1506
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Firm heterogeneity and trade

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References for this lecture

- BBGV Chapter 4
  - Paragraphs 4.7, 4.8

Comparison of models: Assumptions

	Ricardo	HOS	Krugman
Production factors	1	2	-
Within-country mobility of inputs	Yes	Yes	Yes
Between-country mobility of inputs	No	No	No
Technology / productivity	Heterogeneous	Homogeneous	Homogeneous
Relative factors' endowment	-	Heterogeneous	-
Trade frictions	No	No	No
Returns to scale	Constant	Constant	Increasing
Commodities	Homogeneous	Homogeneous	Heterogeneous (varieties)

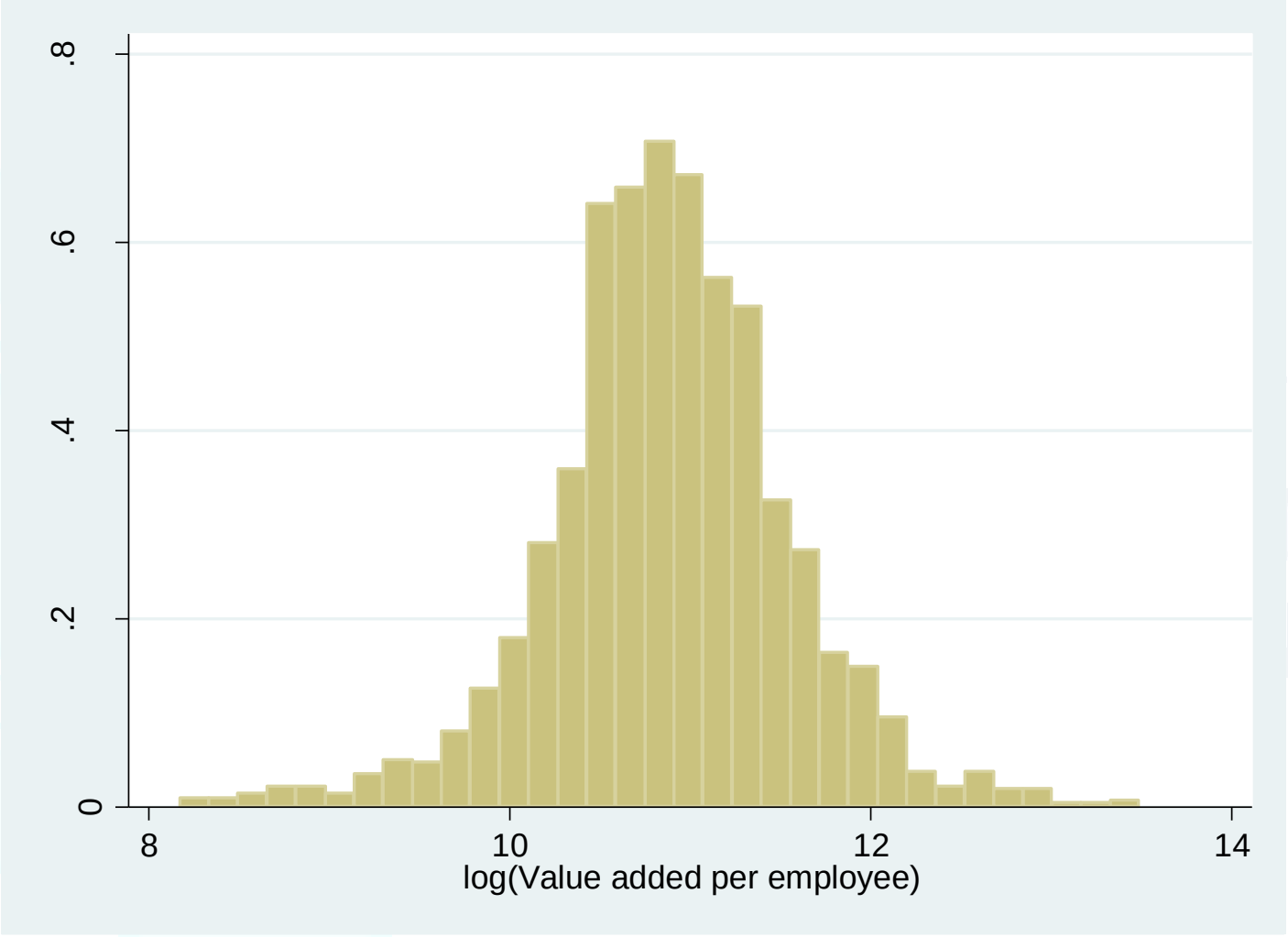
Comparison of models
Predictions of the model

	Ricardo	HOS	Krugman
Inter-industry trade	Yes	Yes	-
Intra-industry trade	No	No	Yes
Full specialization	Yes	Not necessarily	Yes (in varieties)
Commodity price equalization	Yes	Yes	-
Factor(s) price equalization	No	Yes	-
Trade is mutually beneficial	Yes	Yes	Yes

Trade and firm dynamics

- The model of **trade** with **monopolistic competition** predicts a '**competition effect**'
- Some **firms exit** the market and the **remaining** firms **gain market shares**
- The **basic model**, however, is based on the **assumption** of **identical firms** (except for the variety they produce)

Firm heterogeneity in labour productivity (in log)

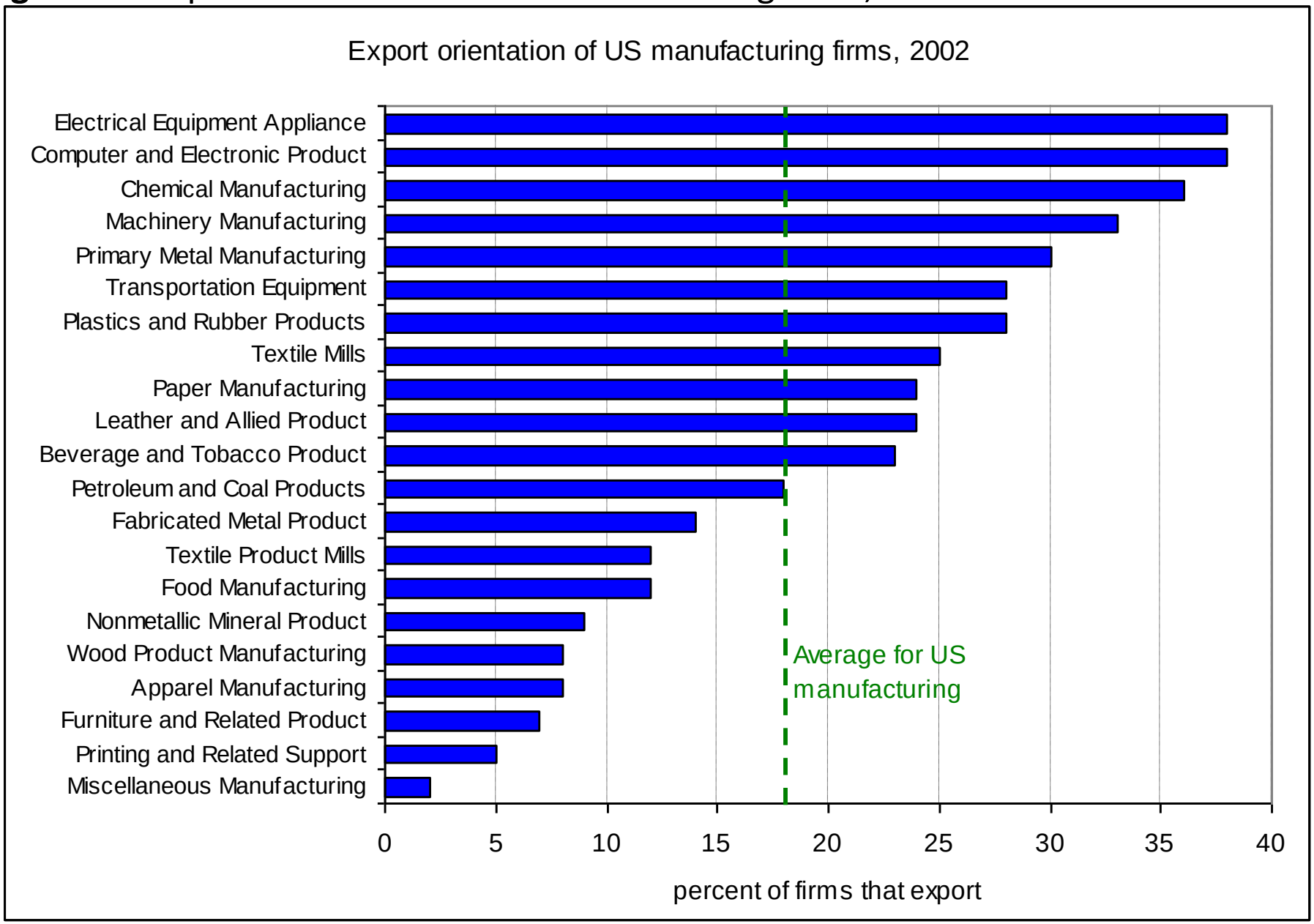


Firms in the chemical sector in Italy
Year 2011
Source: AIDA

Firm heterogeneity and trade

- Only **few firms import** or **export**
- Also **within sectors** in which a country has **comparative advantage** (or is well endowed with the intensive factor), only a **selection** of **firms** actually **exports**

Figure 4.8 Export orientation of US manufacturing firms, 2002



Source: van Marrewijk (2012), based on Bernard et al. (2007, Table 2).

Firm heterogeneity and trade

- As only **few firms** actually **trade**, it is important to understand which are the **characteristics** of these firms

- Are these firms **larger**? Are they more '**efficient**'? Are they more **productive**? Are they more **technologically-endowed**?

Firm heterogeneity (Italy)

	Exporter premia (%)
Size (employees)	69.5
Labour productivity (VA per employee)	11.4
Capital stock per employee	18.9
Share of graduates	23.5
Probability of doing R&D	17
Probability of adopting a product innovation	14.4
Probability of adopting a process innovation	9.7
Probability of applying for a patent	4.2
Probability of doing FDI	1.9

Italian manufacturing firms. Sector and year dummies included.
Source: Mediocredito Centrale, years 1995-2007

Firm heterogeneity (US)

Table 4.3 Exporter premia in US manufacturing, 2002

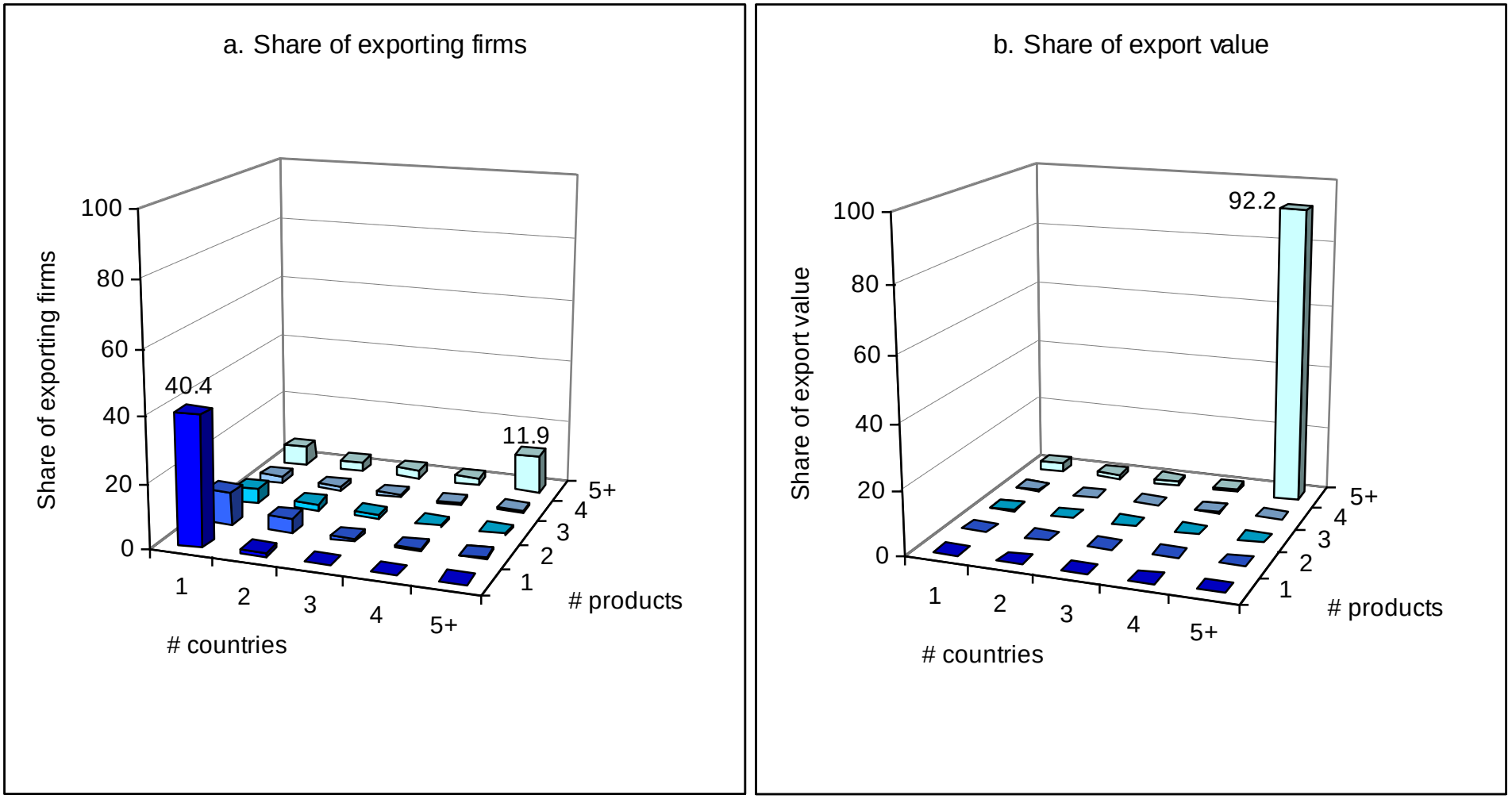
	Exporter premia (%)
Employment	164
Shipments	194
Value-added per worker	12
TFP – total factor productivity	3
Wage	6
Capital per worker	13
Skill per worker	12
Additional covariates	Industry fixed effects

Source: based on Bernard et al. (2007, Table 3); all results are significant at the 1 percent level.

Firm heterogeneity

- **Exporting firms** are:
  - **Larger**
  - More **capital** intensive
  - With a more **skilled** labour force
  - More **productive**
  - More **innovative**

Figure 4.9 Distribution by number of products and export destinations; USA, 2000

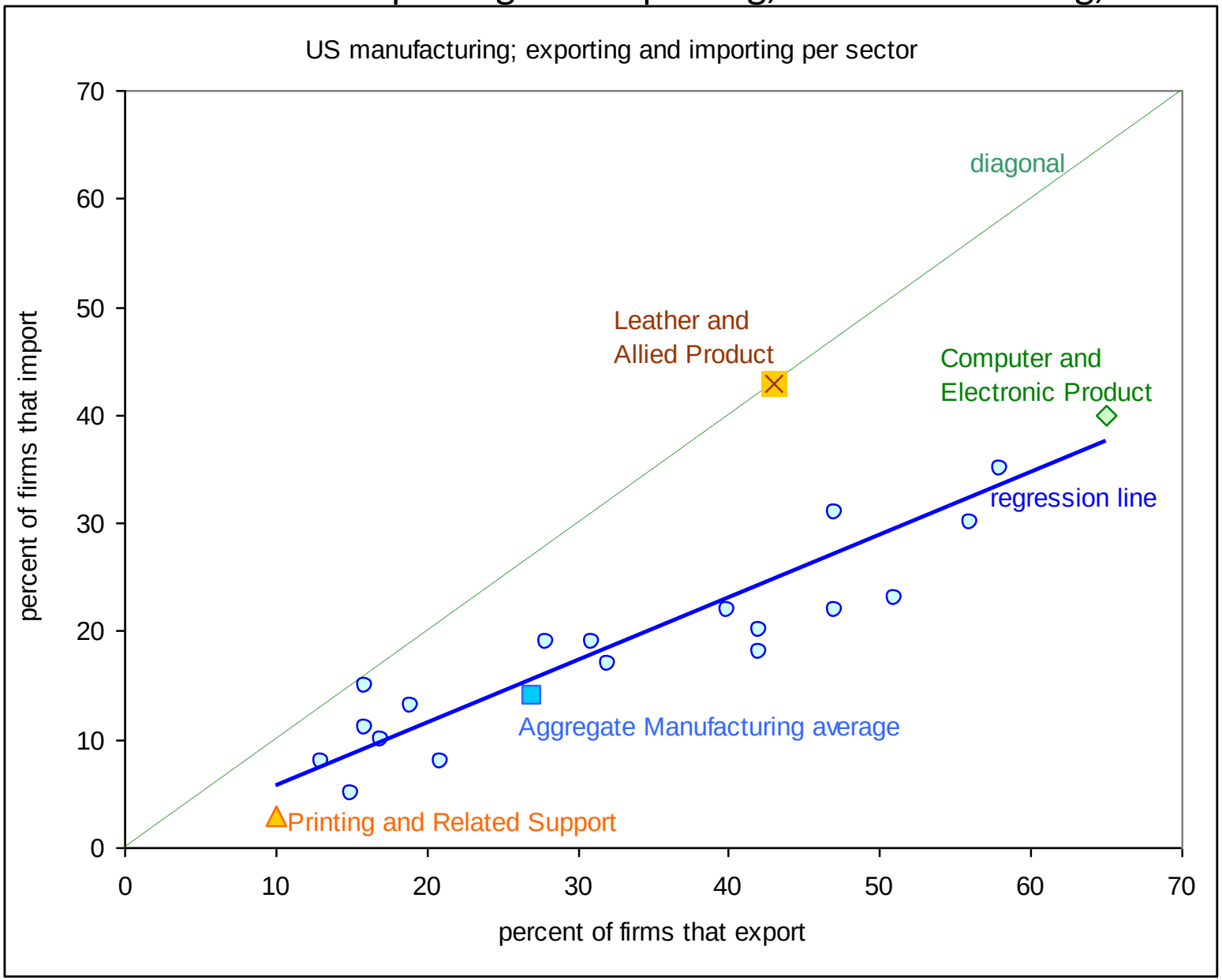


Source: van Marrewijk (2012), based on data from Bernard et al. (2007, Table 4).

Heterogeneity between exporting firms

- Almost **half** (40.4) of **US exporting** firms just export **one product** to just one **country**
- Firms that export **five or more products** to five or more **countries** account for **92.2** percent of total **export**

Figure 4.10 Simultaneous exporting and importing; US manufacturing, 1997



Source: van Marrewijk (2012, based on data from Bernard et al. (2007, Table 7).

Import and export

- There exist a positive **correlation** between **exporting** and **importing**
- **41 percent** of the **exporting** firms also **import**
- **79 percent** of **importers** also **export**

Trade and selection

- For a **given demand** and **market** structure, firms with **higher marginal costs** make **less profits** than firms with lower marginal costs

- If profits are **below zero** (due to too high marginal costs), the firm **exits** the market

Figure 4.11 Firm heterogeneity, prices, and profits

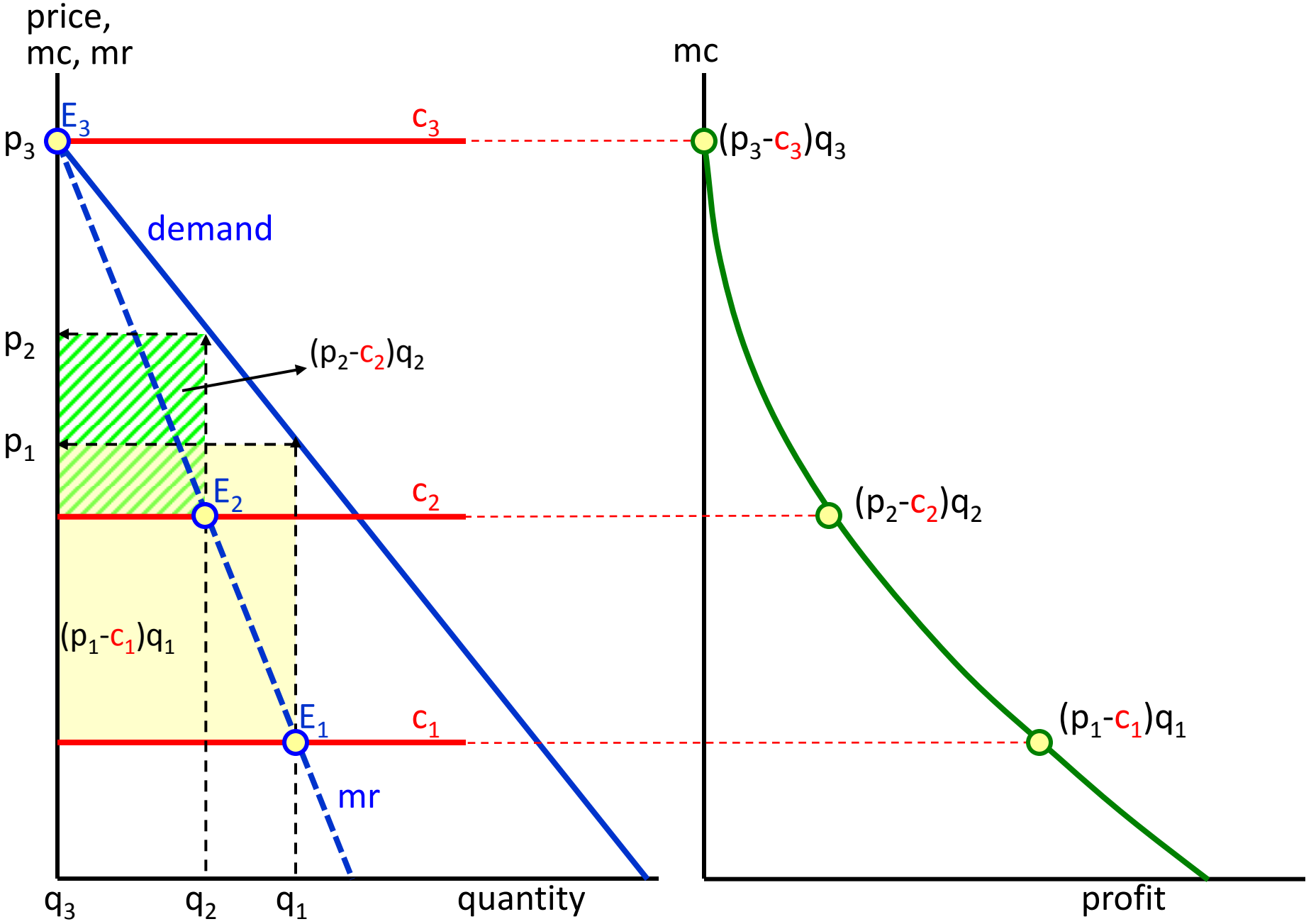
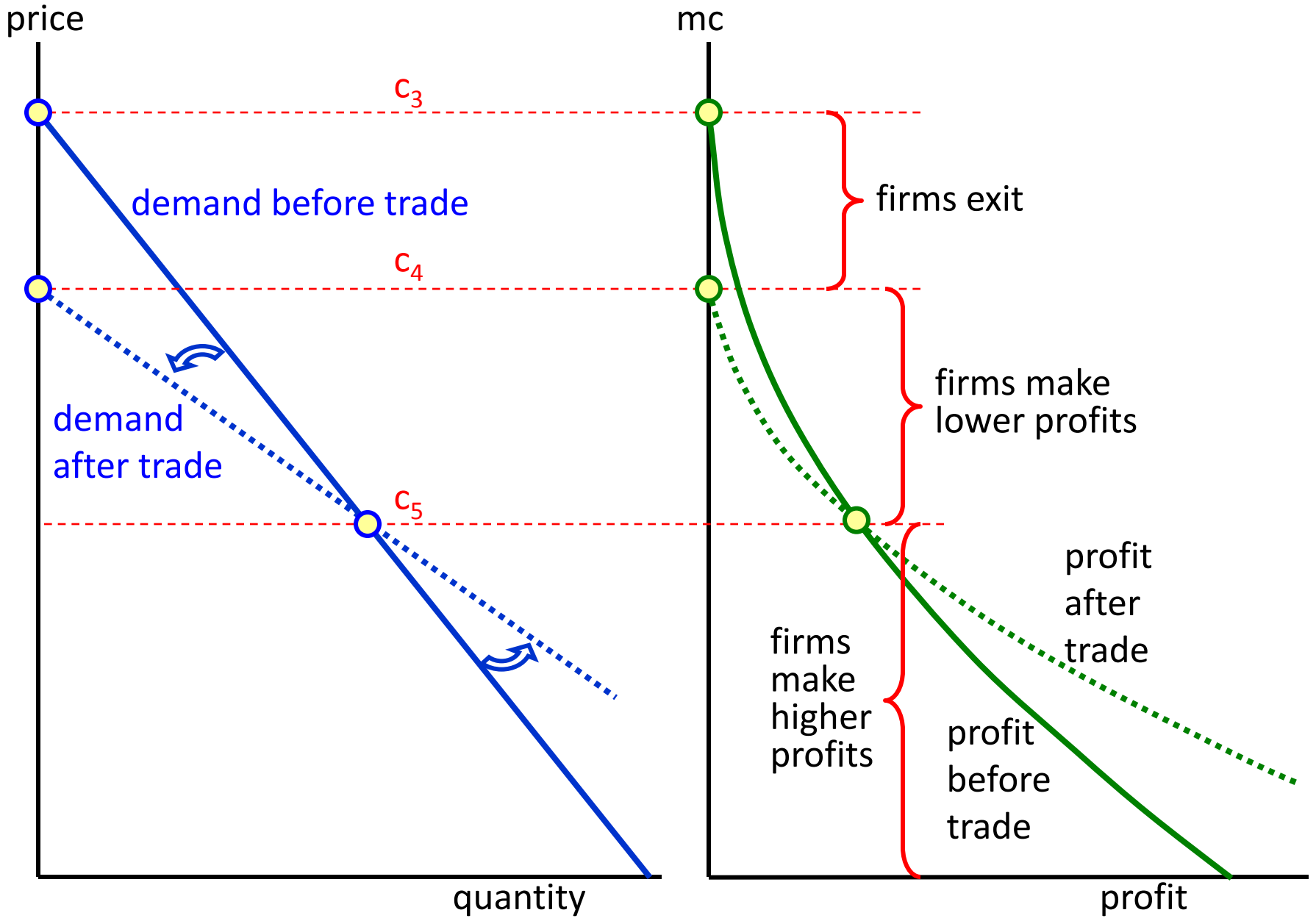


Figure 4.12 Firm heterogeneity and trade



Trade and selection

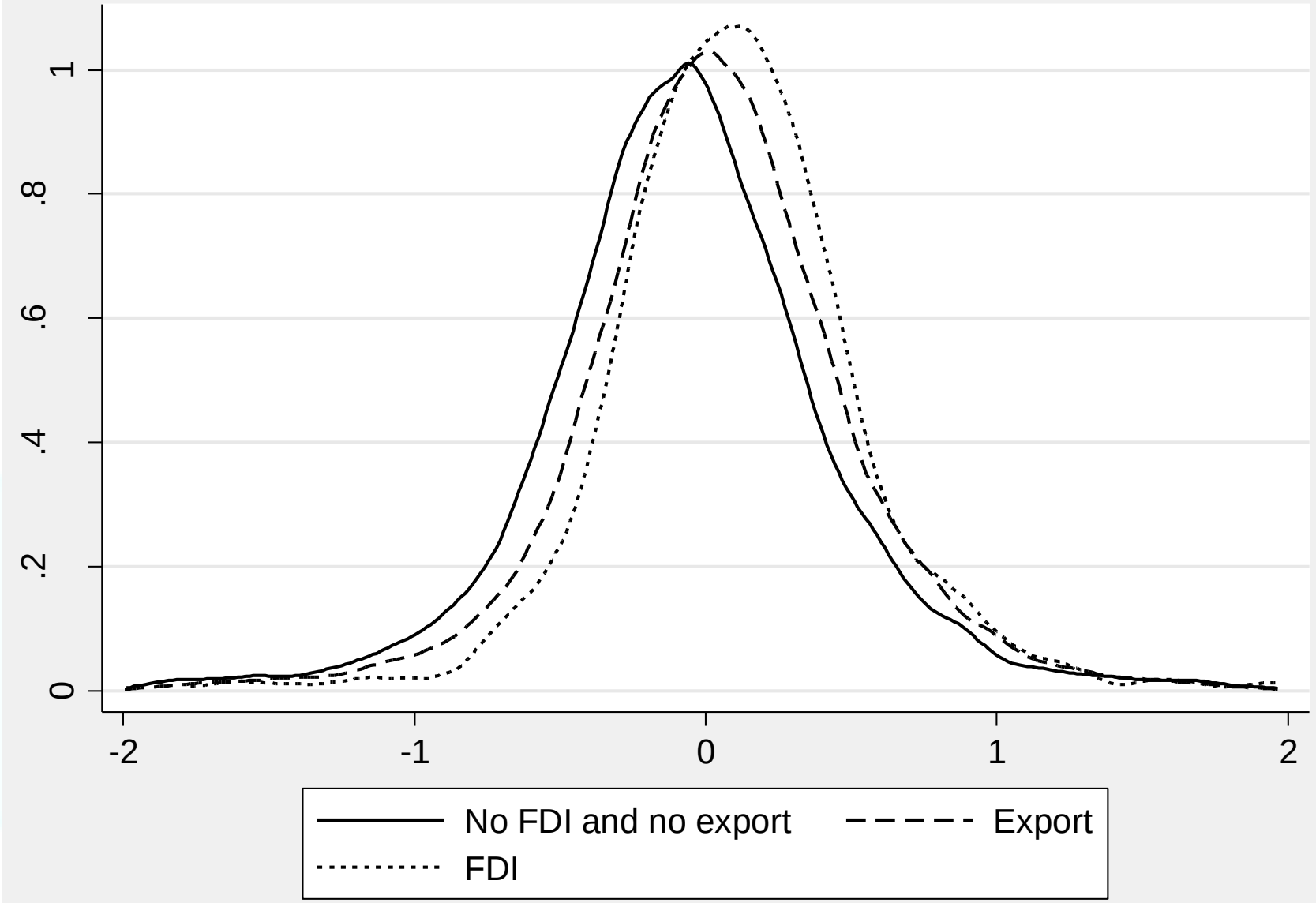
- Trade induce a **counterclock wise rotation** of the **demand** curve ➔ demand becomes **more elastic**
- As we will see in the coming lectures, firms that **engage** in **trade** need to incur in a series of **fixed costs** of **exporting** ➔ only firms with a **sufficiently high productivity** can **bear** the fixed cost of exporting
  - **Least productive** firms will **exit** the market
  - Firms with **intermediate productivity** will **remain** on the market but **cannot bear** the **fixed cost** of **exporting**
  - Firms with **high productivity** will **increase** their **market share** and also **export**

- Doing **FDI** is even **more 'costly'** ➔ further **selection**

Trade and selection

	Exporter premia (%)	FDI premia (%)
Size (employees)	69.5	164.0
Labour productivity (VA per employee)	11.4	11.1
Capital stock per employee	18.9	22.4
Share of graduates	23.5	23.4
Probability of doing R&D	17	29.5
Probability of adopting a product innovation	14.4	24.3
Probability of adopting a process innovation	9.7	16.3
Probability of applying for a patent	4.2	11.4
Probability of doing FDI	1.9	-
Probability of exporting	-	20.7

- Doing FDI is even more 'costly' ➔ further selection



Italian manufacturing firms. Labour productivity partialled out of sector and year dummies. Source: Mediocredito Centrale, years 1995-2007