can be performed also in a subsidiary in the South with local labor (wage $w_S < 1$)
  - marginal cost of producing in N vs S:

$$MC_N = \frac{w_N^{1-\beta} w_N^{\beta}}{\varphi} = 1/\varphi \text{ vs } MC_S = \frac{w_N^{1-\beta} w_S^{\beta}}{\varphi} = w_S^{\beta}/\varphi$$

    - $\beta \in (0,1)$ = share of physical production cost in variable cost

Multinationals and Vertical FDI: Costs

- trade-off between variable and fixed cost
  - profits N vs S:

$$\pi_N = A\varphi^{\alpha/(1-\alpha)} - f_N \text{ vs } \pi_S = A(\varphi/w_S^{\beta})^{\alpha/(1-\alpha)} - f_S$$

  - firms choose FDI if it saves in variable cost more than in fixed cost
  - multinationals are more productive ($\varphi > \varphi^*_{VI}$)

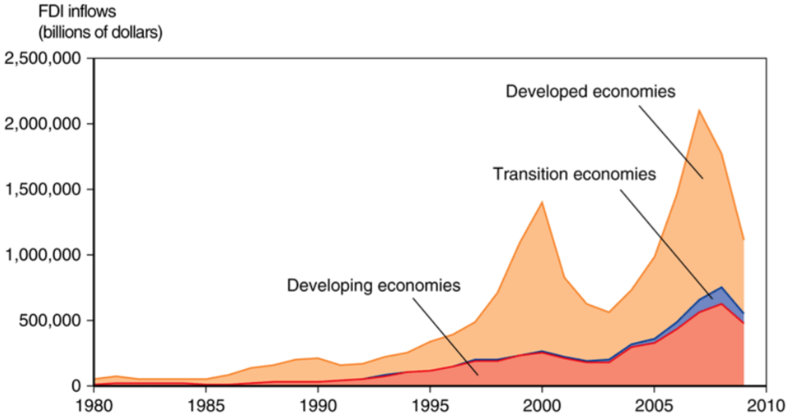
$$A(\varphi^*_{VI})^{\alpha/(1-\alpha)}\left(w_S^{-\beta\alpha/(1-\alpha)} - 1\right) = f_S - f_N$$

- vertical FDI more likely ($\varphi^*_{VI} \downarrow$) if
  - comparative advantage is strong (low w_S)
  - set-up cost abroad is relatively low (low $f_S - f_N$)
  - share of variable cost in production cost is high (high β)

FDI in General

- it is FDI when investment represents more than 10% of the value of the foreign firm
- FDI may be:
  - "greenfield": set up a new firm abroad
  - "brownfiel": invest in existing plants (mergers and acquisitions)
- features of FDI and MNCs' activities:
  - level of development of source and destination country: different patterns
  - which are the sectors with more MNCs activity?
  - which are the characteristics of Multinationals?
  - what do MNCs? subsidiaries do?
  - how much greenfield and brownfield FDI in advanced countries vs LDC?

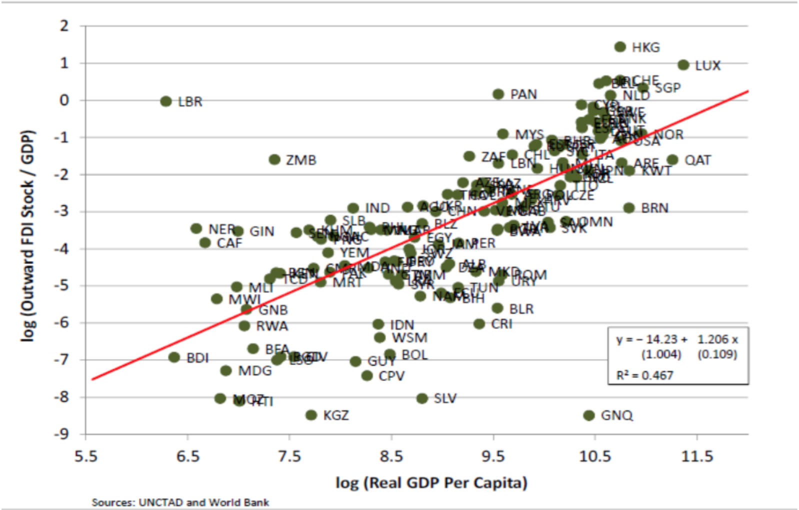
FDI over time



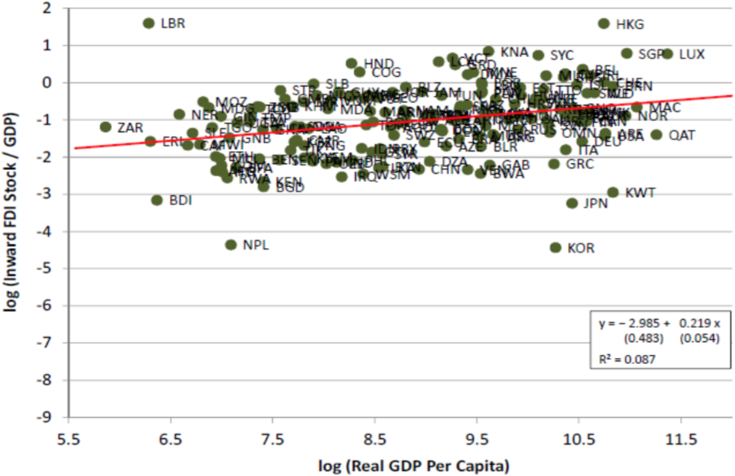
Development and FDI

- advanced countries do more FDI
- advanced countries receive (slightly) more FDI
- high FDI inflows and outflows between advanced countries LDCs are more likely to
- receive FDI than to do it

Advanced Countries Do More FDI



Advanced Countries Receive (Slightly) More FDI

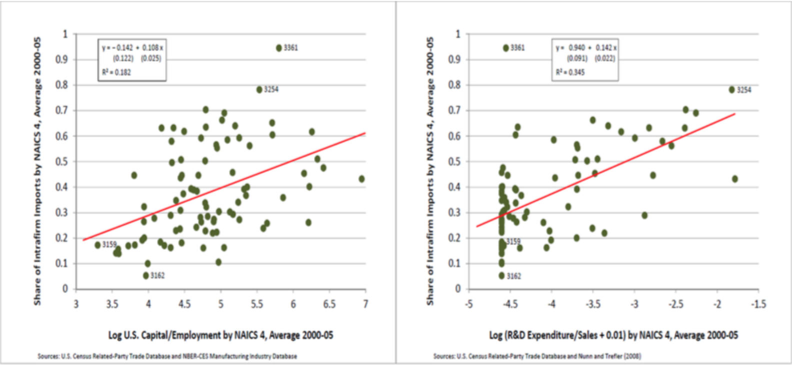


Sources: UNCTAD and World Bank

Sectors and Activity of Multinationals

- where there are MNCs there's intra-firm trade
  - headquarters to subsidiaries and back
- the share of import captured by intra-firm import
  - is higher in capital and R&D intensive sectors
    - intermediate goods for textiles and shoes are imported from external firms
- lot of intra-industry FDI

Intra-firm Import and Capital and R&D Intensity



What Distinguishes Multinationals?

- MNCs' subsidiaries, relative to local firms:
  - are larger (by employment and sales)
  - are more productive
  - invest more in R&D
  - are more export oriented

What Distinguishes Multinationals?

Table 1. Affiliates Relative to Local Firms

	Finland	France	Ireland	Holland	Poland	Sweden
Enterprises	1.6	2.0	13.4	3.4	16.0	2.8
Employment	17.2	26.2	48.0	25.1	28.1	32.4
Sales	16.2	31.8	81.1	41.1	45.2	39.9
R&D Expenditure	13.1	27.4	77.3	35.8	20.9	52.0
Exports	17.5	39.5	92.3	60.0	69.1	45.8

Source: OECD (2007).

What Do US MNCs' Subsidiaries Do?

- headquarters specialize in R&D and product design
- subsidiaries:
  - mainly sell in their own markets (horizontal FDI)
  - second, export to other countries (hub for horizontal FDI)
  - third, export back to the US (vertical FDI)

What Do US MNCs' Subsidiaries Do?

Table 2. Destination of Affiliate Sales by Industry

	Host Country	Other Foreign	United States
Total Manufacturing	55	34	11
Textile and Apparel	45	35	19
Metals and Minerals	60	32	8
Chemicals and Plastics	58	36	6
Machinery	49	36	15
Computers and Electronics	40	43	16
Electronic Equipment	47	40	13
Transport Equipment	47	35	19
Other	66	26	8

Source: 2009 Benchmark Survey of U.S. Direct Investment Abroad, BEA.

Greenfield vs Brownfield

- UNCTAD data for 2007
- mergers and acquisitions represent
  - 50% of FDI flows at world level
  - 68% of FDI flows in advanced countries
  - 18% of FDI flows in LDCs

Offshoring, FDI and Licensing/Outsourcing

- offshoring = acquiring intermediate goods and/or services from abroad
  - trade in intermediate goods = 40% of world trade in manufacturing
- offshoring can be done
  - internally (FDI) → intra-firm trade = 1/3 world trade
  - externalizing:
    - licensing (instead of horizontal FDI)
    - outsourcing (instead of vertical FDI)

Offshoring: FDI vs Licensing/Outsourcing

- how to choose licensing vs horizontal FDI? trade-off
  - save in fixed production cost
  - risk of imitation/loss of exclusive technology
  - in general, risk overweighs cost saving
    - we observe little licensing
    - risk of imitation/loss of exclusive technology
- how to choose outsourcing vs vertical FDI? trade-off
  - cost saving: foreign providers can specialize and serve more customers (economies of scale)
  - critical factors/processes: more likely costly ex-post renegotiation with the provider (hold-up problem)
  - this trade-off explains:
    - lot of FDI in sectors with high capital and R&D intensity
    - lot of outsourcing in textiles, accessories, shoes...

Who Does Offshoring?

- in general larger firms do offshoring (of any type)
  - better exploit lower variable costs
  - better cover the higher fixed costs with economies of scale

Consequences of Multinationals and Outsourcing

- same effects as trade in comparative advantage models
  - to the extent that internationalization follows comparative advantage
  - gains for both countries
  - redistributive effects
- gains related to economies of scale
- knowledge spill-overs in the destination country and technological progress
  - more efficiency
  - redistributive effects (e.g. through change in factor intensity of production)
  - assimilation of countries (partial loss of gains from trade?)