International Outsourcing and Innovation in Clean Technologies

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Summary

- **Question:** What is the impact of imports of material products from low-cost countries on firms' propensity to engage in 'clean' innovation?
- **Main finding:** A higher proportion of 'material' imports sourced from low-cost countries has a significant negative impact on firms' propensity to conduct 'clean' innovation.
- **Implications:**
  - Trade with low-cost countries may reduce environmental innovation.
  - Therefore, it may not only affect the rate of technological change but also its *direction*.

What I like about this paper

- Nice paper that deals with a very important topic
- Careful empirical investigation
- The empirical findings have clear policy implications for the current debate on carbon 'leakage'.

Comments 1/3

- What does the model add to the paper?
- You mention that the aim of the model is "to guide [your] intuition for the empirical investigation".
- I see two reasons why the model is useful:
  - Although I'm not fully comfortable with the comparative statics with respect to the share N_i^c of materials sourced from China (because this rests on assuming that N_i^c is exogenous) I find them useful:
    - They show that the effect of N_i^c on the incentives to engage in clean innovation are ambiguous, which makes the empirical investigation even more valuable.
  - Endogeneizing N_i^c clearly shows that making a causal inference would be problematic.

Comments 2/3

- The link between the theoretical section and the empirical part should be clarified.
- The (main) prediction of the model regarding the effect of a larger share of dirty inputs on the incentives to innovate is not fully tested, is it?
  - In particular, does your data allow you to test the (positive) effect on general process and product innovation?
    - This would provide some additional support to the underlying mechanisms in your model and to your claim about the effect of international trade on the direction of technological change.

Comments 3/3

- Subsidies for investment in clean technologies might affect your analysis.
  1. Do you control for all variables X such that there exist subsidies that are X-specific?
  2. I guess there are country-specific subsidies within the EU.
     - If there are significant differences between France and the rest of the EU in terms of subsidies, this could weaken the instrument based on EU imports.
- The latter concern is probably more acute for the instrument based on US imports.
- However, since there is probably less 'interaction' between French and US firms (than between French and other EU firms), there is less concern about the validity of that instrument than about the one based on EU imports.