

ISSUE 2010/05  
JUNE 2010

## THE GLOBAL OPERATIONS OF EUROPEAN FIRMS

by **Giorgio Barba Navaretti**

University of Milan and  
Centro Studi Luca d'Agliano  
*barba@unimi.it*

**Matteo Bugamelli**

Bank of Italy  
*matteo.bugamelli@bancaditalia.it*

**Gianmarco Ottaviano**

Senior Fellow at Bruegel and Professor of  
Economics, Bocconi University  
*gianmarco.ottaviano@bruegel.org*

and **Fabiano Schivardi**

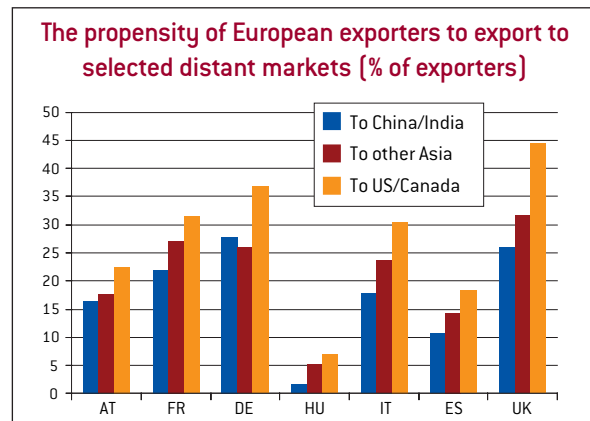
University of Cagliari and CEPR  
*fschivardi@unica.it*

**SUMMARY** Europe's position in the post-crisis world economy depends on the ability of its firms to carry through effective global export and production strategies. New data from 15,000 firms from seven countries shows that firm size, productivity, skill intensity and the ability to innovate are associated with better export performance, foreign direct investment and outsourcing. Exporting and foreign production are complementary, particularly for entry into fast-growing emerging markets. But foreign production involves high entry costs and is demanding in managerial, organisational and technological terms. Firms can improve their competitive skills in the European single market, but competing in the next few years will require more than just exporting to neighbouring EU countries.

### POLICY CHALLENGE

European countries differ in their trade performance and patterns of global production; these differences mostly relate to differing industrial structures. For all countries, firm growth and consolidation would generate a considerable increase in exports. Small firms are frequently the backbone of European economies, but they are increasingly unable to overcome the fixed costs of global operations. Structural reforms that make it easier for firms to

grow and to move towards more sophisticated forms of management, organisation and innovation, are key to strengthening Europe's competitiveness. The European single market is the space in which firms initially grow and policies should aim to ease further the movement of goods within the EU.



Source: EFIGE.



**WHY IS THERE SO MUCH VARIATION** in trade performance across European Union countries? Some variation results from country-specific features such as macro-economic policies, market size or infrastructure. However, it is firms that are at the heart of European competitiveness. Firms carry out global operations, exporting to, importing from and producing in foreign countries. A crucial issue for policymakers is thus to understand to what extent the global reach and the international performance of European economies are determined by the characteristics of their firms, regardless of their location and of the features of national economies.

The study, *The Global Operations of European Firms*, on which this Policy Brief is based, finds that firm characteristics influence the patterns of internationalisation in a surprisingly consistent way across countries. The analysis is based on the newly completed EU-EFIGE/Bruegel-UniCredit survey of

15,000 manufacturing firms in seven countries (Austria, France, Germany, Hungary, Italy, Spain and the United Kingdom)<sup>1</sup>. Size, productivity, the skill intensity of the work force and the ability to innovate are related to firms' export performance in all countries of the study, in terms of both exporter status and exports as a share of firm turnover. Firm characteristics also relate to the complexity of firms' internationalisation strategies in terms of both the number and the difficulty of export markets served. Finally, firm characteristics also relate to global production decisions, either through foreign direct investment (FDI) or international outsourcing (IO).

The EFIGE project, within which this brief and the broader study have been prepared, aims to address policy questions on the causal link between firm characteristics and internationalisation. This report, as an initial step in this exercise, looks at broad correlations, which are *per se* extremely

insightful and provide new perspectives on the links between firm and country features.

The fact that firm characteristics are central raises new challenges for policymaking in terms of fostering the 'right kind' of characteristics. For example, we find that if the industrial structure (in terms of firm size and sectors) of countries like Italy and Spain were to converge with the structure of Germany, the value of the total exports of Italian and Spanish firms would rise considerably – by 37 percent and 24 percent respectively. Fostering growth in firm size does not mean that companies should all necessarily become very large. Medium-sized firms contribute considerably to export performance in most European countries.

This highlights the centrality of structural reforms in facilitating the growth and development of companies throughout Europe. As policies affecting firm growth are multi-faceted, parallel reforms may be required in several areas, such as labour regulation, taxation and reducing red tape.

Particularly in a phase of sluggish demand and reduced fiscal resources, we should not forget the enormous potential of the European single market as the quintessential quasi-domestic space where firms initially grow and reinforce their global competitiveness. Policy action should then aim at easing even further the movement of goods and factors

**BOX 1: The EU-EFIGE/Bruegel-UniCredit survey**

The EU-EFIGE/Bruegel-UniCredit survey has gathered both qualitative and quantitative information at the firm level by means of a detailed questionnaire containing more than 150 items related to the international operations of firms and collected via CATI (Computer Assisted Telephone Interview) and CAWI (Computer Assisted Web Interview) approaches. In order to ensure that the collected data is standardised and statistically representative, an initial target was set of around 3,000 firms for France, Germany, Italy and Spain, 2,100 firms for the UK, and 500 firms for smaller countries (Austria and Hungary), ie a total of 15,100 valid questionnaires. The exact numbers by country deviated slightly from the targets as the result of appropriate sampling procedures. Survey questions cover the following drivers the competitiveness of European manufacturing firms: size and productivity; organisation; geographical scope; skills and tasks; innovation; financial constraints; and use of the euro.

1. Part of the 'European firms in a global economy' (EFIGE) project. The research leading to these results has received funding from the European Community's Seventh Framework Programme/Socio-economic Sciences and Humanities (FP7/2007-2013) under grant agreement n° 225551. The views expressed in this publication are the sole responsibility of the authors and do not necessarily reflect the views of the European Commission. The research is co-financed by UniCredit Group. See <http://www.efige.org/> for further information.



within the EU, resisting calls for local measures that support firms within national boundaries.

Our study is of course not the first to stress the importance of firm characteristics. Recent contributions have emphasised both theoretically and empirically the key role of the heterogeneity of firms in explaining internationalisation patterns<sup>2</sup>. However, this is the first time that country, industry and firm characteristics have been jointly analysed using fully comparable cross-country data. In addition, for the first time, it has been possible to study within a single framework the comprehensive span of global operations available to firms: export, imports, FDI and international outsourcing.

## 1 FIRM CHARACTERISTICS MATTER, NOT PRODUCTS OR HOME LOCATION

A basic ingredient of a country's export performance is how many firms are exporters (the so-called *extensive margin*). The percentage of exporters in the seven countries under consideration varies. Although in each country most firms with more than 10 employees are exporters, there are major differences, with a roughly 15 percentage point gap between countries with the highest share of exporters (Austria, Hungary and Italy) and those with the lowest share (Germany and France). There are of course country-specific factors explaining these differences – above all, market size – but there are also other less

obvious factors. When, for example, we compare the large continental economies, it is interesting to notice that Italy has an especially high export propensity compared to both France and Germany. This is also confirmed by the report's regression analysis.

When we take into account country characteristics and firm characteristics simultaneously in the regression analysis, we find that firm characteristics are more important than country characteristics. In line with previous empirical literature on firms and trade, we show that firms that are larger in size, have a more skilled workforce, and are more productive and more innovative are more likely to export than others, whatever the industrial sector. Unlike previous studies, we show that these patterns are consistent across countries and in fact shape internationalisation trends to a greater extent than country characteristics. Importantly, we also find that the impact of firms' characteristics on the extensive margin of trade is very similar across countries.

Table 1 provides some evidence for these assertions. Focusing on size and computing the percentage of exporting firms by firm size and country, it is clear that the differ-

ences between size classes within countries are more relevant than differences between countries. For all countries, the proportion of exporters increases with size, with a difference of at least 20 percentage points between small and very large firms. Among firms with more than 249 employees, the propensity to export is very high for all countries.

Similar results are generated when we focus on the intensive margin of exports, that is on exports as a proportion of total turnover, conditional on being an exporter. Again, firm characteristics matter more than country characteristics: among the former, size, productivity, innovation and human capital are the dominant factors. Table 2, on the next page, reports the share of exports in total turnover by firm size and country. The share of exports increases from less than 30 percent for firms with 10-19 employees up to 40-65 percent for the largest firms.

In summary, firm characteristics – size, productivity, innovative activity, workforce skills – are the primary determinants of export performance, more so than country characteristics. Firm characteristics indicate the probability of a firm being an exporter, and of the

Size class	AT	FR	DE	HU	IT	ES	UK
10-19	69.82	44.65	45.74	58.00	65.36	51.15	54.85
20-49	63.81	59.12	65.41	64.74	73.25	63.54	62.75
50-249	88.64	75.38	78.19	79.33	86.59	76.15	76.83
More than 249	90.76	87.55	83.98	97.42	92.62	87.96	80.72
Total sample	72.59	57.93	63.36	67.33	72.15	61.06	63.97

2. Melitz (2003), Helpman et al (2004), Eaton et al (2004), Melitz and Ottaviano (2008) provided the theoretical framework for analysing patterns of international trade through analysis of heterogeneous firms. Mayer and Ottaviano (2007) was the first report comparing firm-level export performance across European countries, but did so on the basis of non-homogeneous data sets. See also Fontagné and Gaulier (2010) for a comparison of the export performance of French and German firms.



**Table 2: The export share varies significantly depending on firm size**

Size class	AT	FR	DE	HU	IT	ES	UK
10-19	26.17	22.98	25.88	30.22	30.41	21.44	26.15
20-49	33.27	26.98	28.10	43.58	34.24	24.53	27.83
50-249	55.91	33.00	33.94	53.23	42.16	33.30	33.18
More than 249	64.66	41.18	37.84	66.61	52.63	40.61	34.24
<b>Total sample</b>	<b>40.44</b>	<b>28.54</b>	<b>30.00</b>	<b>44.79</b>	<b>34.55</b>	<b>25.93</b>	<b>29.14</b>

share of turnover attributable to exports. This analysis broadly holds true whichever country is under consideration.

**2 EXPORTING IS NOT ENOUGH: EUROPEAN FIRMS PURSUE COMPREHENSIVE STRATEGIES FOR GLOBAL MARKETS AND GLOBAL PRODUCTION**

The propensity to export and the share of exports in a firm's total activity provide just part of the overall picture of the internationalisation of firms. The global operations of European firms are very heterogeneous and entail very complex and dissimilar internationalisation patterns. We begin by looking at other aspects of exporting activity. In Table 3, we show the distribution of exporting firms by destination markets.

Almost all exporting firms sell the

greatest part of their production in the EU15 market, the closest proxy to a domestic market. But far fewer go to more distant destinations such as the US or the difficult and fast-growing markets of China, India or Latin America. This pattern is seen for all sample countries. Distant destinations are more costly to reach and often involve higher risks and other barriers than closer-at-hand EU markets. Moreover, when we track the activity of firms in distant destinations, more marked differences relating to country of origin seem to emerge. For example, in China and India, two markets that most exporters probably still have to enter, German firms have gained a competitive advantage (10 percent more German than Italian firms export to China and India). Again, we must ask if this is due to firm characteristics or to a country-of-origin characteristic that

benefits all German exporters. The regression analysis reported in our study confirms that firm characteristics (size, productivity, innovation, human capital) are relatively more important than differences between home countries. This is even more so for distant destinations. This suggests that the prominence of Germany comes, at least in part, from having firms with the 'right' characteristics to export to China and India.

A different indicator of the complexity of exporting activity is the number of destination markets at the firm level<sup>3</sup>. Table 4 on the next page shows the average number of destination markets of exporters for the seven countries, broken down by firm size. We have already argued that a greater share of German firms export to fast-growing emerging countries. On average, German firms perform better than those in other countries: they export to three countries more than Italian and French firms. Yet, when we take into account firm size categories, it is striking how the number of markets invariably rises, for each country of origin. This pattern persists in the econometric analysis

**Table 3: The geographical distribution of exporters**

	EU15	Other EU	Other Europe	China/India	Other Asia	US/ Canada	Central-S. America	Others
Austria	94.20	49.91	46.83	16.42	17.65	22.45	7.08	12.39
France	92.45	36.75	41.82	22.04	27.01	31.55	14.74	30.58
Germany	93.12	47.87	52.65	27.86	25.86	36.81	16.36	16.63
Hungary	81.97	50.13	24.06	1.62	5.15	6.87	0.71	4.28
Italy	89.63	40.97	49.72	17.72	23.63	30.46	19.27	24.19
Spain	92.63	27.62	26.57	10.76	14.28	18.40	29.59	24.03
United Kingdom	92.27	33.72	33.70	25.91	31.64	44.49	15.03	35.07

3. Eaton et al (2004) show that most French firms export only to a small number of destinations.



reported in the full study, where we control for other firm characteristics, such as productivity, skill intensity and the sectoral composition of the samples.

German leadership becomes even clearer when we focus on the proportion of firms with FDI commitments (Table 5). Again, firm size plays a key role: in Germany the percentage of firms involved in FDI increases from 1.5 percent of the smallest firms to 32.8 percent of the largest. Similar patterns are found in the other countries<sup>4</sup>.

To close the circle, it is interesting to note that firms that are involved in foreign production are also the main exporters, particularly to emerging economies. More than a quarter of the exports of France, Germany and Italy to China and India originates from French, German and Italian companies that also have invested in manufacturing there (Table 6). International production therefore complements exporting because it makes expansion into new markets easier, particularly those that are difficult and distant.

### 3 RECONCILING AGGREGATE AND FIRM-LEVEL EVIDENCE: INTERNATIONALISATION PATTERNS DIFFER MAINLY BECAUSE COUNTRIES DIFFER IN THEIR INDUSTRIAL STRUCTURES

How can we reconcile the finding that internationalisation patterns are predominantly driven by firm characteristics, with the evidence that, overall, countries perform

**Table 4: Average number of export destinations of exporting firms**

Size class	AT	FR	DE	HU	IT	ES	UK
10-19	4.77	6.58	6.98	2.55	7.69	4.96	8.59
20-49	7.87	8.99	12.15	3.79	9.97	7.75	11.62
50-249	18.30	14.40	17.78	6.07	17.27	12.37	17.75
More than 249	31.88	24.34	28.36	13.68	29.22	22.78	26.75
<b>Total sample</b>	<b>11.84</b>	<b>10.93</b>	<b>13.88</b>	<b>4.95</b>	<b>10.71</b>	<b>8.39</b>	<b>13.20</b>

**Table 5: Proportion of firms with FDI commitments (%)**

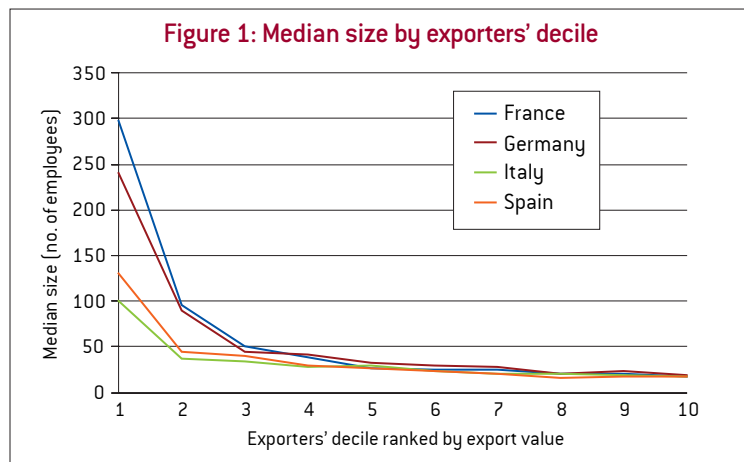
Size class	AT	FR	DE	HU	IT	ES	UK
10-19	2.19	0.86	1.46	2.50	0.57	0.75	2.00
20-49	3.31	2.02	4.17	1.10	2.24	1.76	3.88
50-249	15.76	8.15	9.18	1.68	6.24	7.91	10.49
More than 249	36.09	23.37	32.76	6.97	25.91	25.15	20.63
<b>Total sample</b>	<b>7.29</b>	<b>3.70</b>	<b>5.96</b>	<b>1.98</b>	<b>2.46</b>	<b>2.74</b>	<b>5.46</b>

**Table 6: Exports of firms with FDI to China and India over total country exports to China and India (%)**

France	28.3
Germany	25.1
Italy	28.2

very differently in terms of their exports and global production strategies? The main reason is that the industrial structure and the characteristics of firms are different in each country of origin. This is immediately apparent if we compare the size of exporters in

the largest continental EU economies. Figure 1 shows the median size (number of employees) of exporting firms in these countries, according to the value of firms' exports (with 1 being the decile of the largest exporters and 10 the decile of the smallest exporters). Size distributions differ across countries. The median size of the top 10 percent of exporters is larger in France and Germany (298 and 240 employees respectively) than in Italy (100) and Spain (130). Because exports are highly concentrated



Source: EFIGE.

4. Antras (2003) and Antras and Helpman (2004) theoretically, and Nunn and Treffer (2008) empirically, show there is a relationship between firm productivity and the complexity of operations carried out abroad, with only the most productive firms having FDI commitments. For additional interesting evidence for several economies see Defever and Toubal (2007), Fryges and Wagner (2008), Andersson et al (2008), Serti and Tomasi (2008), Kohler and Smolka (2009) and Federico (2009).



among the top exporters, this is a relevant concern<sup>5</sup>. French and German firms also tend to be larger when we move down the ladder of exporters, almost to the sixth decile. Thus, second-tier exporters are on average larger in France and Germany than in Italy and Spain and, especially in Germany, they contribute more to total exports.

Given that size affects all aspects of global operations, the distribution in the number of employees reported in Figure 1 is therefore in line with the fact that German firms pursue (as do French firms, though to a lesser extent) more comprehensive internationalisation strategies, and with the overall evidence that Germany is the European leader in exports of manufactured goods.

To further corroborate this evidence, we ask what the export performance of France, Italy and Spain would be if they had the same industrial structure as Germany. We carry out this exercise in a very simple way. We look at the size and sectoral composition of total employment for our samples in each country. We keep the size of the manufacturing sector fixed in terms of total employment, but reshuffle workers so as to replicate the German distribution in terms of firm size and sector. In doing so, we combine the German industrial structure with the individual export propensity of firms in each country<sup>6</sup>.

We then look at the resulting change in the total value of exports

in the three countries (Figure 2, the height of the bars). Total export value increases substantially in Spain (+24 percent) and Italy (+37 percent). For France, the increase is smaller, but still sizeable (+9 percent), in line with the fact that its industrial structure is more similar than Italy's or Spain's to Germany's.

We then decompose this variation, to see how much of it can be attributable to the change in the size distribution, and how much to the reweighting of the sectoral composition (Figure 2, the composition of the bars). Results are different for each country. In Italy most of the change is attributable to the modification of the firm size structure, which is consistent with the strong prevalence of small firms in this country. Although Italian SMEs display a relatively high export propensity, on average their contribution to internationalisation remains substantially lower than that of larger firms. The sectoral effect is less notable, given that Italian firms are leading exporters in traditional industries. In France the sectoral composition plays a

more important role, given that France's firm size structure is similar to that of the benchmark country. Finally in Spain, two thirds of the growth in exports would be attributable to the sectoral reallocation of employment and one third to size consolidation. The major impact of the sectoral reallocation for France and Spain implies that a relatively large share of their employment is today in industries with relatively low export propensity.

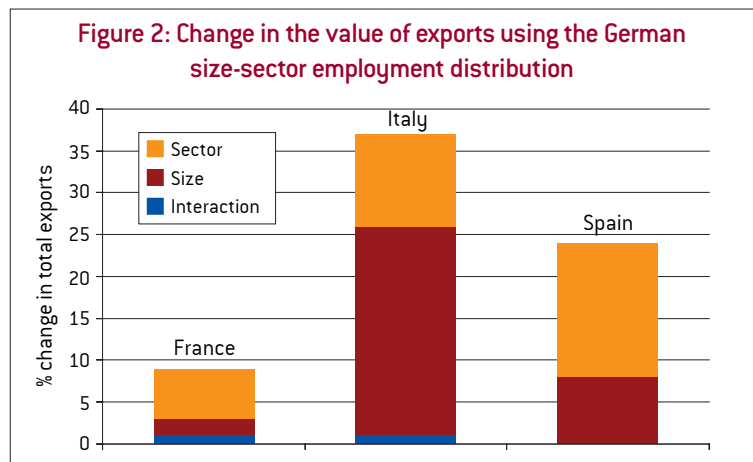
All in all, the evidence indicates that the main differences between countries are dictated by their industrial structures. Similar firms behave similarly across countries, but Germany has a structure that favours the internationalisation of its economy to a much greater extent than Spain or Italy. In particular, the greater presence of medium and large firms in Germany means that the German economy has a greater international dimension.

Increasing the size of firms does not mean that firms should become especially large. Figure 1

5. Mayer and Ottaviano (2007) show that exports are very concentrated in the first decile of exporters in most European countries. These findings are consistent with those reported in our main study.

6. Export propensity depends on firm-specific characteristics other than size and sector, which are kept unchanged in this exercise.

Figure 2: Change in the value of exports using the German size-sector employment distribution



Source: EFIGE.





shows that firms with around 50-100 employees contribute greatly in export terms. It is medium-sized firms that make up the backbone of export performance for most European countries. Although our data provides a snapshot in time, we know from other country-specific studies that increasing numbers of small firms have stopped exporting in recent years<sup>7</sup>.

Naturally there are other persisting differences between countries not related to their industrial structures. For example, as discussed previously in section 2, Italian firms have a higher export propensity than firms in other countries, whatever their size and sector. Also the large size of the German domestic market has an impact on the strategies of German firms. Still, these effects are dominated by those deriving from differences in the industrial structure.

#### 4 POLICY CHALLENGES

The findings of the study, *'The Global Operations of European Firms'*, raise potentially significant policy challenges. It is hard to disentangle the causal link between firm characteristics and performance and international activities and we do not aim to do so at this stage. Analysis of this new data is only starting. Nonetheless, our results so far, which are mostly based on broad correlations, already suggest several areas worth deeper investigation.

##### 1 Firm growth and consolidation, particularly of small-medium

**companies, could generate a considerable increase in the value of European exports.** Firms in industrialised economies are less and less able to compete by cutting costs and prices. They increasingly rely on other competitive factors: quality, technology, branding and so on, which are costly to acquire. Moreover, the broadening of the global span of markets forces firms to operate in several regions, often also to produce abroad. These patterns raise the cost of global competition, often beyond the means of small firms. Consequently, structural reforms that foster firms' growth and favour their move towards sophisticated forms of management, organisation and innovation, favour export growth.

**2 Advocating the growth in size of small and medium-sized enterprises does not imply that companies should all become very large.** They must be large enough to carry out complex global operations, including global production. A big share of firms in the 50-250 employees category are exporters, serve a number of markets and have foreign production. Medium-sized firms contribute considerably to export performance in most European countries.

**3 Structural reforms may be required in several areas,** such as labour regulation, taxation and reducing red tape. Also targeted sector-specific training and research programmes can foster export-oriented activi-

ties. Several of these measures may have a European dimension and partly be coordinated. Particularly in a phase of sluggish demand and reduced fiscal resources, we should not forget the enormous potential of the European single market as the quintessential quasi-domestic space where firms initially grow and reinforce their global competitiveness. Policy action should then aim at easing even further the movement of goods and factors within the EU, resisting calls for local measures that support firms within national boundaries.

**4 Global production strengthens global sales, particularly to emerging markets.** Through foreign production, firms can often reduce production costs and make entry into distant and difficult markets more easy for themselves. China and India are the countries where European firms most frequently have production facilities outside the EU. Policymakers may want to bear this in mind. Attempts to prevent the transfer of production abroad could severely hinder export growth. At the same time such measures would weaken the global competitiveness of national firms, with long-term negative effects on domestic employment.

*The research for this report was coordinated by Centro Studi Luca d'Agliano (Ld'A). Research assistance by Daniela Maggioni and Daniel Horgos is very gratefully acknowledged.*

7. See Fontagné and Gaulier (2010) for an analysis of French firms.



REFERENCES:

- Andersson, M., H. Löf and S. Johansson (2008) 'Productivity and International Trade: Firm Level Evidence from a Small Open Economy', *Review of World Economics* 144 (4), 774-801
- Antràs, P. (2003) 'Firms, contracts, and trade structure', *Quarterly Journal of Economics* 118 (4), 1375-1418
- Antràs, P. and E. Helpman (2004) 'Global Sourcing', *Journal of Political Economy* 112 (4), 552-80
- Defever, F. and F. Toubal (2007) 'Productivity and the sourcing modes of multinational firms: Evidence from French firm level data', *CEP Discussion Paper* No 842
- Eaton, J., S. Kortum, and F. Kramarz (2004) 'Dissecting trade: Firms, industries, and export destinations', *American Economic Review* [Papers and Proceedings] 94, 150-54
- Federico, S. (2009) 'Outsourcing versus integration at home or abroad and firm heterogeneity', *Empirica*, Online Publication Date: 2009/12/10.
- Fontagné, L. and G. Gaulier (2010) *Performance à l'Exportation de la France et de l'Allemagne*, Conseil d'Analyse Economique, Paris
- Fryges, H. and J. Wagner (2008) 'Exports and Productivity Growth: First Evidence from a Continuous Treatment Approach', *Review of World Economics* 144 (4), 695-722
- Helpman, E., M. J. Melitz and S. R. Yeaple (2004) 'Exports vs. FDI with heterogeneous firms', *American Economic Review*, 94 (1), 300-316
- International Study Group on Exports and Productivity (2008) 'Understanding Cross-Country Differences in Exporter Premia: Comparable Evidence for 14 Countries', *Review of World Economics* 144 (4), 596-635
- Kohler, W. and M. Smolka (2009) 'Global Sourcing Decisions and Firm Productivity: Evidence from Spain', *CESifo Working Paper* No. 2903
- Mayer, T. and G. Ottaviano (2007) *The Happy Few: The Internationalisation of European Firms*, Bruegel Blueprint Series, Volume III
- Melitz, M. J. (2003) 'The impact of trade on intra-industry reallocations and aggregate industry productivity', *Econometrica* 71 (6), 1695-1725
- Melitz, M. and G. Ottaviano (2008) 'Market size, trade and productivity', *Review of Economic Studies* Vol. 75, pp. 295-316
- Nunn, N. and D. Trefler (2007) *The boundaries of the multinational firm: an empirical analysis*, University of Toronto, mimeo
- Serti, F. and C. Tomasi (2008) 'Self-Selection and Post-Entry Effects of Exports: Evidence from Italian Manufacturing Firms', *Review of World Economics* 144 (4), 660-694

EFIGE is a project designed to help identify the internal policies needed to improve Europe's external competitiveness.



EFIGE is coordinated by Bruegel. For further information and details of other partners, see <http://www.efige.org/>

© Bruegel 2010. All rights reserved. Short sections of text, not to exceed two paragraphs, may be quoted in the original language without explicit permission provided that the source is acknowledged. The Bruegel Policy Brief Series is published under the editorial responsibility of Jean Pisani-Ferry, Director. Opinions expressed in this publication are those of the author(s) alone.

Visit [www.bruegel.org](http://www.bruegel.org) for information on Bruegel's activities and publications.

Bruegel - Rue de la Charité 33, B-1210 Brussels - phone [+32] 2 227 4210 [info@bruegel.org](mailto:info@bruegel.org)

