

THE POST-ENTRY EFFECT OF EXPORTING ON PRODUCTIVITY: INFERENCE ON THE COUNTERFACTUAL DISTRIBUTION

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Abstract This paper investigates the post-entry effect on productivity experienced by firms that start to exporting. The effect of entering into international markets is disentangled by the self-selection component and its empirical distribution is evaluated. Results show that the impact on productivity of moving from the status of non-exporter to the status of exporter is different at different sections of the productivity distribution.

1. The learning by exporting puzzle

This paper investigates the learning-by-exporting (hereinafter LBE) hypothesis which states that firms that move from the status of non-exporter to the status of exporter (export starters) experience an increase in productivity during the period following their entry into the export market. Although an extensive stream of empirical literature on international trade shows that the most productive firms undergo a self-selection process to enter foreign markets, few empirical contributions support the LBE hypothesis. Besides, most of the literature focusing on the test of the LBE hypothesis estimates the effect by using either i) regression models which estimate productivity premium by controlling for the relevant covariates or ii) methods developed in the context of the evaluation literature, such as the propensity score matching approach. Both of these approaches present strengths and weaknesses, but, primarily they limit the analysis to the estimation of the average treatment effect.

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In this paper, by operating in the context of the impact evaluation, we extend the focus to differences observed in the whole distribution of the productivity and not only at differences at the mean levels. We estimate the whole distribution of the net productivity premium caused by the entrance into the international markets, where “net” refers to the premium actually imputable to LBE. We disentangle the (raw) LBE premium from the component due to differences in the structural composition among the groups of export starters, firms operating in the domestic market for the whole period considered (domestics) and firms that entered international markets before the considered period and continue to export (incumbents). In order to make inference on counterfactual distribution we adopt the Quantile Decomposition (QD) approach (Chernozhukov et al., 2012). We obtain the estimate of the post-entry effect distribution by comparing the observed productivity distribution of the export starters group to the productivity distribution of its counterfactual.

The analysis is based on a newly available panel data set of firms recently developed jointly by the Italian National Institute of Statistics (Grazzi et al., 2009). This data set contains firms’ micro-data for the period 1998 through 2007, and it has been realised by matching different census and sample surveys of the firms. This very rich longitudinal firm-level data allow for the solving of potential endogeneity problems and the proper evaluation of the causal effect of exporting on the performance of firms by also dealing with the self-selection bias.

2. Main findings

According to expectations, the raw TFP premiums for exporters, both incumbents and starters, are large and persistent before and after the treatment period, at least in the bottom section of the TFP distribution (Table 1, raw differences). We estimate the net TFP premium obtained by removing the selection bias from the raw premium. More specifically, from the perspective of the decomposition approach, the difference of the TFP across groups measures the *raw* export premium, and it can be decomposed into two parts: the component owing to characteristics that may be interpreted as the effect of self-selection on observables and the component owing to coefficients that may be interpreted as the estimate of the treatment effect. To investigate the performance of starter firms in the post-entry period, we pose the treatment time at $t=0$ and focus on four post-entry periods denoted by $t=0+j$ for $j=1,2,3,4$. The first step of the QD approach consists of estimating quantile regression models and explaining raw TFP for the different groups. With this aim, we specify the following τ -th quantile regressions model that we estimate over each group ($g = s, d, i$):

$$Y_{ij} = \alpha^g(\tau) + \sum_{k=1}^2 \beta_k^g(\tau) IND_{ig,k} + \sum_{l=1}^3 \gamma_l^g(\tau) REG_{ig,l} + \eta^g(\tau) Z_{i,g-2} + u_{ij}$$

where Y_{ij} is the TFP level at time j of firm i , which belongs to group g ; $IND_{ig,k}$ are two out of three dummies indicating the principal industry group to which firm i of the group g belongs at year 1999; $REG_{ig,l}$ are three out of four dummies indicating the macro-area in which the firm i of the group g is located at year 1999; $Z_{i,g-2}$ is the vector of observable covariates that control for selection bias, that is the pre-entry raw productivity level (TFP_{-2} for firm i at fixed time $t=-2$).

The second step consists of estimating the net TFP through the QD approach, that is, of removing the selection bias due to different group compositions observed before entry and to raw TFP pre-entry levels. Results of the decomposition are reported in Table 1 (net differences). The estimated net TFP premiums of starters versus domestic firms are positive over the post entry-period in the first half of the distribution. At the same time, the net premiums of the starter firms in the higher half of the TFP distribution are null or negative (Figure 1). This suggests that, while TFPs of lower and medium performing starter firms overcome TFPs of lower and medium performing domestic firms, this does not occur for better performing firms. With regards to the level of the estimated net TFP premiums of starters versus incumbents, they are negative for low, medium and high performing firms. In addition to the levels of the net TFP, it is also important to understand how these premiums evolve during the post-entry periods. This may be usefully captured by jointly considering empirical evidences from Figures 1 and 2 in two directions. On the one hand, net premiums of starter with respect to domestic firms along the post-entry period are quite stable, the only exception being the fall in period $t=+3$. On the other, the dynamics of net premiums of starters with respect to incumbent firms is positive. Thus, the negative gap of starters tends to decline and becomes null either at time $t=+3$ for the comparison that entails lower performing firms, at time $t=+4$ for the comparison that entails medium performing firms or suddenly at time $t=+2$ for the comparison that entails higher performing firms.

An initial conclusion is that starters, during the post-entry periods, increase their TFPs more than incumbents but do not increase their TFPs more than domestics.

Table 1 Decomposition of the TFP level

TFP <i>time</i>	Raw differences			Net differences (coefficients)		
	q=0.2	q=0.5	q=0.8	q=0.2	q=0.5	q=0.8
Incumbents vs. Domestics						
-1	0.315 **	0.289 **	0.292 **	0.077 **	0.069 **	0.071 *
0	0.364 **	0.318 **	0.334 **	0.132 **	0.124 **	0.140 **
1	0.366 **	0.281 **	0.261 **	0.123 **	0.079 *	0.059
2	0.353 **	0.264 **	0.209 **	0.126 **	0.062	0.017
3	0.212 **	0.189 **	0.129 **	0.102	0.039	-0.039
4	0.238 **	0.215 **	0.155 **	0.086	0.054	0.037
Starters vs. Domestics						
-1	0.155 **	0.161 **	0.177 **	0.037	0.036	0.018
0	0.237 **	0.193 **	0.221 **	0.100 **	0.073 *	0.081
1	0.199 **	0.146 **	0.153 **	0.067 °	0.029	0.014
2	0.205 **	0.157 **	0.115 *	0.086 *	0.043	-0.007
3	0.102 *	0.084 *	0.047	0.051	0.004	-0.053
4	0.16 **	0.130 **	0.055	0.078	0.038	-0.011
Starters vs. Incumbents						
-1	-0.160 **	-0.128 **	-0.115 **	-0.032	-0.030 *	-0.052
0	-0.127 **	-0.126 **	-0.113 **	-0.02	-0.037 °	-0.054
1	-0.167 **	-0.135 **	-0.108 *	-0.075 **	-0.055 **	-0.056
2	-0.149 **	-0.106 **	-0.094 *	-0.07 *	-0.037 °	-0.048
3	-0.111 **	-0.106 **	-0.081 °	-0.034	-0.039 °	-0.037
4	-0.078 *	-0.085 **	-0.100 **	-0.004	-0.018	-0.058

°, *, **, significant at 90, 95 and 99 per cent, standard errors in brackets.

That is, the entry into international markets produces an acceleration of starter TFPs with respect to incumbents. To better understand this finding, it must be remembered that the analyzed years represent a phase of a negative cycle of Italian exports during which premiums of incumbents diminished as long as they had become not significant (Table 1). According to expectations, if a post-entry effect had not intervened, the net premiums of starters would have experienced a decrease of the same order of incumbents' premiums. On the contrary, the levels of premiums for starters remained quite stable during the post-entry period and converged to the premiums of incumbents. At time $t=+4$, premiums of lower and medium starter firms may not be distinguished from the ones of lower and medium incumbent firms (Figure 2). With regards to the firms in the top section of the TFP distributions, the net premiums are usually lower than in the other sections of the distributions, and they are never significant, indicating that the TFPs of the best performing firms are not sensitive to internationalization status.

The main findings draw important conclusions in terms of economic policy. In fact, if a learning-by-exporting effect is present, policies should remove obstacles to export entry as this may help to increase the number of firms that successfully act on the world market in the future and that contribute to economic growth through the increase of their productivity. On the contrary, if the learning-by-exporting effect is absent, policies should focus on directly fostering productivity

Figure 1 Net TFP premiums: starters vs. domestics (s vs d) and starters vs. incumbents (s vs i) at quantiles (q) 0.2, 0.5 and 0.8

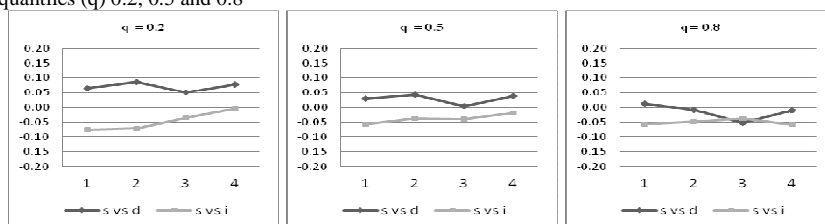
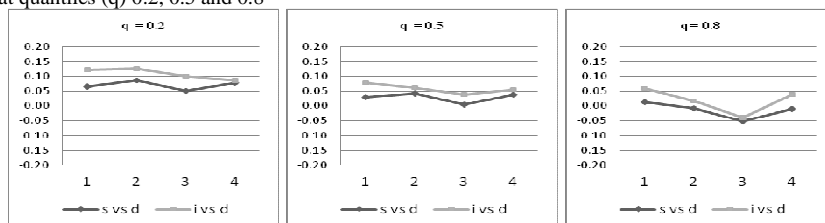


Figure 2 Net TFP premiums: starters vs. domestics (s vs d) and incumbents vs. domestics (i vs d) at quantiles (q) 0.2, 0.5 and 0.8



References

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