

Recent advances in the field of Trade Theory

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Cosimo Beverelli
(World Trade Organization)

Session 1:

Stylized facts about firms in international trade

Stylized facts about firms in International trade

- Firms are heterogeneous
- Only few firms are exporting
- Exporters are different
- Most productive firms self-select into exporting
- Trade liberalization raises industry productivity

Stylized facts about firms in International trade

Firms are heterogeneous

- Across all the US plants in 1992:
 1. A plant one standard deviation above the mean size is 167% bigger than the average
 2. A plant one standard deviation above the mean plant productivity level is 75% more productive (Bernard, Eaton, Jensen and Kortum 2003)

Stylized facts about firms in International trade

Firms are heterogeneous

- The distribution of firms size is dispersed, even within sectors (evidence of heterogeneity across firms)

Table 1: Heterogeneity of firms (standard deviation of log sales)

Country	Producers	Overall	Within sector
France	76,456	1.82	1.7
Italy	39,704	1.33	1.29
Spain	31,446	1.26	1.18
US (plants)	224,009	1.67	-

Stylized facts about firms in International trade

Only few firms export

- The overall share of US manufacturing firms in 2002 that export is 18% (Bernard et al. 2007) – see following table
- Exporting firms ship a small share of their total shipments abroad, shares range from 21% in computer sector to 7% in beverages (Bernard et al 2007)
- Results of a the recent census on European firms (EFIGE Report 2010) show that European firms have different exporting behaviour across countries: extensive margins (share of firms with strictly positive export sales) are large in small open economies (Austria and Hungary) and small in large economies (France, Spain)

Stylized facts about firms in International trade

Only few firms export

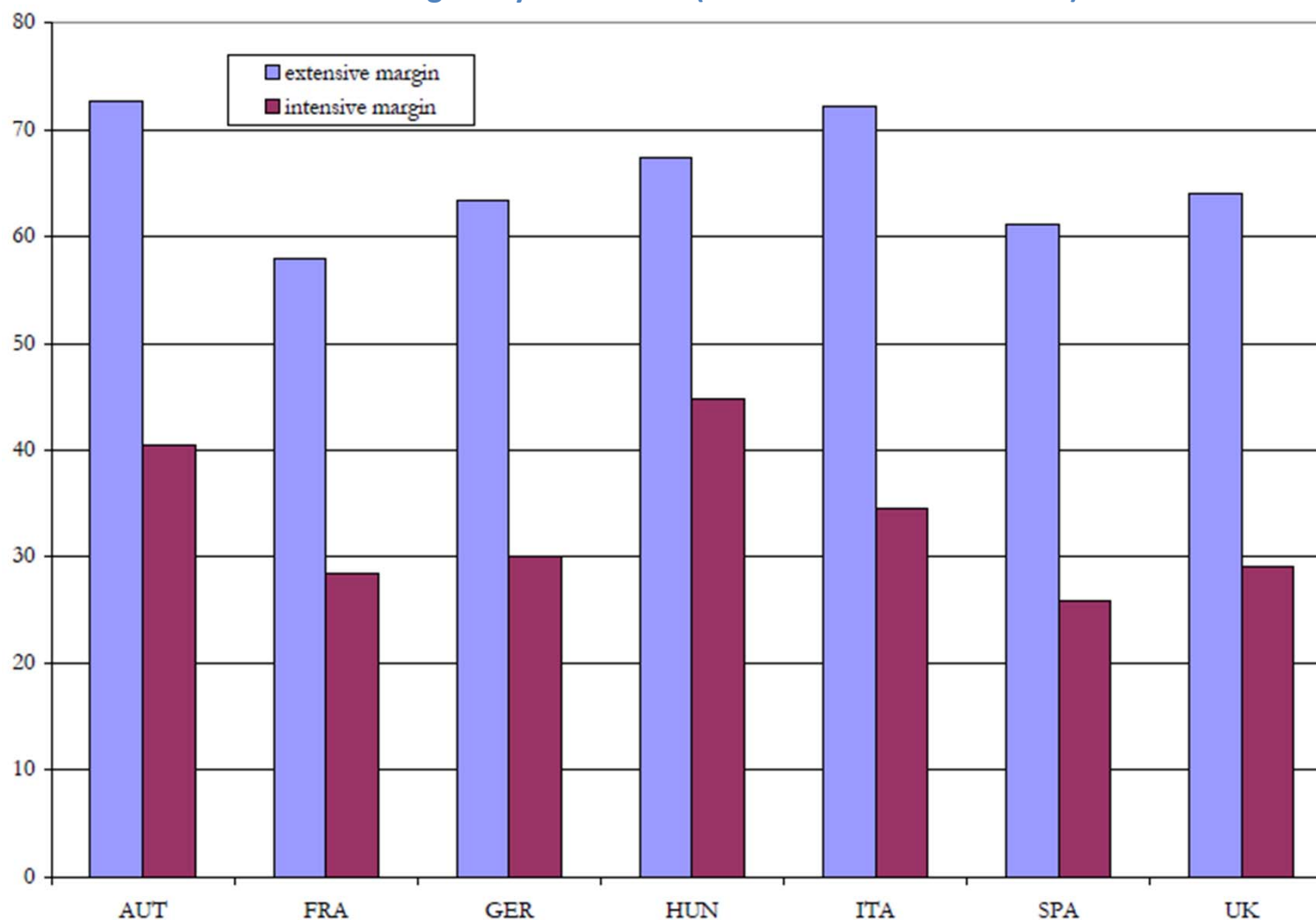
Table 2: Heterogeneity of US firms (Bernard et al. 2007)

Sector	Per cent of firms	Per cent of Firms that export	Mean Exports as a per cent of total shipments
Food manufacturing	6.8	12	15
Beverage and tobacco products	0.7	23	7
Textile mills	1	25	13
Textile product mills	1.9	12	12
Apparel manufacturing	3.2	8	14
Leather and allied product	0.4	24	13
Wood product manufacturing	5.5	8	19
Paper manufacturing	1.4	24	9
Printing and related support	11.9	5	14
Petroleum and coal products	0.4	18	12
Chemical manufacturing	3.1	36	14
Plastics and rubber products	4.4	28	10
Nonmetallic mineral products	4	9	12
Primary metal manufacturing	1.5	30	10
Fabricated metal product	19.9	14	12
Machinery manufacturing	9	33	16
Computer and electronic product	4.5	38	21
Electrical equipment	1.7	38	13
Transportation equipment	3.4	28	13
Furniture and related product	6.4	7	10
Miscellaneous manufacturing	9.1	2	15
Aggregate Manufacturing	100	18	14

Stylized facts about firms in International trade

Only few firms export

Table 3: Heterogeneity of EU firms (Barba Navaretti et al. 2010)



Stylized facts about firms in International trade

Only few firms export

- The share of exporters increases with the firm size: the difference in export propensity between the group of firms with 10-19 employees and the group of firms with at least 250 employees is above 25%

Table 4: extensive margin of exports by European country and size class (Barba Navaretti et al. 2010)

Size Class	AUT	FRA	GER	HUN	ITA	SPA	UK
10-19	69.8	44.7	45.7	58.9	65.4	51.2	54.9
20-49	63.8	59.1	65.4	64.7	73.3	63.5	62.8
50-249	88.6	75.4	78.2	79.3	86.6	76.2	76.8
> 249	90.8	87.6	84.0	97.4	92.6	88.0	80.7
Total	72.6	57.9	63.4	67.3	72.2	61.1	64.0

Stylized facts about firms in International trade

Only few firms export

- The higher the size class the higher the value exported by exporters

Table 5: intensive margin of exports by European country and size class
share of exported over total output (Barba Navaretti et al. 2010)

Size Class	AUT	FRA	GER	HUN	ITA	SPA	UK
10-19	26.2	23.0	25.9	30.2	30.4	21.4	26.2
20-49	33.3	27.0	28.1	43.6	34.2	24.5	27.8
50-249	55.9	33.0	33.9	53.2	42.2	33.3	33.2
> 249	64.7	41.2	37.8	66.6	52.6	40.6	34.2
Total	40.4	28.5	30.0	44.8	34.6	25.9	29.1

Stylized facts about firms in International trade

Only few firms export

- **“Superstar exporters”**: aggregate exports are driven by a small number of top exporters. The top one per cent, five per cent and 10 per cent of exporters account for no less than 40 per cent, 70 per cent and 80 per cent

Table 6: share of exports for top exporters in 2003, total manufacturing (Mayer and Ottaviano 2007)

Country of origin	Top one percent	Top five percent	Top 10 percent
Germany	59	81	90
France	44	73	84
United Kingdom	42	69	80
Italy	32	59	72
Hungary	77	91	96
Belgium	48	73	84
Norway	53	81	91

Stylized facts about firms in International trade

Exporters are different

- Firms that export look very different from non-exporters. Exporters:
 - are larger by 97% for employment and 108% for shipments
 - are more productive by 11% for value added and 3% for TFP
 - pay higher wage by 6%
 - own more physical and human capital

Table 7: exporter premia in US Manufacturing, 2002 (Bernard et al. 2007)

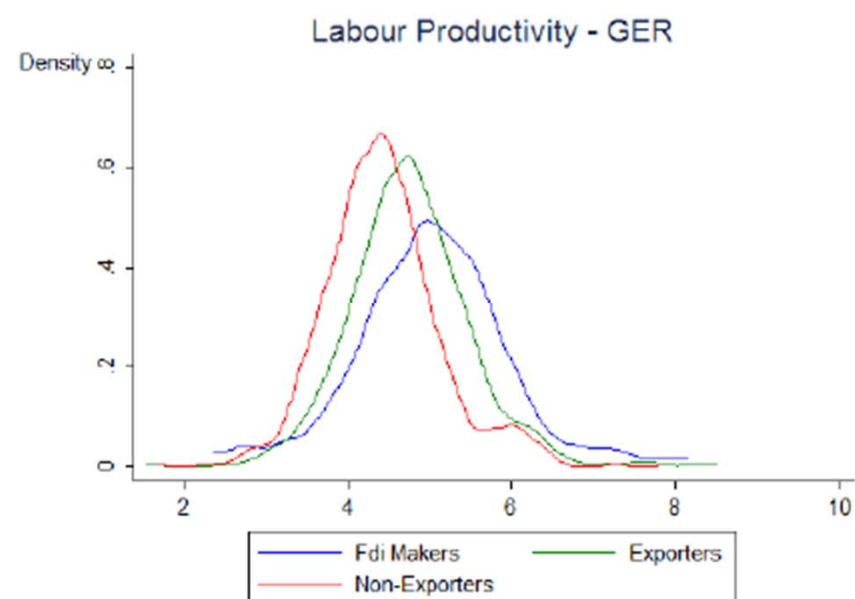
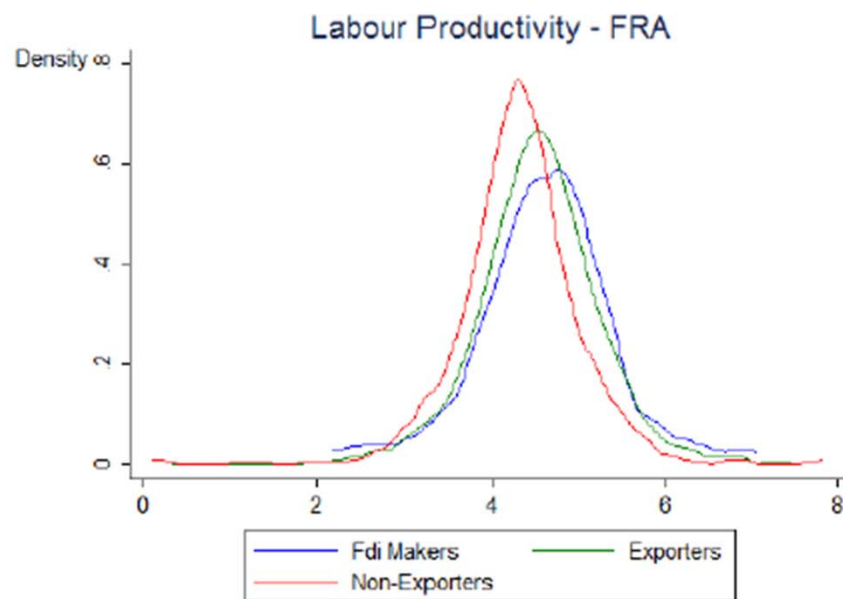
	(1)	(2)	(3)
Employment (ln)	1.19	0.97	.
Shipments (ln)	1.48	1.08	0.08
Value added per worker (ln)	0.26	0.11	0.1
TFP (ln)	0.02	0.03	0.05
Wage (ln)	0.17	0.06	0.06
Capital per worker (ln)	0.32	0.12	0.04
Skill per worker (ln)	0.19	0.11	0.19
Additional Covariates	None	Industry fixed effects	Industry fixed effects and employment (ln)

Stylized facts about firms in International trade

Exporters are different

- Among European countries exporters have higher labour productivity than non exporting firms

Table 8: exporter premia in European firms, 2008 (Barba Navaretti et al. 2010)

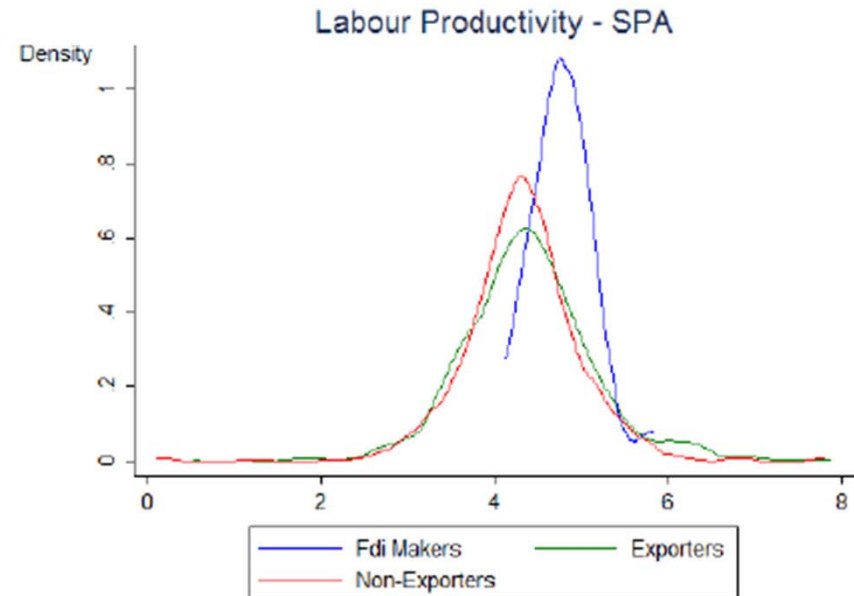
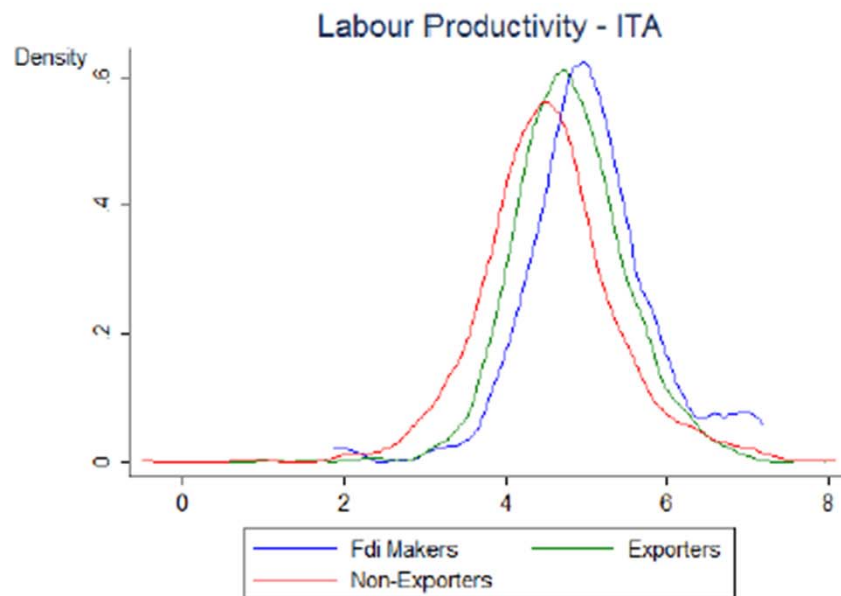


Stylized facts about firms in International trade

Exporters are different

- Among European countries exporters have higher labor productivity than non exporting firms

Table 8 cont.: exporter premia in European firms, 2008 (Barba Navaretti et al. 2010)



Stylized facts about firms in International trade

Exporters are different

- The higher the size class the higher complexity of exporting activity (given by the number of destination markets)

Table 9: exports complexity by European countries and size class (Barba Navaretti et al. 2010)

Size Class	AUT	FRA	GER	HUN	ITA	SPA	UK
10-19	5	7	7	3	8	5	9
20-49	8	9	12	4	10	8	12
50-249	18	14	18	6	17	12	18
> 249	32	24	28	14	29	23	27
Total	12	11	14	5	11	8	13

Stylized facts about firms in International trade

Most productive firms self-select into exporting

- The finding that exporters are systematically more productive than non-exporters raises the question of whether exporting causes productivity growth through some form of “learning by exporting”
- A lot of studies across industries and countries confirm that high productivity precedes entry into export markets → presence of sunk cost!
- Moreover some other studies find little or no evidence of improved productivity as a result of beginning to export (Bernard and Jensen 1999; Clerides, Lach and Tybout 1998)
- However, there is abundant evidence of the fact that firms entering export market grow faster in terms of employment and output than non exporters

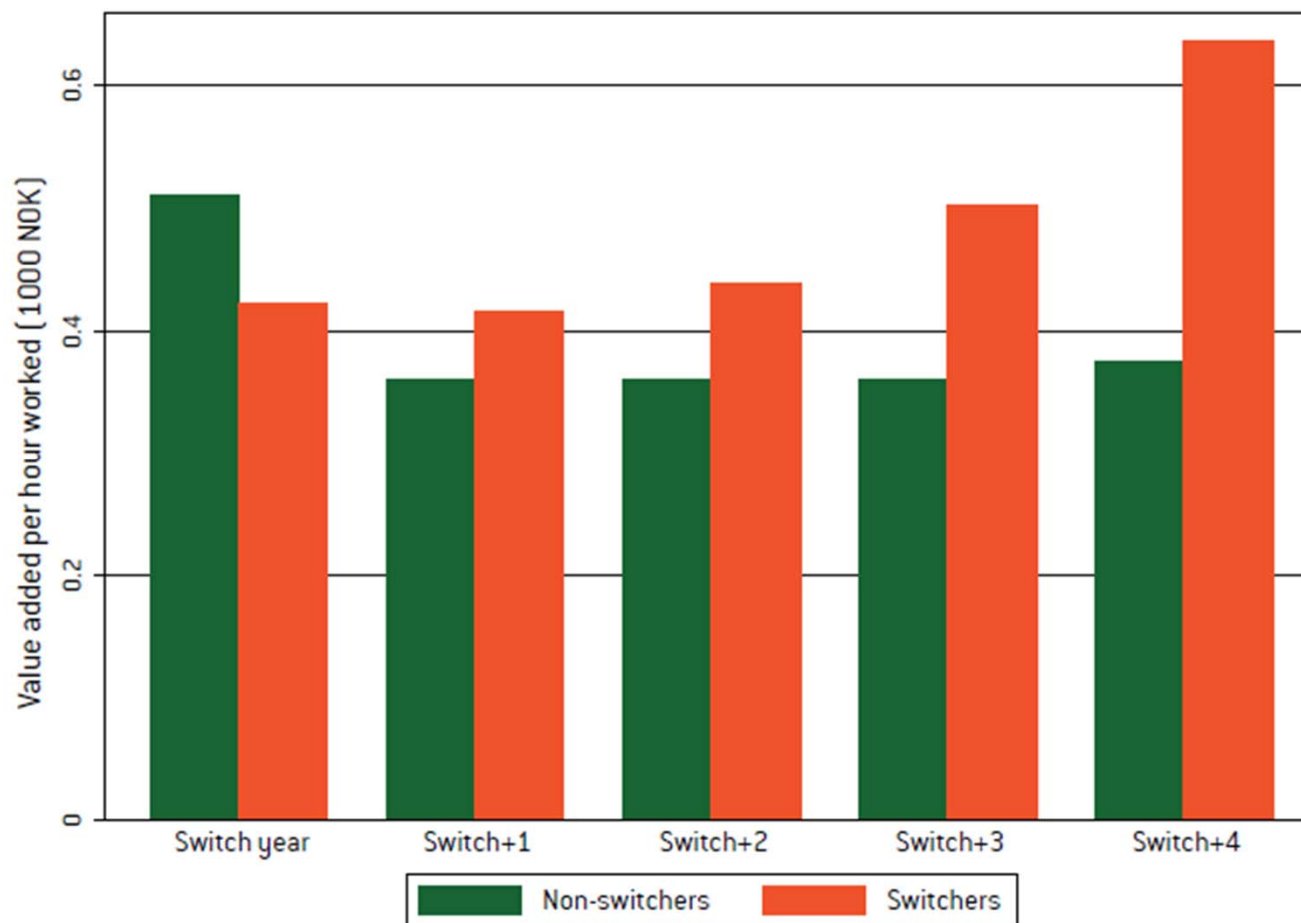
Stylized facts about firms in International trade

Most productive firms self-select into exporting

- This chicken-and-egg question is presented for France and Norway in the followings figures
- The figures consider firms in the samples that became exporters during the period of observation and that were observed for four years after switching status ('switchers'). It then compares their behaviour with that of all other firms ('non-switchers')
- The comparison is made in terms of value added per worker a given number of years after the firms first began exporting

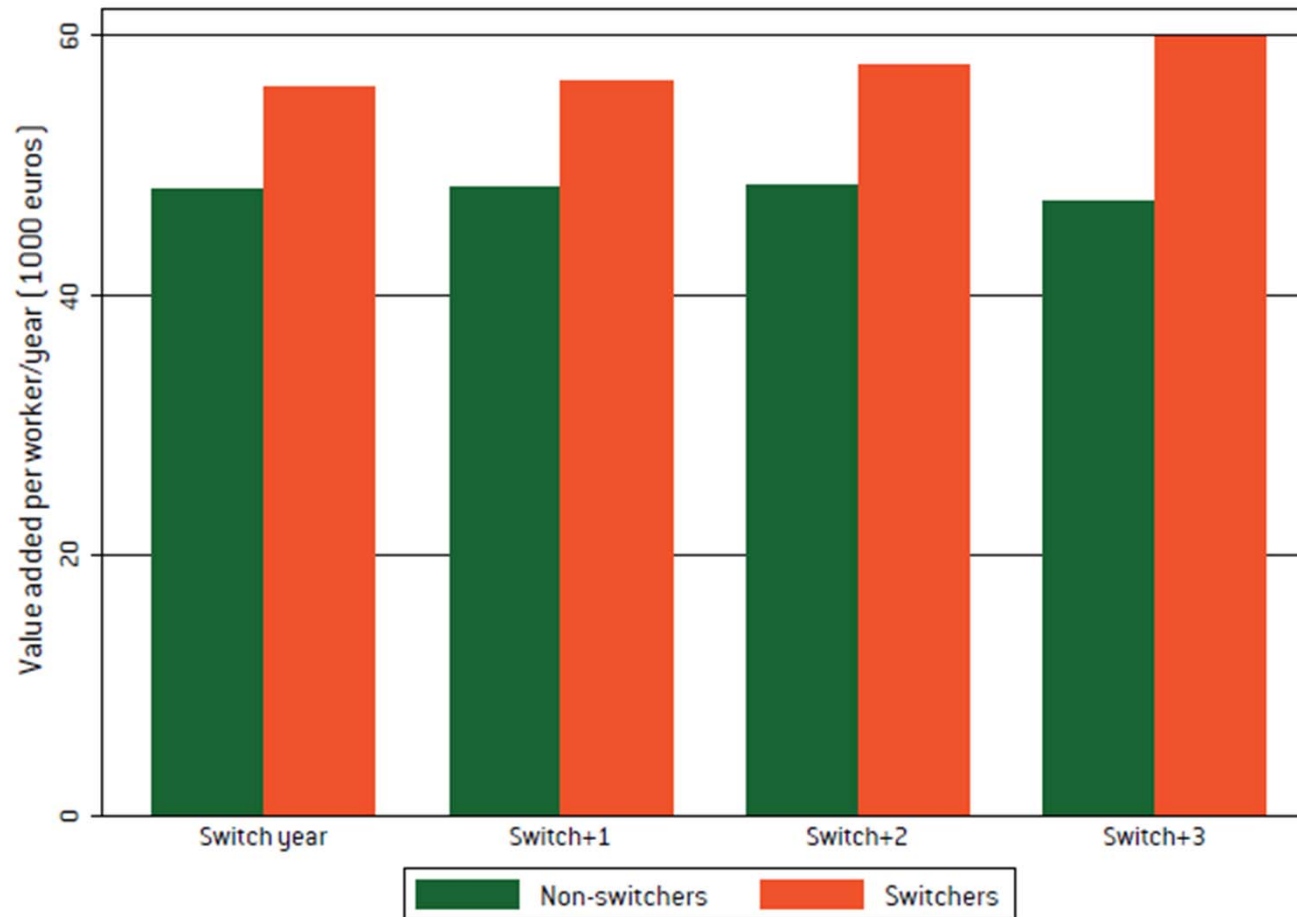
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Table 10: compared performances in labor productivity – Norway (Mayer and Ottaviano 2007)



Stylized facts about firms in International trade

Table 10: compared performances in labor productivity – France (Mayer and Ottaviano 2007)



Stylized facts about firms in International trade

Trade liberalization raises industry productivity

- Given that exporters are more productive than non-exporters and that exporters grow faster than non-exporters, trade liberalization has an important role in enhancing aggregate productivity through reallocation across firms:
 - Aggregate productivity growth is driven by the contraction and exit of low-productive firms and by the expansion and entry into export markets of high-productivity firms
 - This reallocation of resources from low to high productive plants raises average productivity level

Stylized facts about firms in International trade

Trade liberalization raises industry productivity

- Pavcnik (2002) finds that two-third of the 19% increase in aggregate productivity following Chile's trade liberalization of the late 1970's and early 1980's was due to the relatively greater survival and growth of high-productivity plants
- This evidence has been shown for both developing and developed countries

Stylized facts about firms in International trade

Trade liberalization raises industry productivity

- The increase in average productivity after trade liberalization is also due to the within-plant productivity gains from the reallocation of resources across activities within plants (Pavcnik 2002)
- Trefler (2004) finds that Canada-US Free Trade Agreement raised labour productivity of Canadian firms by 7.4% or by an annual compound growth rate of 0.93%
- Bernard, Jensen and Schott (2006) find that a one standard deviation reduction in industry-level trade costs (i.e. trade liberalization) raises plant-level productivity growth by 2.3%

Stylized facts about firms in International trade

What we learned

- Strong differences among firms (heterogeneity) in terms of size, productivity, etc. Their different export performances suggest:
 - Inappropriateness of traditional trade models which consider the “representative” firm
 - The need for new trade models having the single firm as the central individual of analysis and which consider this heterogeneity among firms