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ABSTRACT

We investigate the impact of import competition from low-cost countries on the exit of domestic firms from the manufacturing industries of eight European countries. We find a significant positive impact on the exit of large firms, while small firms are not directly affected. The empirical evidence is consistent with small firms having a comparative advantage in terms of flexibility and niche-filling capabilities, on a narrower relevant geographic market.

JEL classification: F14, L25, L60

Keywords: globalization, low-cost import competition, firm exit

1. INTRODUCTION

During the last two decades the world economy has been undergoing a pervasive globalization process. In particular, industrialized countries have witnessed a surge in imports from low-cost/fast-developing countries such as China and India. This trade pattern has been determining an increase in the competitive pressure faced by domestic firms. Indeed, several papers have found increasing import competition from low-cost economies to raise firm exit in the manufacturing sector of industrialized countries (Bernard et al., 2006; Coucke and Sleuwaegen, 2008). Firm heterogeneity seems to matter decisively in determining the extent to which domestic companies are displaced by such import competition. In particular, less productive and more labor intensive firms seem to be relatively more affected (Bernard et al., 2007; Tybout 2003; Coucke and Sleuwaegen, 2008). And yet, there is one important dimension of firm heterogeneity for which the implications in this context have not been explored so far: firm size. This paper aims at filing this gap by analyzing the exit dynamics of small and larger European firms in response to increasing import penetration from low-cost countries. The remaining of the paper is structured as follows: in Section 2 we develop three research hypotheses. In Sections 3 and 4 we present the data and the empirical model. Results are discussed in Section 5, while Section 6 concludes.

2. THEORETICAL FRAMEWORK AND HYPOTHESES

There are two main reasons for expecting a differentiated impact of foreign competition on firms of heterogeneous size. First, small firms are normally characterized by higher output flexibility, which allows them to adapt more easily to changing demand conditions (Mills, 1984; Dean et al., 1998). For instance, in declining industries small firms may adjust to the new competitive scenario with limited profit losses, thus being more likely to survive. Second, small firms tend to specialize their products in specific market-niches, as a strategy to avoid direct competition with larger companies (Porter, 1980; Caves and Porter, 1977). Extending this logic, a niche-focus is also expected to shelter small firms from import competition originating from low-cost countries. In fact, such competition tends to be based on large scale production, and is more oriented towards mass markets. We thus posit:

Hypothesis 1: Compared to large firms, small firms show a lower exit response to changes in import competition from low-cost countries.

The niche-seeking behavior of small firms is likely to be more relevant and successful in industries characterized by high levels of intra-industry trade (IIT). Indeed, as shown by Caves (1981), product differentiation is a major factor leading to increasing IIT. If domestic firms are able to substantially differentiate their products with respect to foreign competitors, a lower import-driven displacement can be expected (Greenaway et. al, 2008; Colantone and Sleuwaegen, 2010). Given the above discussion about market-niches, we expect the impact of IIT to be relatively more important for small firms. Hence:

Hypothesis 2: Ceteris paribus, firms exit relatively less from industries characterized by growing intra-industry trade. The negative impact on exit is more important for small firms than for larger ones.

Another firm-strategy for coping with low-cost import pressure is that of moving to a more capital intensive production technology (Bernard et al., 2006). Such a shift typically entails high sunk costs, and thus scale enlargements and a consolidation of capacity within industries (Kessides, 1990). Moreover, as firm restructuring takes place, off-shoring of labor intensive activities to low-cost economies is often observed, along with a downsizing of the domestic supply network (OECD, 2007). These dynamics are expected to worsen the competitive position of small firms. In fact, small producers are less likely to implement a similar unbundling of activities at the global level, and they are more likely to be directly damaged by shrinking domestic supply chains. Therefore we posit:

Hypothesis 3: Ceteris paribus, the exit rate of small firms is higher in industries characterized by growing capital intensity.

3. DATA DESCRIPTION

We employ firm exit data from the Eurostat "Business Demography Statistics" database, for eight European countries: Belgium, Denmark, Finland, Italy, Netherlands, Spain, Sweden and the United Kingdom. We focus on twelve manufacturing industries (see Table 2), for the time-span: 1997-2003. Exit rates in a given industry, country and year are defined as the ratio of exiting firms over the number of active ones. For each industry-country pair we could retrieve two separate figures, referring to the population of small and larger firms. At this purpose, the binding cut-off is set by Eurostat at the level of 20 employees[1] . In Table 1 the evolution of exit rates over time is displayed, on average across countries. Exit rates are increasing for both categories of firms. In particular, large firms 'figures witness a three-fold increase between 1997 and 2003, moving from 0.4% to 1.3%.

Insert Table 1 About Here

We employ international trade data from Eurostat COMEXT, from 1995 to 2003. As a first step, for each industry-country pair we compute an overall index of import competition as the following ratio: sectoral imports over the sum of domestic production and imports (Colantone and Sleuwaegen, 2010)[2] . The overall index is increasing in all the analyzed countries over the time span (between 0.29 to 0.33 on average). Next, the index is further decomposed into two components: one representing import penetration from a set of 52 low-cost countries (impcomplow) and the other referring to the remaining trading partners (impcomp-high)[3] . This is done as in Bernard et al. (2006), by keeping at the numerator the level of imports from the two sets of countries alternatively. Import flows from the set of low-cost countries have displayed a five-fold increase between 1995 and 2003, and their average share of total imports has doubled, moving from 4% to 8% (see Table 2). Our analysis aims at assessing the exit response of small and larger fims to such a shock.

Insert Table 2 About Here

4. THE EMPIRICAL MODEL

The baseline estimating equation is as follows:

$$Exit_{ijt} = \beta_0 + \beta_1 \Delta impcomp\_low_{ij(t-1)} + \beta_2 \Delta impcomp\_high_{ijt\,(t-1)} \quad (1)$$

$$+ \beta_3 \Delta IIT_{ijt} + \beta_4 investment/turnover_{ij(t-1)} + \beta_5 Z_{ij(t-1)} + \beta_i + \beta_j + \beta_t + \varepsilon_{ijt}$$

$Exit_{ijt}$ stands for the exit rate of industry *i* in country *j* at time *t*. We run separate regressions for the exit rates referring to the population of small and larger firms within the same observational unit. $\Delta impcomp\_low_{ij(t-1)}$ represents the change in the index of import competition from low-cost countries between t-1 and t-2. This variable is crucial for the empirical test. However, we also control for the evolution of import competition with respect to all the remaining trading partners: $\Delta impcomp\_high_{ijt\,(t-1)}$[4]

ΔIIT_{ijt} is the change in the Grubel-Lloyd (1975) index of intra-industry trade between t and *t-1*. The index ranges between zero and one, and is computed as:

$$IIT_{ijt} = 2 * \frac{min(Mijt, Xijt)}{Mijt + Xijt}$$

where M_{ijt} and X_{ijt} represent, respectively, import and export flows for industry *i* in country *j* at time *t*. $Investment/turnover_{ij(t-1)}$ stands for the logarithm of the lagged net investment in tangible assets over turnover at the industry level. This variable is a proxy for the change in the industry's capital intensity. $Z_{ij(t-1)}$ is a vector of three further explanatory variables, which are commonly identified in the relevant literature as sources of competitive pressure for incumbent firms. First, we control for lagged firm entry at the industry level (Dunne et al, 1988). Consistent with the idea that large and small firms compete in different strategic groups (McGee and Thomas, 1986), we include the lagged entry rate of both small and large firms in each regression. Second, we control for lagged TFP growth at the industry level, as a proxy for technological change and the related market turbulence[5] . β_i , β_j and β_t represent industry, country and year fixed effects. The model for small firms is estimated through standard Least Squares Dummy Variables regressions. For larger firms, instead, a Tobit estimation is performed, to account for the presence of zero cells in the database[6] .

5 RESULTS

Table 3 reports the outcome of the econometric analysis. Results referring to small and larger firms are reported in column 1 and 2, respectively. In the latter case, unconditional marginal effects from the Tobit estimation are reported.

Insert Table 3 about here

Consistent with Hypothesis 1, we find that large firms 'exit is positively affected by increasing import pressure from low-cost countries, while the same does not hold true for small firms. In particular, a marginal increase by 0.01 in the impcomp-low index generates higher exit rates of large firms by around 0.4 percentage points. Instead, exit rates of small firms are sensitive, to a lesser extent, to marginal increases in import competition from the set of relatively wealthy trading partners. In line with Hypothesis 2, an increase in intra-industry trade is significantly associated to lower exit, but only for small firms. Finally, consistent with Hypothesis 3, small firms exit relatively more from industries characterized by increasing capital intensity.

Exit is positively associated to previous entry, with a noteworthy difference between small and larger firms. Indeed, small firms seem to be affected by previous entry of both small and large competitors. Instead, larger firms only respond to the competitive pressure coming from new large companies. The exit of large firms is also found to be positively related to lagged TFP growth at the industry level, while the same effect is not detected for small firms.

As a robustness check, in columns 3 and 4 we have looked at the impact of import competition originating from within vs. outside the European Union that is "intra EU25 "vs." extra EU25. The results for small firms point again at the competitive effects exerted by imports from similarly endowed countries (intra EU25). For large firms, instead, no statistically significant effects are found for both indexes of import competition. This reinforces our idea that the increase in import flows from low-cost countries has been the most relevant competitive shock for large European firms over the considered period.

6 CONCLUSIONS

Our results corroborate the established view that increasing import competition raises the exit rates of domestic firms in the short-run. However, we add to previous studies by showing that firms of different size might be affected differently by diverse sources of import competition. Our findings are consistent with small firms having a competitive advantage in terms of flexibility and market-niche focus, on a narrower relevant geographic market.

Notes

[1] More details at: http://epp.eurostat.ec.europa.eu

[2] Domestic production data are retrieved from the Eurostat Structural Business Statistics Database.

[3] The set of low-cost countries is the same as in Bernard et al. (2006). It includes China, India and other economies with a level of GDP per-capita lower than 5% of the US figure.

[4] The choice of the time-lag follows earlier findings by Colantone and Sleuwaegen (2010).

[5] Data on total factor productivity have been retrieved from the EU KLEMS database. Detailed information available at: http://www.euklems.net/index.html

[6] See Greene (2004) and Kee et al. (2007) on the appropriateness of Tobit estimation with fixed effects.

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TABLE 1: EXIT RATES – YEARLY AVERAGES

	Overall figures	**Small firms (<20 empl)**	**Large firms (≥20 empl-)**
Year	Exit rate	Exit rate	Exit rate
1997	6.2%	6.8%	0.4%
1998	6.4%	7.3%	0.9%
1999	6.4%	7.1%	1.2%
2000	6.3%	7.0%	1.0%
2001	6.1%	6.8%	1.1%
2002	6.4%	7.2%	1.2%
2003	6.5%	7.4%	1.3%

TABLE 2: SHARE OF SECTORAL IMPORTS COMING FROM LOW-COST COUNTRIES (ON AVERAGE ACROSS THE EIGHT EU COUNTRIES IN THE SAMPLE)

Sector Description	NACE code	Low-cost share 1995	Low-cost share 2003
Manufacture of leather and leather products	dc	18%	30%
Manufacture of textiles and textile products	db	15%	22%
Manufacture of electrical and optical equipment	dl	2%	7%
Manufacture of other non-metallic mineral products	di	2%	6%
Manufacture of rubber and plastic products	dh	2%	5%
Manufacture of wood and wood products	dd	3%	5%
Manufacture of machinery and equipment n.e.c.	dk	1%	4%
Manufacture of basic metals and fabricated metal products	dj	2%	4%
Manufacture of food products, beverages and tobacco	da	2%	2%
Manufacture of chemicals, chemical products and man-made fibres	dg	1%	2%
Manufacture of pulp, paper and paper products; publishing and printing	de	0%	1%
Manufacture of transport equipment	dm	0%	1%
	Mean	4%	8%

TABLE 3: ECONOMETRIC RESULTS

Dep.var;: Industry/country specific exit rate, defined over the population of small and large firms

	(1) Small Firms	(2) Large Firms	(3) Small Firms	(4) Large Firms
Δ*imp comp low*$_{(t-1)}$	-0.0328	0.4124***		
	(0.107)	(0.137)		
Δ*imp comp high*$_{(t-1)}$	0.1055**	0.0534		
	(0.047)	(0.037)		
Δ*imp comp Intra EU 25* $_{(t-1)}$			0.1347**	0.0748
			(0.056)	(0.055)
Δ*imp compExtra EU 25* $_{(t-1)}$			0.0326	0.0866
			(0.066)	(0.056)
Δ IIT Index	-0.0603**	0.0022	-0.0622**	-0.0006
	(0.024)	(0.019)	(0.024)	(0.020)
Investment/Turnover (t-1)	0.0029*	-0.0014	0.0037*	-0.0024
	(0.002)	(0.002)	(0.002)	(0.002)
Entry Rate Small (t-1)	0.2132***	-0.0283	0.2123***	-0.0381
	(0.047)	(0.037)	(0.047)	(0.038)
Entry Rate Large (t-1)	0.4982**	0.7392***	0.5244**	0.7003***
	(0.196)	(0.179)	(0.204)	(0.180)
TFP Growth (t-1)	0.0343	0.0596**	0.0374	0.0642***
	(0.030)	(0.026)	(0.030)	(0.025)
Constant	0.0681***	0.0057	0.0708***	0.0043
	(0.007)	(0.008)	(0.008)	(0.009)
Industry dummies	yes	yes	yes	yes
Country dummies	yes	yes	yes	yes
Year dummies	yes	yes	yes	yes
N. of obs.	302	297	302	297
R-sq	0.87		0.87	
Pseudo R-sq		0.79		0.77

Robust standard errors in parentheses

*significant at 10%, ** significant at 5%, ***significant at 1%