Foreign Direct Investment Selection and Costs in Monopolies

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Abstract

Do monopolists with lower marginal costs gain more from foreign direct investment (FDI)?

The answer depends on the form of trade costs saved when open a foreign plant for horizontal FDI and similarly on the form of production costs saved for vertical FDI.

Low-cost firms pick horizontal FDI over exporting when unit trade costs dominate; sufficient iceberg trade costs lead high- or intermediate-cost firms to choose horizontal FDI.

Similarly, low-cost firms pick vertical FDI over producing back home when cost savings are mostly additive; sufficient proportional cost savings cause high- or intermediate-cost firms to choose vertical FDI.

Introduction

Are multinational firms more productive than firms who do not engage in FDI?

Standard theories, mostly under monopolistic competition, predict that the most productive (lowest marginal cost) firms engage in horizontal FDI to avoid trade costs, while less efficient firms export or serve only the domestic market.

This paper shows that in monopolies with linear demand, selection of firms into FDI hinges on the form of cost savings (unit or proportional), regardless of whether FDI is horizontal (avoiding trade costs) or vertical (lower production costs).

Horizontal FDI Model

Monopoly: Linear demand $p = a - bQ$ (for foreign country), with constant marginal cost c that varies by industry.

Mode decision: Serve a foreign market by exporting from a domestic factory or build a factory there.

Export option: Marginal cost when exporting $\delta c + \tau > c$, where trade costs can be unit $\tau > 0$ and/or iceberg $\delta > 1$.

Horizontal FDI option: Lower marginal cost c avoids trade costs but incurs fixed cost G to build another factory.

Horizontal FDI Results

Gain from FDI = horizontal FDI profits (for zero fixed cost) minus exporting profits = maximum fixed cost the firm would pay. Pick FDI if $\bar{G}^X > G$.

Gap highest at zero marginal cost for unit trade costs, but it increases with marginal cost for iceberg trade costs.

With **unit trade costs** $\tau > 0$, monopolists with low enough marginal costs choose horizontal FDI, aligning with the standard prediction. Higher τ induces more FDI.

Indifferent between exporting and horizontal FDI for fixed cost threshold equal to the variable cost savings $\bar{G}^X = \tau(Q^F + Q^X)/2$ for unit trade costs.

With **iceberg trade costs** $\delta > 1$, higher- or intermediate-cost monopolists may be the ones who engage in horizontal FDI as these cost savings rise with marginal cost. Higher δ (or lower fixed cost G) induces more FDI.

Fixed cost threshold $\bar{G}^X = c(\delta - 1)(Q^F + Q^X)/2$ for iceberg trade costs and $\bar{G}^X = [\tau + (\delta - 1)c](Q^F + Q^X)/2$ for linear trade costs.

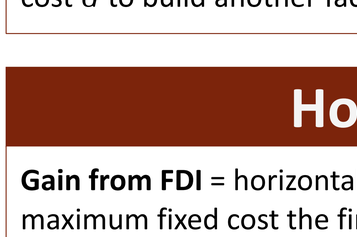


Figure 1. Profits: Horizontal FDI vs Exports.

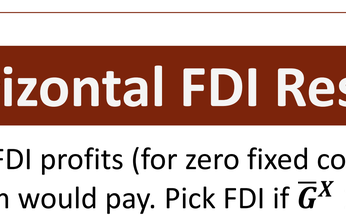


Figure 2. Horizontal FDI (unit trade costs).

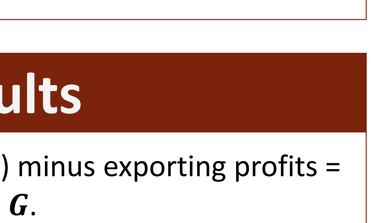


Figure 3. Horizontal FDI (iceberg trade costs).

Table 1. Cost Specifications

Mode Choice	Marginal Cost	Fixed Cost	Profits
Exporting	$\delta c + \tau$	0*	$\pi^X = (p^X - \delta c - \tau)Q^X$
Horizontal FDI	c	G	$\pi^F = (p^F - c)Q^F - G$
Domestic Production	c	0*	$\pi^D = (p^D - c)Q^D$
Vertical FDI	$\frac{c}{\omega} - x$	G	$\pi^V = \left(p^V - \frac{c}{\omega} + x\right)Q^V - G$

Vertical FDI Model

Monopoly: Linear demand $p = a - bQ$ (for world), with constant marginal cost c that varies by industry.

Mode decision: Serve the world market by producing at domestic factory or build a foreign factory.

Domestic production option: Higher production costs c with lower fixed costs.

Vertical FDI option: Lower production costs $\frac{c}{\omega} - x$ with $\omega > 1$ and $x > 0$.

Vertical FDI Results

Gain from FDI = vertical FDI profits (for zero fixed cost) minus domestic production profits = maximum fixed cost firm would pay.

Gap highest at zero marginal cost for unit cost savings, but it increases with cost for proportional cost savings.

For **unit cost savings** $x > 0$ (foreign production reduces marginal costs by a fixed amount x per unit compared to domestic production), the lowest-cost firms select into vertical FDI. Larger x induces more FDI.

Indifferent between domestic production and vertical FDI for fixed cost threshold $\bar{G}^V = x(Q^D + Q^V)/2$ for unit cost savings.

For **proportional cost savings** $\omega > 1$, higher- or intermediate-cost firms can be the ones attracted into vertical FDI. Larger ω (or lower G) induces more FDI.

Fixed cost threshold $\bar{G}^V = c\left(1 - \frac{1}{\omega}\right)(Q^D + Q^V)/2$ for proportional cost savings and $\bar{G}^V = \left[x + \left(1 - \frac{1}{\omega}\right)c\right](Q^D + Q^V)/2$ for linear cost savings.

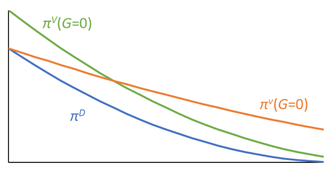


Figure 4. Profits: Home Production vs Vertical FDI.

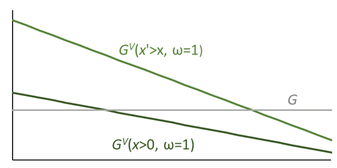


Figure 5. Vertical FDI (unit cost savings).

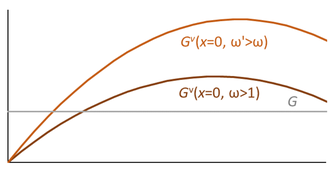


Figure 6. Vertical FDI (proportional cost savings).

Conclusions

In monopolies, lower costs do not always increase gains from FDI. Selection into FDI for monopolies is not always by the more productive (lower cost) firms.

Form of cost savings (unit versus proportional) is crucial in determining selection pattern.

Sufficient proportional cost savings from FDI can cause higher costs to increase the attractiveness of both horizontal and vertical FDI.

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