Comments to Bronzini and Iachini

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What is the paper about?

- Ex-post evaluation of the “Regional Program for Industrial Research, Innovation and Technolocal Transfer” implemented by the Emilia-Romagna region since 2003.
- Authors apply a regression discontinuity design to compare several proxies for R&D expenditures above/below the cut-off point.
- The overall effect is not statistically different from zero. However, this result masks substantial heterogeneity with small firms increasing their investment significantly.
- Policy implications: R&D programs should be targeted towards small firms since they are more likely to suffer from financing constraints.

Data

- Confidential data from the Emilia-Romagna region: 1,246 firms (557 treated and 689 untreated) from the 2004 and 2005 auctions.
- Incentives amount to 93 million euros corresponding to 0.1% of regional GDP. The average subsidy is equal to 182,000 euros.
- Balance-sheet data provided by Cerved:
  - R&D expenditures are not observable;
  - Tangible investment, intangible investment, labor costs, service costs, all scaled by pre-assignment sales.
- Final sample of 468 firms (315 treated and 153 untreated), further disaggregated between industrial and service firms.

Data problems

- R&D expenditures are not directly observable:
  - The majority of R&D expenditures is related to labor costs;
  - Cost capitalization is a strategic decision for firms;
  - More succesful firms are less likely to capitalize for fiscal reasons; small firms might also be more/less likely to capitalize;
  - Intangible investment might be a poor proxy for R&D expenditures;
  - More work/discussion is probably needed here.

- Sample selection and small sample problems
  - Balance-sheet data for unsubsidized firms look more difficult to collect. Is this simply because of those firms which did not receive a score in the second auction?
  - In the “narrow window – small firm” case the sample is made of around 50-60 observations.

Main results

- No overall effect (Table 3). True, but sensitive on how variables are defined.
  - Positive effect on total investment over capital/assets (Table 4)
  - Negative effect on labor costs over sales (Table 4).
- Significant and sizeable effect on small firms. Similar effect on tangible and intangible investment (Table 5)
  - R&D subsidies should affect intangible investment more than tangible investment. This is not the case here. Complementarities?
  - It would be useful to see what happens to the other variables (labor costs over sales, external services over sales, etc.).

General comments on the main results

- Time and cross-sectional substitution patterns are neglected.
- External validity. Need for meta analysis. Scope for a large-scale project which exploits detailed regional variation in program characteristics?
- R&D is an input in the knowledge production function. Can we measure output? Scope for a more detailed analysis based on survey data?
- Ex-post evaluation versus ex-ante evaluation.

Policy implications (intro)

- Many small-medium sized firms do not conduct “formal” internal R&D activities;
- R&D investment is characterized by non-negligible indivisibilities;
- Learning by doing is another important aspect of R&D activity.

Policy implications

- Before turning to “definitive” conclusions
  - Firm behavior has to be tracked over time;
  - A detailed analysis of cost items has to be made;
  - Information on how subsidies affect the innovation process have to be gathered.
- Financing contraints are likely to be part of the story but they are not the full story.