

Referee report on: “The export-productivity link for Brazilian manufacturing firms”

May 26, 2015

1 Overview and main results

This paper uses Brazilian data to analyze the link between exports and total factor productivity of firms over the period between 2000-2008. Using Wooldridge (2009) GMM procedure to obtain TFP under two alternative assumptions (exogenous or endogenous law of motion for productivity), the authors implement stochastic dominance techniques and matching techniques to explore the self-selection and learning by exporting hypotheses. The authors find some evidence of a self-selection process into export markets. They also find a learning by exporting process during the first year in international markets. This extra TFP growth appears higher under the assumption of an endogenous law of motion for productivity.

The analysis presented in this paper tries to contribute to a growing literature which aims at a better understanding of the relation between exports and firms productivity. Despite the huge number of studies on the self-selection and learning by exporting process, there is always a need to learn more about such effects. Each country has a specific context and different firm characteristics and Brazil is a country that received little attention in the empirical literature.

2 Main Comments:

1. PIA empresa database is not a census database, it is crucial to have more information on the coverage of the data.

Reply (as regards this comment we have introduced the following changes and clarifications in the new version of the paper at the beginning of section 2 –first paragraph):

“PIA is a firm level survey for manufacturing and mining sectors conducted annually by the Brazilian Statistical Institute, IBGE (Instituto Brasileiro de Geografia e Estatística). Firms with 30 or more employees are included in the sample, while smaller firms of up to 29 workers are included randomly in the sample. Important efforts have been made to minimise attrition and to annually incorporate new firms so that the sample of firms remains representative over time”.

2. In table A.1. it is important to display standard-errors with the coefficients of the

production function.

Reply: Table A.1. now displays the standard errors of the production coefficients estimated.

3. As there are some differences between PIA and SECEX in identifying exporters, it would be interesting to made a sensitivity analysis of the results depending on the different choices made on the export status of the problematic cases.

Reply (footnote 5 has been rephrased taking into account the following and including the underlined sentence):

As suggested in footnote 5 we used SECEX as the most reliable source of information for exporters since exports are adequately registered by the customs authority. At the beginning of the project when we identified some differences between both databases regarding exporters, we contemplated the idea of using PIA to identify indirect exporters. So it could be that exporters identified in PIA and not in SECEX were indeed exporters that would not export directly. However, we were persuaded of not using PIA to identify exporters for two reasons. First, after discussing these findings with other researchers that had used PIA also suggested that this was an unreliable source for identifying exporters. Second, the fact that more exporters in SECEX were not registered as such in PIA when we positively know that they have exported would contaminate our control group of non-exporters. So overall, we believe that PIA is misleading in identifying exporters. This was communicated to IBGE, the Brazilian statistical office.

4. Whatever the model used, the authors find that the productivity of exporters is higher than that of non-exporters in all industries except publishing and printing (23), office machinery (30), electrical components and communication apparatus (32) and medical equipment (33). Why? Do they have an explanation?

Reply:

Honestly, we do not really know why in these sectors non-exporters are more productive than exporters. It could be that in sectors with a high degree of technological intensity or sophistication, productivity driven self-selection into export markets is not so relevant. Now footnote 8 has been rewritten as follows: “For these industries the distribution of exporters does not dominate that of non-exporters, but the opposite. Similar results will appear when testing for self-selection. It could be that in sectors with a high degree of technological intensity or sophistication, productivity driven self-selection into export markets is not so relevant.”

5. The specification of the propensity score could be improved by adding more covariates such as experience of the firm, foreign ownership, location dummies, etc... The more disaggregated and richer the information is, the more likely is to hold the basic assumption underlying propensity score matching: that selection bias is based only on observed characteristics.

Reply:

We agree with the referee that the specification of the propensity score could be improved probably adding more covariates. However, we would like to note that this piece of research was performed in a secure data room at IBGE, Rio de Janeiro, in Brazil. In this data room we had access to old generation computers for a limited amount of time and computationally limited. Nowadays we do not have access to these facilities. Therefore, we can only answer to this comment trusting that because balancing properties are fine in our matching samples the quality of the matching is reliable. Now the paper includes balancing score tests as explained in the next point and requested by the reviewer.

6. The paper should present balancing score tests in order to measure the match quality.

Reply: We agree with the referee and we have incorporated this information that was in our estimation output but we did not incorporate in our previous version of the paper. Now it is incorporated. We provide now the balancing property statistics. These are included in “Table A.2. Quality of the matching analysis” in the Appendix.

7. The authors present one algorithm for the matching technique. Other matching estimators are needed to justify the robustness of the results.

Reply: We agree with the referee that other algorithms would be desirable to justify more the robustness of results. However, we would like to note that this piece of research was performed in a secure data room at IBGE, Rio de Janeiro, in Brazil. In this data room we had access to old generation computers for a limited amount of time and computationally limited. Therefore, we were compelled to choose among alternative algorithms. We chose the more efficient one in terms of computation (without losing of sight robustness). In that sense we followed Abadie and Imbens (2008) recommendation for standard errors in nearest neighbours matching, as it is stated in footnote 12 of the manuscript. Our original estimation programmes to be ran at the IBGE included kernel and radius matching, but time and computing constraints prevented us to run these alternatives.

8. It would be interesting to use the construction of the two groups (treatment and control) with the propensity-score matching in a first step in order to combine in a second step a difference-in-differences estimator with propensity-score matching to understand if the performance of exporters compared with non-exporters is indeed different according to some firm characteristics like skills, experience, size, etc. This can be achieved with an entry variable interacted with some firm characteristics.

Reply:

We agree with the referee that it would be interesting to run diffs-in-diffs with the matched samples. However, nowadays we do not have access to the secure data room at IBGE in Brazil, because this was inside a project with funding and permissions for access that unfortunately already expired.

3 Other Comments:

1. It would be interesting to add descriptive statistics like the output, the number of workers, the capital, the materials and wages of the average exporting firm and the average non-exporting firm by year.

Reply: Table 3 in the manuscript provides now the information requested by the referee (we have incorporated this information that was in our estimation output but we did not incorporate in our previous version of the paper).

2. The authors need to specify the digit level of the sector deflators provided by the IBGE used to deflate the variables.

Reply (this information has been added in the previous paragraph to section 3 in the paper):

“The digits level of the sector deflators corresponds to the 2 digits CNAE classification.”

3. In a footnote at the end of Tables 4 and 5, the authors should define S1 and S2. We assume that it represent the so-called one-sided K-S test and two-sided K-S test but it need to be clarified.

Reply: The referee is right; S1 and S2 are the one-sided and two-sided K-S tests. We have clarified this in the new version of the paper.